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CATALYTIC EVENTS: ENVIRONMENTAL EVENTS THAT TRANSFORM INSTITUTIONS

by

KEN YIN CHUNG

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ABSTRACT OF THE DISSERTATION

Catalytic Events: Environmental events that transform institutions

By Ken Y. Chung

Dissertation Director:
Petra Christmann, PhD

Some environmentally disastrous events lead to significant institutional change while others do not. Consider that the volume of oil spilt at Guadalupe Dunes, California was twice that of the Exxon Valdez accident. Few have heard of the former while the latter has led to significant legislation to control oil pollution.

Organizational institutionalists are ambivalent about why events lead to change or even whether they do. Some theorists argue that shocking events break the status quo but what constitutes shocking is unclear. Others argue that events do not by themselves cause change. Instead, individuals or groups who seek change look for events merely as a tool to publicize a problem and recruit support.

The central goal of this dissertation therefore is to understand why and how events that arise from industrial accidents that harm the environment lead to significant institutional change. This study is focused on the claims that key actors make in establishing shared meanings that compel the new institution.

By devising a comparative case study of four environmental accidents, I have developed a theory to explain why and how events lead to significant institutional change. I find that institutional change occurs when a few people perceive that an industrial accident has disrupted their lives and make claims to problematize the accident

as causing an undesirable condition that must be alleviated. These people, labeled problem providers, then engage others, labeled solution providers, to create new meaning or symbolize the event. Such meanings further persuade others to create new institutions to effectively enforce a new order.

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ABBREVIATIONS AND ACRONYMS

Calif	California
CDFU	Cordova District Fishermen United
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act of 1980
D	Democrat
EPA	U.S. Environmental Protection Agency
Gov	Governor
Jr	Junior
N.C.	North Carolina
N.J.	New Jersey
N.Y.	New York
OPA	Oil Pollution Act of 1990
Pres	President
R	Republican
Rep(s)	Representative(s)
Sen(s)	Senator(s)
Sr	Senior

GLOSSARY

Term	Definition
Agency (human agency)	The idea that humans can act independently and not deterministically (Mead, 1934)
Agenda	A list of issues which are recognized by the active participants as legitimate subjects of attention, concern, debate and decision making (Baumgartner, 2001: 288; Walker, 1966: 292)
Agenda setting	The process of placing issues on the agenda
Catalytic event	An event whose shared meaning begins with the perception of disrupted life and is settled with a new order. See also Event
Causal story	An explanation for "how situations come to be seen as caused by human actions and amenable to human intervention" (Stone, 1989: 281)
Claim	Any activity, verbal, written or behavior, that seeks to persuade others (Loseke, 2003; Spector & Kitsuse, 2001)
Deviance	"Conduct which the people of a group consider so dangerous or embarrassing or irritating that they bring special sanctions to bear against the persons who exhibit it" (Erikson, 1966: 6)
Disrupted life	A condition in which one interprets a situation where an institution that is important to social life is blocked
Event	A social point of reference for a specific or a related series of occurrences that encompasses shared meaning (Lewis & Weigert, 1981: 433)
Focusing event	Event that calls attention to a problem (Birkland, 1997: 11; Kingdon, 2003: 95)
Institution	"Institutions are comprised of regulative, normative and cultural-cognitive elements that, together with associated activities and resources, provide stability and meaning to social life" (Scott, 2008: 48).
Institutional entrepreneur	Actor who leverages resources to create new or transform existing institutions (Battilana, et al., 2009: 68)

Term	Definition
Institutional recreancy	"[T]he failure of institutional actors to carry out their responsibilities with the degree of vigor necessary to merit the societal trust they enjoy" (Freudenburg, 1993: 909)
Meaning	Meaning of an object is a shared understanding of what the underlying object is (Blumer, 1998; Hewitt, 2003; Zilber, 2008)
Moral entrepreneur	Actor who actively works on "the creation of a new fragment of the moral constitution [rules] of society, its code of right and wrong" (Becker, 1973: 145-147)
Policy entrepreneur	Actor who invests resources to accomplish a public policy change (Kingdon, 2003: 122; Mintrom, 1997: 739)
Polity	The group of constituted (formally recognized) political actors with routine access to government officials and resources (McAdam, et al., 2001: 11)
Problem provider	A social role to make claims and conduct claims-making activities that problematize an event
Problem shopping	An iterative process through which change proponents offer and select problems that are most favorable to enable change
Public policy	A stream of activities and decisions leading to a particular course of action (Polsby, 1984: 7)
Regulatory capture	A regulation that "is acquired by the industry and is designed and operated primarily for its benefit" (Laffont & Tirole, 1991: 1090)
Role	See social role
Sign or signifier	A sound or conventional set of markings (also known as the Signifier) that is used to represent an object, process or state of things (also known as the Signified) (Deacon, 1998: 59)
Social construction	The process through which people assign meaning to the world (Berger & Luckmann, 1967; Best, 2003: 982)
Social problem	"The activities of groups making assertions of grievances and claims with respect to some putative conditions" (Kitsuse & Spector, 1973: 415)

Term	Definition
Social role	"A comprehensive pattern of behavior and attitudes, constituting a strategy for coping with a recurrent set of situations, which is socially identified--more or less clearly--as an entity" (Turner, 1990: 87)
Social structure	Patterns of social interaction and persistent social relationships associated with the interaction (Ritzer, 2007: 64)
Solution provider	A social role to make claims and conduct claims-making activities that propose a specific solution to the problem. See also problem provider
Symbol	A type of sign where the signifier and signified are related by formal law, convention, or mutual agreement (Peirce, 1931-58: Vol 2: 292-302). See also sign

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CHAPTER 1. INTRODUCTION

Some industrial accidents that harm the natural environment have led to significant change in our institutions but others lead to no change at all. In one event, toxic chemicals leaking into a residential neighborhood in Love Canal in New York state is credited as the precursor to one of the most significant legislative reforms in environmental protection in the U.S. (Colten & Skinner, 1996). But the event at Love Canal was quite similar to several accidents, incidents, protests and unregulated activity that had already taken place in Michigan, Virginia, California and New York states that led to no comparable change (Szasz, 1994: 38-39). In another case, an event in which oil leaked into the neighborhood in Guadalupe Dunes in California has led to no institutional change even though the volume of oil spilt was twice that in the Exxon Valdez event that has otherwise led to the creation of the Oil Pollution Act of 1990 and maintained an iconic status (Beamish, 2002). Why do some events lead to significant institutional change while others do not?

The study of these events is central to organizational theory because corporations are part of the cause and also of the solution to much human misery that is associated with such events (Margolis & Walsh, 2003). Industrial accidents have been studied in various forms as disasters, issues and events. Disasters, both technological as well as natural, are man-made primarily because of increasing use of high risk materials and complex technology (Beck, 1992; Perrow, 1999; Turner, 1978; Vaughan, 1996), and because more people are at risk, in part because people live and work closer to hazardous

sites (Clarke & Short, 1993: 378; Mileti, 1999; Perrow, 2007). In most cases we accept these risks but occasionally an accident prompts debate and can subsequently lead to change. The resulting change has been studied both at the organizational level as well as at a wider institutional level. Studies at the organizational level focus on how interpretations of "fact like" events affect change (Bartunek, 1984; Daft & Weick, 1984; Dutton & Dukerich, 1991; Gioia & Thomas, 1996; Isabella, 1990; Staw, et al., 1981; Thomas, et al., 1993). In contrast, this dissertation is focused at the institutional field level to show how events come to affect all organizations within the field.

Advancing our understanding of events

Past studies, however, have not fully explained why events lead to significant change in institutions. One approach suggests important events provide a "jolt" to break inertia and drive action in a new direction (Meyer, 1982; Meyer, et al., 1990). What constitutes a jolt, however, is not well understood. A second approach suggests actors use events as a tool to mobilize support and then enact change according to their interests (Cobb & Elder, 1972; Garud, et al., 2002; Munir, 2005). In this process, change proponents actively have or look for an event to publicize and foster debate regarding the event's relevance, significance and scope; but it is the process of debate that leads to new alliances and practices that constitute institutional change. This line of inquiry is incomplete because the role of an event is minimized and not required—change proponents may use other forms to publicize and mobilize support. More specifically, we do not know much about what makes an event more significant or relevant.

In contrast, I propose that there may be a pattern to how some events are constructed as more compelling and meaningful. The social constructionist view, taken here, is that actors construct or give meanings to an event through interaction with others (Berger & Luckmann, 1967; Lewis & Weigert, 1981) and more importantly that those meanings drive action (Blumer, 1998; Dobbin, 1993; Sewell, 1996). Thus, an event, imbued with meaning, is the reason for change.

Another fundamental weakness in past studies is that social mechanisms that link events to change have not been properly identified or have not been made explicit. All the studies I have reviewed examine events when change does occur but do not include events that do *not* lead to change.

Together these streams of research, i.e., event as "jolt" and event as socially constructed, set a foundation for understanding how events can lead to institutional change but this knowledge should be advanced further. The extant literature suggests we do not fully understand why events lead to change and if they do. Past studies focus on the resulting change, but do not address why or how we come to agree on the reason change is necessary.

Research question

The central questions that frame this dissertation research project are: Why and how do events that arise from management of industrial materials, such as chemicals and wastes, lead to significant institutional change? What key actors do is central to the social construction of an event, and therefore the research questions require an examination of the nature of the claims-making activities. Claims are what others should believe.

Explaining why events lead to change thus requires three more specific questions. What patterns of claims are made about an event, i.e., what should others believe about the event? Who makes these claims, and to whom do they appeal to? And, how are these claims specifically linked to institutional change, or what mechanisms link events to change? Similarly, understanding how events lead to change is to discover the claims-making process. How do claims emerge? And, finally claims are debated or counter claims are made but how do claims settle into consensus such that compelling meaning emerges?

Concept of an event

There are various kinds of events, broadly defined as social points of reference for a specific or a related series of occurrences that encompass shared meaning (Lewis & Weigert, 1981: 433), such as new scientific evidence or discovery, political decisions or endorsements, and news exposes may spark radical change (Baumgartner, 2006). The focus of this study is on events that first impact the environment, such as oil spills and industrial accidents involving hazardous materials, to ensure valid inferences and bound the scope of the project. The study of such events is deliberately chosen for two reasons to ensure valid inferences. First, accidents involving hazardous materials are more narrowly associated with specific institutions that protect the natural environment and human safety related to the use of the specific materials—thereby linking antecedents to institutional change more directly. Second, these events affect the public earlier in the process towards change and therefore provide a relatively transparent process where records are available for study, as opposed to events that may originate and remain hidden from scrutiny behind closed doors in private corporations. Industrial accidents, for

example, injure citizens who come to media attention and thereafter the change process remains relatively transparent through the media, courts and public hearings. Other events, such product and process innovations and discoveries, may not afford the same transparency beyond selective corporate disclosure.

Concept of significant institutional change

Institutional change is considered significant in this dissertation when it is "reconstructive" in Colomy's (1998: 276) terms. Reconstructive change, in this classification, is the creation of new structures, i.e., the patterns of social interaction and persistent relationships, or a fundamental reform in the institution. In contrast, "elaborative" change is the minor alteration of existing practices. Because institutions have enforcement mechanisms and persist (Berger & Luckmann, 1967; Zucker, 1977), most change is elaborative and relatively incremental or continuous (Campbell, 2004; North, 1990). Colomy suggests reconstructive change draws from more general transformative movements, e.g., industrialization, or criticisms of perceived injustice eventually leading to the construction of new positions, roles or organizations. Jepperson (1991: 152), more specifically explains that we should see (1) new institutions being formed; (2) old institutions deinstitutionalized, i.e., the extent of institutionalization or spread is arrested, declines rapidly, or ceases to exist; or (3) reinstitutionalization, i.e., the modification of the institutional logic or organizing principles occur. Therefore, significant institutional change is recognized when a new institution is created, or the existing one is deinstitutionalized or has a modified logic.

Motivations

This project is motivated by several broad areas of theoretical inquiry. These motivations also show how this research project fits into the broader theoretical directions suggested by leading scholars.

First, understanding significant organizational change is crucial (Greenwood & Hinings, 2006). Institutions provide the core of stability within organizations, fields of organizations and society, and thus understanding institutional change is to understand how order is maintained or disrupted (Leblebici, et al., 1991). Equivocal support exists for change that occurs incrementally over long periods of time as well as punctuated change, for example (Campbell, 2004: 5). Whereas we know much about incremental institutional change that arises from within the institutional field, understanding how significant change arises from events, and in particular the natural environment, is a pressing problem that has not adequately been studied (Maguire & Hardy, 2009: 148). Institutional theory generally seeks to explain stability and persistence, not significant change. Because of this weakness (Dacin, et al., 2002), the theory has not lent itself well to explaining how significant change can occur. Yet another area for advancing our knowledge about institutional change is to carefully explain change in terms of social mechanisms instead of vague correlations (Campbell, 2004: 5; Hedstrom & Swedberg, 1998; Hirsch, 1997; Hirsch & Lounsbury, 1997).

Second, this project examines a context where ideas of normative legitimacy are highly contentious yet an area that is important to advancing our understanding of how legitimacy is shaped in the early stages of institutional innovations (Deephouse & Suchman, 2008: 68; Greenwood, et al., 2002: 61; Munir, 2005: 96). To elaborate,

institutionalization occurs because of the need for legitimacy that is gained by the adoption of practices that are desirable, proper and appropriate (Suchman, 1995), but it is not clear how contention over what is legitimate is resolved. Legitimacy is gained when an institution is widely adopted (Deephouse, 1996), but new ideas must be justified before being adopted. Justification for technological innovations may be easily accepted but other innovations are not easily accepted when norms are highly contested. Greenwood, Suddaby and Hinings (2002) found that legitimacy was resolved among competing factions when the debate switched from pragmatic to moral claims. Suddaby and Greenwood (2005), however, show in a subsequent study that both proponents and opponents of change use normative accounts but cannot explain how it is resolved.

Third, the need for this study is based broadly on the understanding that problems we face today in protecting the natural environment enjoy a broad consensus as among the world's most challenging and urgent problems to solve (IPCC, 2007; King, 2004; Oreskes, 2004). These pressing problems affect society today and potentially jeopardize future generations (Bazerman & Hoffman, 1999; Margolis & Walsh, 2003; Wade-Benzoni, 1999). Margolis and Walsh (2003: 285), in particular, explain that future research needs to be oriented to understanding how firms recognize stimuli such as social problems, and more specifically what makes these firms take positive actions. Institutions form a key response to such challenges by providing a structural element to enforcing sustainable norms and practices (Jennings & Zandbergen, 1995). Thus, how these institutions change to align with society is a fundamental question addressed in this dissertation.

Finally, this study addresses an organizational management aspect of institutional change—events are important to organizations in order to understand how to prepare for and respond to societal pressure to change. Commercial and industrial organizations gain an understanding of how events may initiate change in the future, and activist or social movement organizations gain a better understanding of the processes of social change. Changes in the relationships and structure of the social networks, the roles and power of individuals and organizations that comprise an institution often accompany significant institutional transformation (Fligstein, 1993; Lawrence, 1999). As a result, organizations and managers are generally eager to increase knowledge advanced by this project.

Contributions

This study primarily contributes to the literature on institutional change. Institutionalists have called for a clearer understanding of the process through which events come to enable change (Hoffman, 1999; Hoffman & Ocasio, 2001). Whereas we know what causes us to pay attention to specific events (Hoffman & Ocasio, 2001) and the ensuing debate attaches significance, relevance, and scope of an event (Munir, 2005), this research intends to develop a process model to describe why change is needed and how consensus, and therefore legitimacy, is reached. Discovering the core social mechanism or mechanisms that link events and institutional change is an important step in that direction. Although we know that an event's significance in socially constructed (Blumer, 1971; Munir, 2005), it is not clear how an event must be construed to enable change. What is it about the construction of an event that suggests we need change? So, learning the patterns of claims made about events also adds to our understanding of how

the symbolic significance of events are created, manipulated and used by institutional entrepreneurs in the shaping of institutions. In addition, understanding the enabling conditions under which events lead to institutional change may illuminate when change may occur.

This study will find that there is a direct role for events in the process of institutional change. There is a pattern of claims that subsequently imbue events with meaning that compels change. An event, in particular, plays a key role in change because an event provides the basis for some to claim their lives have been disrupted. Having being disrupted, the labor of change is divided between two roles. Problem providers define, describe, dramatize and demonize a problem; act in concert with solution providers who encode or codify new norms, and enliven or give new life to a new order, in this case new laws.

Research design

A qualitative comparative case method approach is used in the design of this dissertation research project. A qualitative approach is ideal where theory must be induced (Berg, 2007) but remain grounded in data (Dougherty, 2002), and especially more so because the theoretical framework is in a nascent stage of development (Edmondson & McManus, 2007). The case method is selected because it allows comparison among cases (Ragin, 1987; Yin, 2008).

The study design incorporates the selection of two pairs of cases where each case encompasses a single environmental accident. Each pair of cases involves two events that are comparable in initial conditions, approximate time and geography, i.e., neighboring or

nearby states in the U.S. One of the accidents in the pair is selected because it has led to significant institutional change, and the other is selected because it has not led to comparable change. As a result, comparisons may be made within-case, between events in a pair, and across four events that led to change versus four events that have not led to change.

Outline of the dissertation

Several chapters follow to complete the development of this dissertation. First, the most relevant literature is introduced in Chapter 2. Then, Chapter 3 describing the rationale and overall research design is detailed. Next, each of the three findings chapters describes the answers relevant to the major framing questions. Chapter 4 offers a narrative of the empirical findings, and also serves as description of what happened in each case. Chapter 5 presents results relevant to why events lead to significant institutional change, and Chapter 6 presents results describing how events lead to change, more specifically, how claims and meanings become compelling. A final Chapter 7 discusses the findings, situates the contributions in the broader literature and highlights some implications.

CHAPTER 2. LITERATURE REVIEW

Preface

This chapter focuses on the literature that is relevant to the key concepts in the dissertation. The section on wastes, toxics and society shows the relationship between broad cultural understandings that have affected our lives, organizations and institutions. We also know a great deal about the concept or meta-nature of events from a theoretical perspective—this knowledge is summarized. Next, I review the literature that show how institutions change. Within the change literature, two important change actors have previously been conceptualized: a policy entrepreneur, and an institutional entrepreneur. A brief section is presented next to properly differentiate significant institutional change from other less significant change. Finally, I review the works that are most relevant to understanding the role of events in institutional change. I end the chapter with a brief explanation for some rival explanations, and why these studies lead my study towards the use of a social constructionist approach.

Wastes, toxics and society

Ideas about wastes

An ongoing relationship between society and its wastes has existed since people have had to live together (145-147; Strasser, 1999; U.S. Environmental Protection Agency - Superfund, n.d.), arguably as long ago as two million years (Rathje & Murphy,

1992: 10). The relationship between society and waste has varied, our ideas of what constitutes wastes have varied, and the relationship essentially reflects a fundamental way people understand their role in the natural environment. These roles and relationships are woven into patterns of social activity—institutions—that while stable also change. Events that arise from the management of industrial wastes therefore appear as momentary reflections of these patterns. Events, therefore, must be understood in the historical context of nested institutions that form the relationship between society and wastes. This section provides a brief overview of a history of society's views on wastes and toxic materials.

Most scholars of wastes, trash, rubbish, garbage and other similar concepts trace their origins or theoretical points of departure to Mary Douglas's definition of dirt (O'Brien, 1999). This passage from Douglas (1984: 2) describes the current conception that dirt is matter out of place:

> As we know it, dirt is essentially disorder. There is no such thing as absolute dirt: it exists in the eye of the beholder. If we shun dirt, it is not because of craven fear, still less dread of holy terror. Nor do our ideas about disease amount for the range of our behavior in cleaning or avoiding dirt. Dirt offends against order. Eliminating it is not a negative movement, but a positive effort to organize the environment.

Although scholars have problematized Douglas' definition and conception (e.g., O'Brien, 2008), the prevailing view among many contemporary scholars conceive of waste similar to that offered by Douglas. Strasser (1999) perceives of waste as a process of sorting, and likewise Thompson (1979) suggests that societies categorize materials based on value in which rubbish is a category where all materials that have no value are placed. In this view, wastes are sorted or placed into categories with other objects of no

value and relegated away from the core of society, and the process is institutionalized. Today's recycling practices, as with those first initiated in the 18th century, is based on sorting at the source (Strasser, 1999). Strasser shows how we are socially driven to throw things "away" where the "away" is a location relatively anywhere except where we are, for example in landfills, incinerators and recycling centers that are on the margins or where other marginalized people live (Strasser, 1999: 135). Waste is placed into places separated by physical or symbolic boundaries (Douglas, 1984), typically close to the margins of a political sub-division such as a town, city, state or nation (Engler, 2004). Strasser argues that these periphery locations are generally determined as anywhere but "here," and Grossman (2006) cites an example of the Basel Treaty that restricts exports of waste; both authors point out that we always define where wastes *cannot* go demonstrating Douglas' idea that we shun waste. This marginalization not only occurs with materials but also the people and trades associated with wastes as well (Zimring, 2004).

Not only do we separate ourselves physically from our wastes, but we also relegate issues of waste as substantially less important than other issues. Social scholars, for example, lament that society pays little attention to waste giving rise to the waste "problem" (Grossman, 2006; Strasser, 1999; Thompson, 1979). So do organizational scholars. Hart (1995) and Shrivastava (1995a, 1995b), for example, argue that organizations have ignored waste management at the risk of losing a competitive advantage and or moral responsibility. King and Lenox (2002) demonstrate the organizations customarily comply with environmental regulations by adopting pollution

reduction practices as an after-thought rather than proactively designing more efficient and profitable industrial processes that reduce material inputs and emissions.

Waste, considered as matter out of place, has a second important implication. We respond to waste similarly whether or not they are desirable or valuable (O'Brien, 1999). For instance, radium is relatively desirable for its luminescent properties but when it is not properly used or transported there is considerable health risk (Clark, 1997). When it escapes our control, unprocessed crude oil is just as repulsive as the engine oil at the local car repair shop—both are socially considered waste and relatively equally regulated even though the latter is a byproduct and output of industrial process and the former is not.

Taken altogether, both scholarly literature and empirically observed societal practices support a conception of waste first put forward by Douglas, that dirt is matter out of place. Waste represents disorder. We want to put waste away, possibly as far away as possible or in places where there is the least opposition often where the underprivileged live—"where only the poor would complain" (Strasser, 1999: 135).

Ideas about toxics

How society has responded to toxic materials and contamination, however, is different from wastes that are not toxic. In areas where toxic wastes contaminated the environment, some scholars find that residents often want to leave, either voluntarily or under government auspices; in Diamond, Louisiana (Lerner, 2005); Love Canal, NY (Colten & Skinner, 1996); and Times Beach, Missouri (Brown & Mikkelsen, 1992); for example. But, other studies find that residents chose to remain, in Woburn for example (Brown & Mikkelsen, 1992). The rationale for residents of contaminated areas to remain

reflects their sense of place—an attachment to the physical and social space (Gieryn, 2000; Kaltenborn, 1998; Stedman, 2003).

Toxic contamination can, but not always, have a long incubation period where the effects or symptoms of contamination are not visible or apparent. First, we cannot readily see or smell many toxic substances, such as radiation, polychlorinated biphenyls (PCBs), and dioxins (Vyner, 1988). Second, we may not readily detect or associate visible symptoms with contamination in part because we often compare change in health with conditions just prior to the development of a symptom—a condition Auyero and Swistun (2008) label as "relational anchoring." Because we compare changes with a reference point, or "anchoring," that is close in time, proximity and within easy memory recall, or "availability" (Tversky & Kahneman, 1974); many victims are not aware of small changes that occur over a long period of time. Victims use their own lives in the close past, or family members and friends who reside close by as points of reference, all of which may also be affected and hence report no extraordinary differences. These victims are more likely to deny contamination has taken place, are less concerned, and less active in finding solutions than other victims (Auyero & Swistun, 2008; Edelstein, 1988). This denial and variation in concern, as a result, makes it more difficult in reaching subsequent consensus on solutions and a unified sense of community. More importantly, the variation in concern and perceptions allows antagonists, such as interested corporations, to develop "labors of confusion," i.e., contradictory evidence that confuses people, such that the contamination is not seen as severe enough to require institutional change (Auyero & Swistun, 2008). Labors of confusion may not only come from corporations with a vested interest in the status quo, but also from regulatory agencies and experts who

require high standards of scientific evidence and so deny validity of lay peoples' observations (Vyner, 1988). Vyner explains that institutions, i.e., organizations, agencies and experts who are involved in the contamination, deny the existence of contamination, or threats more generally, when there is no scientific evidence to support the contamination or when there is conflicting evidence (180-181).

A more lasting impact of toxic contamination, however, arises from the psychosocial stress on people and society (Edelstein, 1988; Vyner, 1988). A major predicament that leads to the stress is (a) the uncertainty and ambiguity in diagnosing the medical problems that follow toxic exposure, "diagnostic ambiguity" in Vyner's terms, and (b) the symptoms cannot be easily attributed to a specific contaminant, "etiological invisibility" (Auyero & Swistun, 2008; Brown, 1997; Brown & Mikkelsen, 1990; Edelstein, 1988: 77; Vyner, 1988: 16). Couch and Kroll-Smith (1985) add that stress and health effects can persist for long and indeterminate periods of time. In other words, contaminated victims may not know they are sick, what the symptoms are, what caused the sickness if they are sick, how to remedy the situation, or how long it may last, and in addition non-contaminated victims may not know how to prevent exposure. Fear sets in both from the stress and from anticipating the stigma associated with being contaminated (Edelstein, 1988: 14, 170-189). Anticipatory fear, in particular, even affects those who are not remotely "affected" and has fueled widespread attitudes of "not in my backyard" (NIMBY).

Toxic contamination, both directly and or through stress, may disrupt everyday life and possibly in social values as well. Edelstein (1988) found that many can become preoccupied with health effects, either as experienced personally or though family and

friends who are sick. The trauma affects people as individuals, the environment, and organizations. Organizations, a regulatory agency for example, may become overwhelmed with work; and become affected in terms of achieving goals, public image, prestige, standing or resources with respect to other agencies and institutions (Edelstein, 1988: 12). In addition, trauma effects spread across various social levels through family, friends, and community (Erikson, 1976). The disruption in routines leads to more reflection and interaction with others similarly affected (Auyero & Swistun, 2008). The disruption prompts questions, challenges and breaks the existing "lifescape," i.e., a fundamental understanding of what to expect from the world around us (Edelstein, 1988: 11). Lifescape includes some broad set of assumptions, expectations or cultural beliefs: an assumption that humans can control the environment; technology and science only bring progress and well-being; risks necessary for the good life are acceptable; personal control over one's destiny is possible; people get what they deserve; experts know best; government exists to help the people; and people have the right to do what they wish on their own private property. Lifescape, sometimes known as the dominant social paradigm or more commonly as the "American Dream," is being challenged because of the prevalence of toxic exposure and pollution (Dunlap & Van Liere, 1984; Edelstein, 1988: 194; Kilbourne, et al., 2002). Disrupting routines in people's everyday life can also trigger activism and active participation in social movements (Snow, et al., 1998).

Another coping mechanism that follows toxic contamination stress is the drive to change institutions that contributed to the contamination. This coping mechanism is aimed to influence the source of the threat, typically in the form of collective action or activism in a social movement (Edelstein, 1988: 13, 138-169). Knowledge that

contamination has a human-origin invites attribution of cause to the mismanagement of technology, corporate greed and government corruption. Molotch and Lester similarly found that events involving toxic effects can radicalize residents into activism (Molotch, 1970; Molotch & Lester, 1974, 1975). And, such events add to and accentuate scientific controversies about the use of hazardous technologies (Mazur, 1981).

In summary, toxic waste and materials, like waste in general, can lead to perceptions of disorder that require a re-ordering. Unlike household or solid waste, toxic exposure can be frightening, spreading long-lasting effects to various levels of social life from individual to institutions. The literature specifically suggests that waste, in various forms, affects people and have prompted social action.

Events

An event is a distinctly social element that is based on our understanding of time. Time is social and qualitative, not objective and quantitative, and depends on the beliefs and customs of the group (Sorokin & Merton, 1937). Events are temporal demarcations or markers, and, for Lewis and Weigert, are social points of reference (1981: 433). As such, we may socially construct time and events as part of a knowledge system that encompasses a shared meaning that subsequently becomes real (Berger & Luckmann, 1966; Orlikowski & Yates, 2002).

An event is, therefore, defined in this project as a social point of reference for an occurrence at a specific point in time that encompasses shared meaning.

"An occurrence is any cognized happening," according to Molotch and Lester (1974: 101). For them, an event is a reified form of any occurrence or occurrences,

depending on the purposes at hand in an attempt order our experience. Because we may select occurrences based on our intent, they seem to suggest that events may have meanings we want.

Some events may be construed as a whole—a collection of other "smaller" events, i.e., we may say an event comprises several sub-events. For example, we may conceive of an event such as the publication of a book or report that documents the historical evidence of various sub-events each of which is less significant than compared to the book (Murphy, 2005). Examples are the recognition of various incidences of mismanagement of *DDT* documented in *Silent Spring* (Carson, 1962), several dust storms over many years that are now collectively remembered as the *Dust Bowl* (Lookingbill, 2001), or the accumulation of scientific evidence of anthropogenic climate change (IPCC, 2007). This particular construction of events from sub-events may be derived from two general characteristics of events: Events are socially constructed; and, according to Abbott (2001: 226), are interpreted as more or less meaningful after the fact and a series of events over time may be viewed together to represent a single systematic or chronic phenomenon in the mind of an observer. Sewell (1996: 844) too sees events as sequences of occurrences because "a single isolated rupture rarely has the effect of transforming structures because standard procedures and sanctions can usually repair the torn fabric of social practice." As a result, sub-events here are described and treated as a whole event when actors treat them together.

Events should not be viewed in isolation but in context. Partly derived from the idea that events may represent a chronic condition, events may be part of a longer sequence of largely invisible elements that finally stimulate a focal event. An example of

such a chronic and latent condition occurred with the oil leaks at Guadalupe Dunes, California that went on for 38 years without being noticed (Beamish, 2000, 2002). Institutionalists, such as Munir (2005), see events as being constructed within the field, the result of an ongoing process of rationalization and justification among actors over an extended period of time.

Events have been labeled and studied under different terms and at various levels of analysis. Events may be a "jolt," as Meyer (1982) suggests, because there is an element of surprise, a "transient perturbation" and typically leads to organizational adaptation. On a long term historical basis, Fligstein (1991) found that sudden "shocks," such as the Depression or legislative reforms, caused significant change to institutional fields and thus organizational goals. Events also shift our attention from the current task to another and often change the direction and intensity of activities (Gersick, 1989, 1991, 1994).

The scope or boundary of an event is defined by the actors. As in Erikson's (1976: 255) study of hazardous events, this study includes those that occur under acute or chronic conditions, which may mean many sub-events comprise a singular event. In addition, because events are sequences of occurrences and can also trigger other events (Sewell, 1996), the scope of an event is recursive and may become problematic for empirical research. As a result, this study refers to events in the same way the actors in the event field define the scope and boundary of the focal event. For example, Sewell describes the French revolution as a sequence of events of debatable duration (between years to days) ending in July 14, 1789, and yet most perceive the revolution is a single momentous event. Furthermore, the social construction of events among key actors also

suggests that what constitutes an event and when it occurs is best left to actors, as opposed to being defined by a study author.

Because events have meaning, they have a social structuring quality that enables and constrains social behavior. People give meaning to an object, such as an event, as they interact with each other (Berger & Luckmann, 1967), and subsequently act based on this shared meaning (Blumer, 1998). Maines (1977: 235) explains, "people transform themselves and their environments and then respond to those transformations." For example, the French Revolution meant independence for many and in particular for chefs who were otherwise considered artisans and thus patrons of the nobility (Ferguson, 1998). The independence gained from the Revolution enabled chefs to reduce their dependence on patronage and instead offer their services to the common people through restaurants thereby establishing *haute cuisine* or fine dining. The independence also meant that dining practices would no longer be constrained by social class and instead *haute cuisine* was to follow the common national identity, a new restraint. These culinary practices, imbued with anti-nobility meaning, become the site for professionalism and subsequent enforcement of those practices and new relationships (Rao, et al., 2003: 799). In effect, the French revolution structured dining and culinary practices for more than 150 years.

To recap, events are references to occurrences and encompass shared meaning. We label occurrences and give them meaning through social interaction. Events may become a tool, symbol or social structure.

Institutions and institutional change

Institutions have a long history in many social science disciplines and subsequently been conceptualized and variously defined. The perspective taken here is from neoinstitutional theory (Meyer & Rowan, 1977; Zucker, 1977) and among the most widely used definitions in organizational studies comes from Scott (2008: 48): "Institutions are comprised of regulative, normative and cultural-cognitive elements that, together with associated activities and resources, provide stability and meaning to social life." In this perspective, institutions may be loosely thought of as norms, customs, rules, routines, conventions, scripts or schemas that govern behavior. More simply, an institution is "an organized, established procedure" (Jepperson, 1991: 143).

Institutions encompass one or more logics or rationales. Institutional logic, defined as "a set of material practices and symbolic constructions—which constitutes its organizing principles and which is available to organizations and individuals to elaborate" (Friedland & Alford, 1991: 248), may be thought of as a framework and world view. The framework is a set of ideas, concepts, scripts, and rationales that cohere and follow from a single precept. Multiple logics can co-exist within an institution forming a dialectical position in balance (Benson, 1977). Logics co-exist either during a transition as one dominant logic gives way to another, as was found among executive successions plans in the publishing industry (Thornton & Ocasio, 1999); or for extended periods in perpetual conflict, as was found among mutual funds who saw themselves as trustees to conservatively preserve capital for clients and those who saw themselves as performance oriented to grow capital for clients (Lounsbury, 2007). Logics may be narrowly adopted, for example, within practices for performance appraisals in evaluating academic career performance (Townley, 1997); or widely adopted across multiple sectors as recently

described by Khurana (2007). Khurana documents a broad social transformation among corporate, educational and societal sectors with regard to the logic of management, i.e., the role of managers, as it shifted from one as independent professional balancing the needs of multiple stakeholders around the turn of the 20th century, to one as the sole agent of powerful shareholders beginning about the 1970's.

Institutions are self-perpetuating, persistent and chronically reproducing because social sanctions and rewards are embedded into the institution (Jepperson, 1991: 145). Institutions evolve slowly, provide stability by connecting the past with the future, and reduce uncertainty (North, 1990, 1991). Although institutions are difficult to change, three broad drivers of change can be found in the literature: Identifiable actor, cultural change and structuration. A few examples of studies that follow serve to introduce these change drivers.

Identifiable actor. The identifiable actor as a driver of institutional change is a reflection of agency—the capacity for individuals to act on their own free will (Bandura, 2001) and to change their relationship with a constraining context (Emirbayer & Mische, 1998)—and the role of agency that is embedded in institutions (Granovetter, 1985). In this perspective, institutional change that must be led and coordinated, and the institutional entrepreneur is a common way to explain change in institutions. DiMaggio (1988) suggests individuals with sufficient resources can instigate change in their interests. And, the idea that some elite individuals or groups can wield enormous power is well established as well (Mills, 1959). Identifiable actors need not be powerful in the traditional sense of possessing considerable influence, resources or knowledge—Waddock (2008) documents how corporate social responsibility has been

institutionalized through the work of a few key individuals who otherwise lack access and power. Similarly, Fligstein (1997, 2001) argues that social skills and resources are vital. In another example, a fledgling group of volunteers argue persuasively that they are worthy of being a distinct, respected and acceptable occupation thus institutionalizing the need to compensate emergency response personnel who had previously been adhoc volunteers (Nelsen & Barley, 1997).

Two types of identifiable actors have been involved in the process of institutional change. The term "Institutional entrepreneurs," popularized by DiMaggio (1988), has been used predominantly in organizational institutionalism, but an earlier and comparable concept of a "policy entrepreneur" is particularly relevant in the context of studying public policy, and regulatory change (Kingdon, 2003).

Institutional entrepreneurs. "Institutional entrepreneurs are actors who leverage resources to create new or transform existing institutions," according to Battilana, Leca and Boxenbaum (2009: 68). Institutional entrepreneurship is a response to a criticism that traditional institutional theory cannot explain how change comes about (Dacin, et al., 2002), and thus explain how individuals play an important role in the change process (DiMaggio, 1988). Institutional entrepreneurs are those who initiate divergent change and participate in the implementation or attempt at change. Individuals, particularly elites, acting on rational self interest are thought to shape how institutions form and maintained by exercising their power over others (Eisenstadt, 1980). Differing views on the exercise of power has broadened scholarly attention from elites to social movements (Rao, 1998; Rao, et al., 2000) and other capable individuals and groups (e.g., Fligstein, 1997; Fligstein & McAdam, 1995; Hargadon & Douglas, 2001; Zucker & Darby, 1997).

Institutional entrepreneurs are driven by two primary interests: a need for stability and predictably and survival (DiMaggio, 1988).

Policy entrepreneurs. The work of institutional change specifically in the context of public policy and regulatory change is best explained by a specific type of institutional entrepreneur, i.e., the policy entrepreneur. A policy entrepreneur is an individual who invests resources to accomplish a public policy change, and is typically motivated by personal interests and values (Kingdon, 2003: 122; Mintrom, 1997: 739). Public policies are the activities and decisions leading to particular courses of action (Polsby, 1984: 7). Even though such policies are not necessarily nor wholly institutions, the concept and work of policy entrepreneurs are relevant and useful in this study because policies typically include legislative and institutional change (cf. Guber & Bosso, 2007; Mintrom, 2000; Roberts & King, 2000). While some scholars suggest the policy entrepreneur may be any individual inside or outside of government (e.g., Kingdon, 2003; Roberts & King, 1989), the policy entrepreneur must gain institutional access past gatekeepers (Cobb & Elder, 1972: 89), and therefore be a member of the polity, i.e., constituted political actors with routine access to government officials and resources (McAdam, et al., 2001: 11); or of high social status (Battilana, 2006; Battilana, et al., 2009; Maguire, et al., 2004). Mintrom (2000: 139, 278) too, finds empirically that policy entrepreneurs who already hold positions of authority are usually more successful in changing policy. In particular, government officials such as the President, legislators or regulators not only play impartial decision-making roles (i.e., those that a policy entrepreneur seeks to influence) but may also be proactively involved in policy entrepreneurship (Cobb & Elder, 1972: 89). Furthermore, insiders and professional experts, rather than those outside policy

circles, are more likely to be policy entrepreneurs in domains with much technical complexity, such as global climate change, because policy entrepreneurs must be capable of understanding various stakeholder demands (Rabe, 2002, 2004). The policy entrepreneur is involved in defining problems and solutions, and in setting the decision-making agenda (Baumgartner & Jones, 1991). The distinguishing feature of the policy entrepreneur concept is the individual's (1) political skill and access to policy decision-makers; (2) ability to develop potential solutions; (3) ability to broker ideas and mobilize support; and (4) and patience required to wait for the right opportunity to spring to action (Kingdon, 2003). In addition, Mintrom (2000) finds that policy entrepreneurs identify opportunities not only in terms of time but also in domains where there are more opportunities (as opposed to domains where fewer opportunities exist) (118-123); where they may be able to force or create new opportunities (130); and or pursue a strategy of "venue shopping" (139) where they find the location, agency or mode of implementation that is more amenable to change.

Policy entrepreneurs are typically motivated by a personal interest in working with policy innovations (Kingdon, 2003). They enjoy the work and derive satisfaction from the involvement. These entrepreneurs, unlike their commercial counterparts, are not driven by profits or financial returns, but do seek personal gain in terms of increased credibility, reputation and or publicity. Some entrepreneurs sometimes too want to make positive changes in their communities according to their personal values (Mintrom, 2000; Mintrom & Norman, 2009).

Cultural change. The role of culture, part of the larger role of structure or social constraint, has long been a part of understanding institutions (Zucker, 1977, 1988). The

French revolution, for example, broke traditional ties between chefs and the nobles, releasing chefs to create dining establishments open to the public thereby institutionalizing an egalitarian and casual dining experience (Rao, et al., 2003). Similarly, the institutional logic of thrifts shifted from saving and borrowing in the community as mutual aid among neighbors to that of bureaucratic efficiency and rationality among strangers in parallel with the change in our values—values that first originated in the Progressive social movement but later adopted for political expediency and finally now well established in the U.S. (Haveman & Rao, 1997; Haveman, et al., 2007).

Structuration. Where the two perspectives on agency and structure may be opposite ways to explain institutional change, structuration encompasses the duality of individual will and structural conditioning where structure is seen as both an outcome and a constraint (Barley & Tolbert, 1997; Giddens, 1984). Fundamental to the structuration process is routinization (Giddens, 1984: xxiii) or habituation (Tolbert & Zucker, 1996)—the idea that the routinized or habitual deviations of day-to-day interactions between people, power dependencies and contextual constraints from the customary routines established by a larger framework of the institution eventually becomes the new institutional structure (Ranson, et al., 1980). Barley (1986), for example, found that the adoption of new CT scanning technology in hospitals slowly changed the traditional role relationships between radiologists and the technicians who operate the systems. Traditional radiologists were responsible for interpreting x-rays while technicians merely operated the x-ray machines in established bureaucratic ways with strict separation of duties. When new CT scanning equipment was introduced, radiologist and technician had

to work together to learn the new operational procedures and capabilities as well as to interpret scans. This recursive interaction led many inexperienced radiologists to learn from the now more experienced technicians, and sought their expertise in interpretation as well—an interaction process that recursively created roles that were more egalitarian and based on complementary skills and knowledge. In another study, reward structures explain team helping behaviors but the behaviors can either reinforce or undermine reward structures depending on business objectives and the larger institutional and cultural context (Perlow, et al., 2004). The study illustrates a multilevel nested structuration effect—managers have a free hand to shape reward structures that affect helping but helping behaviors or the lack of helping are simultaneously shaped by culture and shape the reward structure.

In brief, institutional theory has a long history, and much study has focused on how institutions change. Both agency and structure play a role, and these changes follow the logic of appropriateness driven by practice and or norms.

Significant institutional change

Studies examine specific ways institutions can change—typically qualitatively described or measured as a whole. The studies typically do not label the change as significant or not. One cannot, therefore, compare one change with another unless the changes are placed on a common dimension to illustrate what constitutes a significant or insignificant change. However, Colomy (1998) proposes such a way to describe the extent to which institutions can change.

Colomy (1998: 276) suggests institutional change can be measured by the scope of change and creates three categories: Elaborative, reconstructive and totalizing change. First, elaborative changes are relatively minor and narrow in scope; and maintain or stretch the existing dominant institutional logic and symbol systems. Elaborative changes do not endanger the interests of institutional actors. Minor change in role relationships among professionals (Barley, 1986), the slow incremental adoption of civil administrative procedures among government agencies (Tolbert & Zucker, 1983) or changes in compensation structures (Perlow, et al., 2004) may be such examples.

Second, reconstructive changes encompass moderate to significant level of changes. These changes include new structures and or the reform of established arrangements (Colomy, 1998: 276). These changes draw on a broader or more generalized understanding of the institutional symbols and logic—extending the scope or membership rules in the institution. Reconstructive change may occur because of criticism of the logic—by exposing disorder in justice, for example, thus shifting power relationships. Change to the arrangements includes the creation of new roles or organizations, according to Colomy. Examples include the adoption of new organizational forms and practices (Greenwood, et al., 2002; Lounsbury, 2001), the creation of new professions (Nelsen & Barley, 1997), and the deinstitutionalization or cessation in the use of harmful chemicals (Maguire & Hardy, 2009).

Third, totalizing change represents the radical reconstitution of society. These changes question and restructure several aspects of a society while retaining current social values, attitudes, and social relations. These changes establish radically new reward systems, privileges, and constitute new ideas of material interests. Examples of

totalizing change include the shifts from feudal to bureaucratic political systems, or from nomadic to sedentary social systems (Eisenstadt, 1964). One such analysis of institutional change has been conducted by Greif (2006) depicting how various political and market institutions that emerged in the late medieval period have led to radically different outcomes between European and Muslim worlds. Skocpol (1979) uses a comparative method to expose totalizing change in agrarian and economic reforms that followed social revolutions in France, Russia and China. Similarly, Sewell (1985) examines how institutional ideology changed with the French revolution from a feudal regime based on the king's divine right to rule to an egalitarian-social contract ideology based on a public constitution.

Events in the context of institutional change

Many past studies have linked important events to the creation of new institutions and or significant institutional change. These studies typically take the event as exogenously defined and subsequently theorize the changes that occur after the event. The focus, up until relatively recently, has been focused on the ensuing change rather than why some events appear more important or relevant to institutional change.

Two separate bodies of scholars have considered how institutional change arises from events. The organizational institutionalism literature is discussed first, after which I present how public policy scholars consider the role of events in the agenda setting literature.

Organizational institutionalism view

Early studies treat the importance or "jolt" or disruptive quality of events as given (Fligstein, 1991, 1993; Greenwood, et al., 2002; Meyer, 1982). Events are thought to "unfreeze" cognitive rigidities or resistance to change (Isabella, 1990; Lewin, 1947). Such studies (e.g., Bartunek, 1984; Daft & Weick, 1984; Gioia & Thomas, 1996; Isabella, 1990) rely on some "fact-like" quality inherent in an event that subsequently drives interpretation, sensemaking and cognitive shifts. What constitutes a "jolt," makes the event "important" or "disruptive" is underspecified and not compared to unimportant ones. Some studies examine events selectively because they are unique occurrences. Specific legislative acts, i.e., treated as events, led to significant changes in the transformation of corporate control and governance (Fligstein, 1993), for example. In another example, the Great Depression led to new economic policies and regulations that differed according to a society's cultural beliefs and norms (Dobbin, 1993). Similarly, Meyer (1982) and colleagues (Meyer, et al., 1990) study a local physicians' strike suggesting that jolts, defined as temporary perturbations whose occurrences are difficult to foresee and whose impacts are disruptive, can trigger various adaptations among hospitals in the area.

Another stream of studies revolves around events classified by whether it originates from inside or outside an institutional field. Actors inside an institutional field, i.e., within the boundary of those affected by the institution, are thought to be cognitively and behaviorally constrained to recognize and thus act only on minor or less important events that occur; more important events are similarly thought to be minimized by powerful actors to protect their interests. Actors outside the institutional field are not so constrained, and therefore these actors have the ability to bring about more significant

change (Greenwood, et al., 2002; Hoffman, 1999). Thus, events that arise inside an institutional field lead to minor change while events that arise from outside the field lead to significant change (Colomy, 1998: 276; Maguire & Hardy, 2009: 148). These studies have a weakness. Implicitly, important events are those that arise outside the field and lead to more significant change, but not all events that arise outside the field are "important" enough to cause change. And, events from outside the field have not been sufficiently differentiated between those that lead to change and those that do not. Furthermore, the methodological weakness with these studies is that they do not examine events that are not disruptive (Munir, 2005).

Two studies stand out, however, and make an important contribution by explaining why we pay more attention to some events. Hoffman and Ocasio (2001) found that public salience, accountability, and threats to an actor's identity lead to the actor's increased attention. Similarly, Munir (2005) found that threats to an actor's interests and or hegemony leads to increased attention and resistance to change. The studies specifically reveal what events we pay attention to, but which ones lead to change?

The most revealing clues to help establish why some events appear more important and relevant come from studies that take a social constructionist perspective. This perspective is based on the idea that actors give events meaning and relevance to an event. Intrinsic event properties become irrelevant and the actors that surround the event take prominence (Munir, 2005; Munir & Phillips, 2005). Munir (2005) and Garud and colleagues (2002), for example, suggest that event properties are inconsequential because it is the socially constructed debate and process that determine the significance or importance of an event as well as the ensuing change. Through a social-political process,

events may gain or be denied significance, scope and relevance. The process is driven by actors who have predetermined interests to enact change and actively seek an event to use as a tool to publicize their cause, create debate and mobilize support (Cobb & Elder, 1972). The debate over an event's relevance, significant and scope of change leads to changing alliances among actors and the development of new practices. Munir (2005) argues that it is this debate, not the event, that leads to new institutionalized relationships among actors and practices. The argument, however, is incomplete because it overlooks the idea that meanings given to an event can drive action (Blumer, 1998)—actions towards institutional change, for example—as opposed to Munir's (2005) limited claim that events merely become a focus of debate. Therefore, the meanings given to an event may explain why some events, and not others, lead to significant institutional change.

Together, these streams of research set a foundation for understanding how events can play an important role in institutional creation and change, but this knowledge should be advanced further. The extant literature suggests not only that the role of events in institutional change is more complex than originally thought but also that the event may actually drive change.

Agenda setting view

Public policy scholars use an agenda setting view to explain how events play a role in policy change. Agenda setting is the early phase in the process of a larger process in the development of public policy (Cobb & Elder, 1972; Fischer, et al., 2007). An agenda here is a concept that refers to a list of questions or issues which are recognized by the active participants in politics as legitimate subjects of attention, concern, debate and decision making (Baumgartner, 2001: 288; Walker, 1966: 292).

Kingdon (2003), first introduce the idea in 1984 that discontinuous or punctuated policy change comes about when three separate streams of activities or influential factors—problems, policy proposals and politics—intersect. The three streams intersect only if a policy entrepreneur is successfully able to connect a problem with a viable policy when a political opportunity arises; political opportunities may arise from either the problem (such as a crisis) or in the political stream. The political stream of activities and influential factors include changes in public opinion and legislative composition, the President's or executive branch interests, interest group pressure, and or the national mood. Policy proposals are ideas that are being discussed among policy professionals in the form of conversations, papers, speeches, testimony, and sometimes more formally as legislative bills. The problem stream of activities, for Kingdon, emanates from some one or group who define a problem based on indicators. Indicators are mostly derived from rates of deaths, disease, accidents and so on, that are collected by government or non-governmental agencies on a routine basis. These indicators allegedly tell us about the state and health of our economy or society. According to Kingdon (2003: 95), sometimes (7 of 23 cases studied) events are mentioned as an important and prominent indicator of a problem. He labels such events as focusing events.

Focusing events call our attention to a problem (Birkland, 1997: 11; Kingdon, 2003: 95). Focusing events are those that are "sudden; relatively uncommon; can be reasonably defined as harmful or revealing the possibility of potentially greater future harm; has harms that are concentrated in a particular geographical area or community of interest; and that is known to policy makers and the public simultaneously" (Birkland, 1998a: 54). Because these events are sudden and potentially harmful, change advocates

can use the increased media and attention to build allies and overcome the typical obstacles and barriers set by established powerful actors. Typically, "factual" knowledge is managed and already framed by established powerful actors and perpetuate inequalities in the political system (Edelman, 1988). However, Birkland finds that when knowledge becomes "known" to both policy makers and the public simultaneously, focusing events break the advantage that the traditionally powerful have over the construction of events. With focusing events, change agents have an equal opportunity to construct an event to according to the ideology of their choice (Birkland, 1997, 1998a). Focusing events often put the powerful at a disadvantage because they have to defend the negative publicity.

Focusing events, for Birkland (1997, 1998a, 2006), have a functional quality that sets them apart from other events. Birkland draws his inferences from specific types of events: earthquakes, hurricanes, oil spills, and nuclear accidents as well as more "human-induced" ones such as the September 11 attack and aviation crashes. He sees these events as sudden occurrences that somehow capture attention. Focusing events are thought to expose problems; and the events have concentrated "effects" within some geography. And, these events are thought to affect policies within a narrow range—hurricanes, for example, affect hurricane policy; or nuclear accidents affect energy policy.

What is clearly missing from Birkland's idea for focusing events is a broader notion that events are constructed. The qualities that constitute focusing events, e.g., suddenness or problematic or effect concentration, are all constructed as being more or less important only by actors. Also because Birkland does not examine similar events that do not cause change, we cannot infer if these qualities of focusing events truly lead to change.

Rival explanations

I take a social constructionist approach to this study in linking an event with significant institutional change because the alternative or rival approach does not match what is observed empirically and less feasible theoretically. These rival explanations take the perspective that there is some inherent quality or fact about an occurrence or condition that is problematic and thus causes institutional change. This section describes these rival functional explanations first then summarizes the relevant literature using the social constructionist approach.

Functional approach

Early organizational studies (e.g., Isabella, 1990; Meyer, 1982) implicitly assert that some occurrences (events in their terminology) have some quality that catch our attention, break the status quo or inertia and thus trigger a series of actions that lead to change. These studies have a methodological weakness in that they do not compare these events that have led to change with similar events that have not. However, the cases selected for this study demonstrate that comparable events can have different outcomes in terms of institutional change, and therefore weaken the idea that occurrences trigger change.

Objective characteristics and conditions do not automatically lead to a problematic situation. Several industrial chemical accidents in other nations and states preceded Love Canal but has not appeared to the U.S. as a nation worthy of attention or change (Szasz, 1994). The physical impact of accidents does not seem to matter either.

The volume of oil spilled at Guadalupe Dunes is twice the volume spilled at the Exxon Valdez accident (Beamish, 2002). And, although media coverage can direct attention and has an important role in institutional change (McCombs & Shaw, 1972; Soroka, 2002), the coverage does not always initiate policy change (Crow, 2010) and sometimes does not even inform the public about "important" issues but reflects powerful interests (Clayman & Reisner, 1998; Gamson, et al., 1992).

Similar objective conditions when viewed at a different time and context lead to varying outcomes. Spanking children, for example, has been an indicator of a parent's virtue because it is effective, efficient, responsible, and teaches discipline, enforces proper behavior, as well as prepares children for a hard life ahead (Davis, 2003). Since the "discovery of child abuse" in the 1960's, however, spankings increasingly indicate a child at risk. The same objective condition, spanking, is viewed at one time as a virtue and at another as a troublesome social problem. Using objective conditions as an indicator of a social problem is also flawed because the same condition may indicate different problems (Best, 2008: 6). Best argues that a large number of overweight people may indicate either or both of a public health problem and forms a basis of problematic discrimination. He further suggests that eradicating weight discrimination may inadvertently encourage more obesity thus accentuating the "health" problem.

Using objective conditions as a predictor of subsequent change becomes even more challenging because dissimilar conditions cannot be compared. Without the means to compare problems, we cannot decide which problems to address. No scale exists to compare toxic accidents with car accidents because societies have varying levels of acceptable harm and risk tolerance for different risk objects (Clarke, 1988; Douglas &

Wildavsky, 1982; Slovic, 1987) . Furthermore, there are never enough resources for any organization or society to solve all problems (Hilgartner & Bosk, 1988). Therefore, we must compare and choose problems to address but the choice cannot be predicated on objective conditions.

In summary, the functional approach relies on objective conditions to determine if a problem exists and when change is necessary but is not empirically observed nor theoretically feasible. Gusfield (1981: 3) eloquently describes why the functional approach to objective conditions does not work:

> Human problems do not spring up, full blown and announced, into the consciousness of bystanders. Even to recognize a situation as painful requires a system for categorizing and defining events. All situations that are experienced by people as painful do not become matters of public activity and targets for public action. … "Objective conditions" are seldom so compelling and so clear in their form that they spontaneously generate a "true" consciousness.

Constructionist approach

The constructionist approach is based on the concept of social construction, i.e., the process through which people assign meaning to the world (Berger & Luckmann, 1967; Best, 2003: 982). According to Berger and Luckmann, people place specific objects or experiences into abstract categories in order to simplify and understand the world such that we can act towards all specific objects or experiences within a category in the same way. A category is a short hand way of referring to any or all the underlying objects that constitute the category. In this socially interactive categorization process, we develop meaning or a shared understanding of what the underlying object is (Blumer, 1998; Hewitt, 2003; Zilber, 2008).

In stark contrast to the functional approach, the social constructionist approach holds that no occurrence or condition is inherently problematic (Blumer, 1971; Fuller & Myers, 1941; Kitsuse & Spector, 1973). Instead, institutions arise from human action to define a problematic condition and a compelling need to resolve the problem. In particular, the study of social problems is primarily concerned with theorizing this phenomenon of how problems are defined and thus relevant to this study but this literature too is less clear on the role of events in the problem-making definition process.

The essence of social problems lies in how we define a problem, and constructionists consider the definition as a dynamic process that includes contention and conflict among competing ideas. Social problems are therefore a process—"the activities of groups making assertions of grievances and claims with respect to some putative conditions" (Kitsuse & Spector, 1973: 415). Kitsuse and Spector label this process as the claimsmaking process, in part to highlight the centrality of claims. Claims are defined as any activity (verbal, written or behavioral) that seek to persuade others (Loseke, 2003; Spector & Kitsuse, 2001).

Two important studies illustrate the theory and gaps. Howard Becker studies how deviance and thus rules are socially constructed, and Joseph Gusfield explains the structure of social problems.

In tracing the history of illegal use of marijuana, Becker (1973) explains how institutions arise from the work of a moral entrepreneur. A moral entrepreneur is one who actively works on "the creation of a new fragment of the moral constitution [rules] of society, its code of right and wrong" (145-147). His work shows how a specific government agency, the Bureau of Narcotics, played the role of a moral entrepreneur.

The Bureau was created by Congress in 1930 as a way to protect tax revenue that was otherwise lost—specifically the Bureau was not responsible for regulating marijuana use. Subsequently, however, the Bureau manipulated the media, advocated laws among several states, and finally pushed the 1938 Marihuana Tax Act to prohibit use of marijuana outside of the medical profession. Becker's original study (1953) in the field with marijuana users suggest there is no inherent problem with marijuana—the narcotic does not induce physical addiction nor is associated with other criminal activity. Except during the time leading to the Bureau's media activity and minimal Congressional debate, Becker shows little public interest in marijuana use or abuse. Becker explains that moral entrepreneurs are driven by their personal sense of values and what the broader society should or should not do, and sometimes ally themselves with those who have a more instrumental motive. Because values are typically general (not specific), ambiguous and not immediate motivation for specific human action, moral entrepreneurs can create rules (institutions) as derived from values but made substantially more limited in terms of specificity, scope, and conditions in which they apply thus allowing rules to be created and enforced (129-134).

Becker's (1973) study, however, leaves two unexplained theoretical problems. First, Becker focuses on how morals are shaped, and claims that the moral entrepreneur is more concerned with the ends rather than the means and often works with another to actually formulate the rules but leaves unspecified how this "other" actor may infuse his or her own interests in writing the specific technical rules (Becker, 1973: 150, 152). Theoretically, this person who writes the specific rules also embodies agency that may change how the "rule" or institution is defined. The link between one action (the

definition of a problem), and the solution to the problem (the creation of an institution) is left unexplained. Specifically, Becker implies that another person or role, left unspecified, is necessary to link problem to solution. Second, Becker's study suggests (140-142) but does not explain the role of events in the process of developing new morals. This study attempts to solve these puzzles.

Over several studies of drinking-driving, Gusfield (cf. 1981, 1986) shows how the social problem of drinking and driving has been problematized in different ways by various actors over history. For example, over the period of auto use (1922-1972) harm from auto accidents were attributed first to an incompetent then competent but careless driver and finally to drivers who were "accident-prone," such as the young, elderly or those who were drunk (Gusfield, 1981: 45). According to Gusfield, social problems have a structure —a pattern of how ideas and activities emerge. This theory relates "ownership" and the causal and political responsibilities attributed to solving the problem. Ownership of a social problem refers to an actor's or group's ability to create and influence the public definition of a problem (Gusfield, 1981: 10). The owner of a problem uses rhetoric to persuade others that a problem exists. The rhetoric includes both a cognitive dimension, i.e., knowledge and "science;" as well as a moral dimension that reflects the owner's values. Rhetoric is persuasion, and Gusfield shows that owners selectively pick pieces of knowledge ("facts") and re-present these to persuade an audience.

The National Safety Council, as owner of the auto accidents problem, publishes *Accident Facts* annually that contains data in scientific looking tables with estimates gathered from arbitrary methods. The publication, however, is used by policy

professionals as well as media, safety organizations, insurance companies and groups who propose or oppose auto safety regulations (Gusfield, 1981: 39-43). Although many have attempted convince the National Safety Council of other ways of conceptualizing the problem, the Council continued to propagate specific facts that show drunk drivers as the leading cause of auto accidents (in that period) (Gusfield, 1981: 42). Separately, other scholars also show such "facts" are (mis)used in appealing to audiences because they provide a sense of authority, credibility, objectivity and immutability when the facts are instead one of many ways to construct reality (Best, 2001; Seife, 2010). "If you want to get people to believe something really, really stupid, just stick a number on it," Seife cautions (Seife, 2010: 1). By using such accident data as "facts," the National Safety Council successfully created the knowledge that drinking driving was the cause of accidents and therefore the solution lay in police enforcement and educating the public of such dangers. Thus by defining the problem one way, other solutions, Gusfield suggests, such as safer designs for automobiles or roads, and understanding alcohol sale and use are never considered as possible causes or solutions.

This homogenous consciousness among auto manufacturers, insurers, safety professionals, the public, and policy experts, according to Gusfield, is a salient form of social control. Such a pervasive and unchallenged view, entrenched by culture, is an extremely powerful form of restraint because it renders alternative conceptualizations unthinkable. The consciousness often remains unrecognized because "what we cannot imagine, we cannot desire" (Gusfield, 1981: 7). This perspective is supported by modern forms of power as public discipline (Foucault, 1979), social structure (Lukes, 1977), and

or culture (Bourdieu, 1984) that form the basis of institutionalized forms and practices (DiMaggio & Powell, 1983).

Clearly, Gusfield's (1967, 1976, 1981, 2007) work sets the tone for this study by demonstrating the art of persuasion as a better explanation for institutional change than the presence of objective "facts," but also leaves space for a better understanding for how events play a key role. Gusfield might suggest that events add to the drama (cf. Goffman, 1974) both as a persuasive tool as well as way to draw attention to the problem thus mobilizing support and driving change. This stream, however, still leaves unanswered the central research puzzle: why one event and not the other.

Chapter summary

Wastes, broadly construed, affect people and society in various ways. In particular, mis-management of industrial materials, for example when accidents occur, may affect individuals and prompt social action to remedy the situation. One form of remedy is to change the institutionalized practices of materials and waste management.

By studying these accidents as events, scholars can borrow a great deal of knowledge from existing social theory of events as well as institutional theory. Whereas, many see accidents merely as an occurrence, the use of social theory greatly enriches our understanding of how events can affect institutions. Even though institutional theory is mostly concerned with persistence and slow incremental change, significant change does occur.

Institutional change occurs because of human agency. Institutional, moral and or policy entrepreneurs may be involved in the change process, first by giving meaning to

events, then acting on those persuasive meanings that compel institutional change. These entrepreneurs shape meaning by drawing on cognitive and moral dimensions that we are culturally inclined to believe and will act on.

CHAPTER 3. METHODS

Preface

The chapter serves two purposes. First, a justification for using a qualitative case study is presented followed by a description of the research design. Second, the chapter serves as a description for how empirical data led to the development of a few of the new concepts and theory.

Before continuing I recap the research objective: to develop a new theory to explain, specifically why and how do events that arise from management of industrial materials and wastes lead to significant institutional change.

Rationale for qualitative case study

One may conduct a scientific study from a single or a combination of qualitative and quantitative approaches (Creswell, 2003; Singleton & Straits, 2005). The approaches are understood to encompass philosophical traditions, such as positivism or constructivism, and methods, such as experiments or participant observation (Denzin & Lincoln, 1994: 1), and sometimes referred to as strategies or traditions of inquiry (Creswell, 2003: 13). The qualitative approach broadly refers to an emphasis on studying processes and meanings that are not rigorously measured in terms of quantity, intensity or frequency; and where researchers stress the socially constructed nature of reality and situational constraints shape the inquiry (Denzin & Lincoln, 1994: 4). In contrast, Denzin,

Lincoln, and Creswell explain that a quantitative approach emphasizes measurement and analysis of causal relationships between variables, but qualitative approaches can examine causal relationships as well (Strauss & Corbin, 1998; Yin, 2008).

The design of social inquiry and good research is characterized by principles of sound inference and the use of procedures that are public (King, et al., 1994). They advocate overcoming the quantitative-qualitative divide and instead call for a common shared set of rules of inference—insisting that the same rigorous logic of inference must underlie any study. All studies can and should strive to develop rigorous, valid, reliable and transparent inference through well-established procedures of inquiry.

Given that there are different strengths and weaknesses among the many methods that comprise the quantitative and qualitative approaches in organizational studies, Edmondson and McManus (2007) suggest that the methods be determined based on the best fit with the research question and context. These authors recommend a mixed methods approach when developing theories that lie between those that are at mature and nascent stages. Mature theories are those comprised of precise models supported by extensive past research in varied settings. Nascent theories, on the other hand, are those that have attracted little or no formal theorizing, or represent new phenomenon. The situation in this project is such that we do not sufficiently understand the nature and role of events in the change process. Edmondson and McManus would therefore propose using qualitative methods.

There are numerous benefits to be gained from the specific strengths of a qualitative approach in this project. The most important characteristic of a qualitative approach that is relevant for this project is the ability to understand a complex social

phenomenon where the causal dynamics and people's interactions are unclear (Elsbach & Kramer, 1996), and contention occurs to an extent that even accounts of what happened may differ (Mazur, 1998).

The qualitative approach is best where a deep focus on a small number of observations where interpreting and understanding subtle and nuanced differences in individual actions and reasons for action is required. Many studies in institutional theory, for example, follow this qualitative tradition of examining the meaning that actors acquire and propagate drawn from a small sample (Barley, 1983, 1986, 1990; Greenwood & Suddaby, 2006; Greenwood, et al., 2002; Nelsen & Barley, 1997; Townley, 2002; Zilber, 2002).

The qualitative approach is sensitive to actors' labels or categorization, rather than an investigator imposed category, for specific actions or in describing a situation (Johnson & Onwuegbuzie, 2004). This sensitivity allows an emic view of the phenomenon by insiders as opposed to an etic view by outsiders (Guba & Lincoln, 1994: 106; Stake, 1994). Through "thick description," Geertz (1973: 6) points out, for example, a researcher can show readers the difference between an involuntary eye movement ("blink") and conspiratorial signal ("wink") such that we can infer and assess meaning as the actor does. In the context of this study, actors' assessment of the properties of events, for example, may be more important than an investigator-imposed categorization for properties.

The complexity of the phenomenon is also confounded with the context, in part because we have not previously established boundaries between the phenomenon and the environment, i.e., we do not know yet what the variables are. A qualitative approach

better allows the investigator to arrive at tentative theory from which we may then elaborate further on causal mechanisms and refine specificity (Edmondson & McManus, 2007). The qualitative approach begins with an assumption of complexity and vague causal mechanisms and then proceeds to disentangle complexity to reveal understanding (Ragin, 1987: x). For example, Ragin cautions that "multiple conjunctural" causation, i.e., the idea that different combinations of variables or factors lead to the same outcome, may be in effect in complex social phenomenon that does not lend itself well to using quantitative analysis.

The second major strength of a qualitative approach is the ability to make theoretical comparisons (Eisenhardt, 1991; Strauss & Corbin, 1998; Yin, 2008). As the number of observations being examined increase, for example towards large scale quantitative studies, the tendency is toward understanding the typical observation, thus compromising the ability to uncover theoretical differences between observations.

The number of cases that can be studied is necessarily small because significant institutional change occurs relatively infrequently, especially compared with many incremental changes that may occur from day-to-day deviations. Because there are few observations, limited variety may be found and therefore the use of statistical correlation methods to analyze the associations significantly limits the rigor that can be achieved (Ragin, 1987: 13). Quantitative correlation methods are handicapped because the number of theoretical differences, or more accurately the number of variables, far exceeds the number of observations.

The third major reason for selecting a qualitative approach over a quantitative one is because one objective is to understand a process involved in complex time dimensions.

While some quantitative methods can overcome phenomena that spans a long duration, the temporal intervals between points of interest are uncertain and irregular, rendering these methods less useful compared to a qualitative approach. For example, the time elapsed between an event and news publication is determined by the frequency of a specific publication typically measured in days while the time between event and major legislative change is expected to be measured in years. In addition to a problem of varying elapsed time, and perhaps more important, is that understanding process phenomena and developing such theories require tracing specific path sequences through history, i.e., temporal ordering (George & Bennett, 2005; George & McKeown, 1985; Langley, 1999). Furthermore, the specific moment in time when the phenomena occur may explain why it occurred as well as what occurs after (Pierson, 2000, 2004).

The need to induce theory drives the selection of a qualitative approach to move from learning the particulars to understanding the general phenomenon. Attention is focused on a few select cases in order to better understand the social mechanisms (Hedstrom & Swedberg, 1996, 1998) that explain why events lead to change. The study seeks a deep quality in understanding what causes individuals to act and why they do so in each case. This level of analysis also allows the examination of the properties of events, and the conditions under which an event may or may not lead to change. A qualitative, rather than quantitative, method is also better suited to learning about longitudinal social processes (Mintzberg, 1979; Van de Ven & Huber, 1990; Van Maanen, 1979)—in this case the need to understand the sequences of how different actors play a role in institutional change.

Given these parameters, a case study framework is specifically selected to guide data collection and analysis. The case study method allows for qualitative analysis as well as a theoretical comparison among cases (Yin, 2008).

Research design

A case method is selected as the primary framework for guiding this study because new theory is to be induced, and the research questions are well suited to the method. Nascent, newly emerging theories that have no strong basis for what variables are or how they are related are ideally suited to case study methods (Edmondson & McManus, 2007; Eisenhardt, 1989; Yin, 2008). Whereas other methods attempt to simplify and isolate the effects of a small set of causal factors, the case study method explicitly allows the examination of all factors, including the context or "outside environment" in which the phenomena occur, into consideration. Furthermore, the case method begins with an assumption of complexity and vague causal mechanisms and then proceeds to disentangle complexity to reveal understanding specifically by analyzing different combinations of factors that lead to the same outcome (Ragin, 1987: x).

Two pairs of cases have been selected as the basis on which to develop a new theory— how some key actors make a general pattern of claims of what others should believe about an event, and how these claims become embedded into the event to mean significant institutional change is necessary. The cases have been selected based on broad theoretical and methodological criteria, as well as case-specific ability to reveal new knowledge and relationships. The cases are designed for both within-case analysis as well as comparisons between cases. Each case represents an in-depth study of a single event,

the unit of analysis, and the use of a matched pair case also addresses a key weakness of prior research on events. Individual cases are selected based on whether the case is especially revealing; and whether or not the event is associated with significant institutional change. The four cases are Love Canal, Legler, Exxon Valdez, and Guadalupe Dunes.

Love Canal is a well known icon of environmental mismanagement, and still invoked frequently as an example of reckless-irresponsible management of toxic materials (Colten & Skinner, 1996). Love Canal is a small residential community within the city of Niagara Falls, an industrial hub, in New York State. Over a period of 12 years, Hooker Chemical Company used a tract of land to dump chemical wastes that eventually seeped into the ground, water and air in the surrounding homes causing sickness, birth defects and miscarriages (Beck, 1979; Mazur, 1998: 9-10; Szasz, 1994). The land, meanwhile, had transferred title and a school was built directly on top of the former dumpsite. Subsequently alarmed neighbors, led by victim-activist Lois Gibbs, used many methods in the attempt to stop similar toxic dumping elsewhere. Gibbs is otherwise an unremarkably typical woman who worked on raising two kids in the suburbs (Gibbs & Levine, 1982), but came to be a pioneer in a field we now know as popular epidemiology (Brown & Mikkelsen, 1990). Gibbs was invited to Congressional hearings and meetings with the President, and played an integral role in the creation of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) law enacted in 1980. Not only is the enactment a significant change in the legislative and regulatory landscape (Lazarus, 2004; Rosenbaum, 2002), but is also a significant event that raised public awareness to the horrors in their backyards.

The Legler case was selected because it is similar to Love Canal in terms of occurrence of hazards and geography; and the two events occur at about the same time. The accident at Legler, however, leads to no significant institutional change. Legler is a small residential community, a subdivision of Jackson Township, not far from Trenton, New Jersey, where homes were fed by private individual water wells. Almost immediately after news of groundwater contamination at Love Canal hit the headlines, residents were told by the local Board of Health that their well waters might be contaminated (Edelstein, 1988: 28-30). Some neighbors had been complaining for some time before, and investigations by the state and town officials eventually revealed considerable toxins and carcinogens (Janson, 1980c). Much like Love Canal, the municipality had been using a dumpsite to bury chemical wastes that eventually leaked into the groundwater and found its way into residents' wells; some residents got sick; residents formed a support group and conducted popular epidemiology; and after contentious debate with officials, residents filed a lawsuit (Brown & Mikkelsen, 1990: 163; Edelstein, 1988; Janson, 1980c; Panzer, 1980b). The Legler event begins much like Love Canal but progresses very differently and leads to no significant institutional change in industry or among state and U.S. regulatory agencies.

The second pair of cases is also compared on the basis of a similar hazard—the oil spill. The Exxon Valdez case is a well known accident where the tanker runs aground and spills millions of gallons of oil (Davidson, 1990; Keeble, 1999). The spill caused considerable injury to the water, wildlife, and the people who depend on nature. Exxon was accused on being a villain and a company that deserved to be punished. The popular accounts jump to several conclusions and myths about what occurred, but this study is a

careful comparison with another similar accident to better understand the important influential factors that led to change. The selection of the Exxon Valdez accident serves two purposes: to be compared with the Love Canal accident, and to be compared with the Guadalupe Dunes oil spill.

The Guadalupe Dunes oil spill is one that few have heard of, and yet it is a story about an oil spill that lost as much as 20 million gallons of oil, a volume that is twice that spilled during the Exxon Valdez accident (Beamish, 2002). This case is considerably different from the others in that the accident occurred over a span of 38 years. This prolonged period desensitized residents into a new normal. This case is selected because it breaks the most popular myth that the size or scale of an accident is a primary factor in determining whether change occurs. The accident is revealed when two whistleblowers come forward in 1992 and 1994; well after the Exxon Valdez case but they are similar in many ways. The accident leads to no significant institutional change because the residents' interpretations of the accident are fundamentally different from those in the Exxon Valdez case.

Data sources

Primary textual data has been obtained from major national newspapers and magazines (3536 items on Love Canal; 562 on Legler); books—autobiographical accounts and natural and social histories (1259 pages on Love Canal; 217 on Legler); and Congressional testimony (4310 pages on Love Canal; none for Legler and Guadalupe Dunes). News data were found through broad keyword searches on *Factiva*, *ProQuest*, and *EBSCO* databases. The national newspapers include the *New York Times*, *Washington Post, Wall Street Journal, Los Angeles Times, San Francisco Chronicle* and

Time magazine. Local newspapers were accessed primarily through the media company's website or the Access World News database. Many magazine articles came from the EBSCO databases.

Books were found through book reviews in several top-rated peer-reviewed disciplinary journals such as the *Administrative Science Quarterly* and *American Journal of Sociology*; or through wide citations in other books or news articles.

Congressional testimony comes directly from the U.S. Government Printing Office (GPO) as recorded. The archive I used is an official Federal Depository Library where the GPO routinely sends such records (Source: http://catalog.gpo.gov/fdlpdir/FDLPdir.jsp). Online sources for congressional materials also come from Thomas, the online repository for the Library of Congress; and from ProQuest Congressional databases.

In addition, four minor sources of data were also consulted. Documents at the Love Canal Collections archive at the University of Buffalo; documents at the archives of the Exxon Valdez Oil Spill Trustees Council archives; public opinion polls from the Roper Center for Public Opinion Research; and the Policy Agendas Project, a repository of public policy databases.

Analytical method

The analytical process and data collection is conducted iteratively in the grounded theory building method devised by Strauss and Corbin (1998). Textual data are coded, progressing with fine granularity from microanalysis and open coding through axial then selective or theoretical coding. Microcoding begins with examining each sentence of text and associating the sentence with "open" codes that represent categories, i.e.,

foundational or rudimentary concepts that emerge from the data. Subsequently, axial coding is conducted to bring open codes together into patterns and relationships, i.e., to identify an axis along which the categories align and relate. The final round of coding is labeled theoretical coding to represent how the axes relate together as a coherent theory. Comparisons are made throughout the coding process among codes, axis and theoretical concepts. The coding process is not a monolithic process and instead is interspersed with iteratively returning to established theory and literature then cycling back to emergent theory and data analysis (Bailyn, 1977; Charmaz, 2006). The process iterates until a saturation point is reached where the data no longer reveals new information (Strauss & Corbin, 1998).

Development of concepts

This section is a description of the coding and analytical process. The process describes how I used initial codes to describe then interpret the textual data. This description is the manner in which qualitative researchers expose their assumptions and interpretations, and therefore allows readers to follow, appraise and validate my interpretations and thus reveal how I arrive at findings in the findings section, final theoretical explanation and eventually answering the research questions.

The analytical process and data collection is conducted iteratively in the grounded theory building method devised by Strauss and Corbin (1998). The core concept in grounded theory building is coding. Coding is the decomposition of a unit of text into basic concepts that are then reassembled into theory. Textual data are coded, progressing with decreasing granularity from microanalysis and open coding through

axial then selective or theoretical coding. Microcoding begins with examining each sentence of text and associating the sentence with "open" codes that represent categories, i.e., foundational or rudimentary concepts that emerge from the data. The initial open codes are: people, framing or the claims and reasons for change, place, period or time, action, symbol, and process. Subsequently, axial coding is conducted to bring open codes together into patterns and relationships, i.e., to identify an axis along which the categories align and relate. Comparisons are made throughout the coding process among open codes and axial codes, both within case and between those found in the Love Canal and Legler cases, the two cases I began with.

Initial coding

The initial open coding revealed three large patterns, among others: an *in vivo* code, "What does this mean;" disorder; and liability issues. An *in vivo* code is best described as a literal term or phrase used by the actor, draws our attention and expresses well the phenomenon that is occurring (Strauss & Corbin, 1998).

"What does this mean" is asked by many actors—all of them victims of the accident. The question is always asked in the context of the actor trying to understand the situation with respect to health impact, an inquisition (e.g., to ask about what to do next), the implication of an order (e.g., to evacuate or remain). The actor is genuinely puzzled and typically faces an inexplicable situation. "What does this mean" is not used rhetorically; it is a question that one asks another in search for explanation or knowledge. The context and literal use of the question strongly suggests the actor has not faced such a situation before, i.e., the situation is unexpected—it is new and does not fit existing categories of the actor's experience or knowledge.

This initial coding exercise led me to examine theories for how people construct meaning. The search for meaning making led me to interactionist theories, theories that assert that people interpret a situation based on how other people around them act. These theories of symbolic interaction (Blumer, 1998; Mead, 1934) are quite common in the social sciences, and in particular are congruent with the social construction of objects (Hacking, 1999) including events. Symbolic interaction is also the basis for how social problems (Kitsuse & Spector, 1973) and deviance are defined (Becker, 1973)—again consistent with early theories for how events may lead to change (Gusfield, 1981). These theories, more importantly, led me to better interpret what was going on in the cases—the empirical situations. With a consistent theoretical perspective, I began a subsequent effort to code the data that I present in the findings chapters.

Claims

The idea that people have social problems is based on the theory that social problems do not inherently appear or are suddenly apparent, but instead arise from the claims people make (Best, 2008; Rubington & Weinberg, 1996). Understanding this perspective, I coded for all the claims that the actors made.

Break in routines In examining the data, a researcher might typically code for the actors and actions but the data also seemed to indicate that some actions were not taken. When families were evacuated from their homes in Love Canal, for example, they did not attend to their routine household chores and activities. Here is a reporter's account of what a resident did not do:

> Leonard Whitenight didn't plant flowers in his garden in the Love Canal neighborhood this year, and he no longer mows the lawn … where Mrs.

> Whitenight does the family wash, black stains score a wall where brackish water has seeped in through the foundation. (Barbanel, 1980)

The data here suggests that the Whitenights did not plant flowers—this is explicit but what they did not do with respect to the black stains in the wall and brackish water in the basement is considerably less clear.

The snippet of data presents a coding challenge because a researcher should be creating codes to indicate what an actor did but one cannot create a code for an action not taken—there are an infinite number of possible actions that are not taken. From a coding perspective, it makes no sense to code for actions that are not taken. Yet, there are many such instances in the data that suggests that some actions were not taken. For example, children did not go to school because the school was closed, and when they were allowed to attend school the children were bused to schools away from their neighborhood. From a coding standpoint, a code indicating that children did *not*: sit together with their friends at lunch; get called by their names in a familiar school by teachers who know who they are; or walk home with their parents or siblings.

The data from the Legler case has a similar challenge in terms of what actors were doing versus what they might otherwise be doing. In Legler, the county Board of Health ordered residents not to use well water (previously the source of all their water needs) and instead use water that was delivered into rusty 44-gallon drums placed outside the home. The water had to be boiled before use; children did *not* to play in the spray from the sprinklers that are fed from contaminated well water. Again, a careful strict coding of actions that were taken would reveal little of what was involved in the situation.

After careful deliberation, I decided to create a coding scheme to show the break in routines. A break in routines suggests that there a series of actions we normally conduct in everyday life that are no longer conducted. Thus, instead of a code to indicate that Love Canal children went to a distant school, I used a code to indicate that going to a distant school is a break from the routine of going to one's usual school. Here are two other passages that indicate broken everyday routines; notice the key words that suggest routines were broken are italicized for emphasis.

> Dr. Vianna advised people who lived near the canal ***not to eat any vegetables*** from their gardens. With that, the little girl's father became very upset. "Look—my kid ***can't play in the yard because her feet get burned***. My neighbor's ***dog burns his nose*** in the yard. We ***can't eat out of the garden***.

> Depending upon which way the wind blew, we would get the odor. We had built a patio prior to the landfill's opening so that we could use our backyard. By the following summer, ***we couldn't stay there***. We put in air conditioning in the house because ***we couldn't open the windows*** in the summer.

The idea of a break in routines as a code comes with several benefits. From a theoretical perspective, everyday routines and the corresponding break in routines is the source of meaning and in particular the break in routines is an explicit performance intended to impress an audience (Goffman, 1959). For the residents where the accidents occurred, the break in routines is intended to influence observers—other neighbors and the public, news reporters, state agencies and government representatives. The break in their routines is an explicit claim to persuade others that the accident led to their undesirable condition. From a coding perspective, the code represents a means to remain grounded in observable and empirical data while still showing how people were *not* doing an unspecified routine and typical activity. Finally and most important, the break in

routines is an explicit recognition of interplay between structure and agency that is crucial to qualitative studies.

A break in routines is an explicit recognition that humans can act and express themselves independently of social structures that exist in shaping behavior. Routines are a form of social structure that are thought to constrain how people can act (DiMaggio & Powell, 1991; Feldman, 2000; Nelson & Winter, 1982). Routinized practices, for example, persist until blocked (Jepperson, 1991). But, a break in routines explicitly demonstrates that behavior need not be determined by structure alone but also by people who act on the interpretations of the context and situation (Blumer, 1998; Thomas, 1923). The break in routines is an escape from blocked institutionalized routines—a core idea that the study intends to uncover.

The codes around the break in routines allows me to better conceptualize a finer grained research question in terms of understanding what is going with respect to structure and agency. Where the project is guided by the central question of how an event may lead to institutional change, the break in routines allows a finer grained question to be examined: how agency breaks established structure. The data and associated codes suggest that the answer is some actors construct the claim that their everyday routines are blocked and they are thus forced to find new ways of doing things.

Besieged by wastes Another claim made is a concept I labeled as besieged by wastes. The category consists of several codes that relate together as a whole. Here is how the category emerges. In many locations, the data shows an *in vivo* code, “I just want to get away” (Barbanel, 1980). The quote comes from a typical resident who was frustrated with poor living and health conditions he and his family had to put up with

over about 27 years living in the Love Canal neighborhood. Both Leonard Whitenight and his wife were notified that they had chromosome damage, purportedly because of their extended contact with the toxic chemicals. Their daughter, Debbie, had constant throat infections that were never diagnosed properly. Their home, they discovered, sat directly above a swale, i.e., an underground natural drain, that carried hazardous chemicals throughout the neighborhood. Like other residents, the Whitenights expressed "I just want to get away" as a way to articulate their desire to get away from danger, fear, frustration, anger, and poor health that had persisted for much too long.

While the code "I just want to get away" represents a desire to leave the area, there is a simultaneous constraint that prohibits residents from leaving the neighborhood. As the public slowly came to realize the hazards that arose from the spreading hazardous chemicals, residents became concerned and then experienced falling property values. Property could no longer be sold because no one wanted to buy homes in a disaster area. Residents therefore suffered financially as well as experienced deteriorating psychological and physical health.

Another set of codes relate around the idea of a violation of place. People form a bond with physical and social place, and their ideal place reflects this sense of place (Gieryn, 2000). In particular, we form cultural preferences for where things should go, and disorder occurs when things are not where they should be (Douglas, 1984). These theories thus sensitized me to recognize violations of place as claims of disruption. The following example shows a resident is surprised by where the toxic chemicals are, and how such violation prompts subsequent action. The data illustrates that the wastes are not where they are supposed to be and thus have to be rectified:

> Brown's [news reporter] articles said Love Canal was between 99th and 97th streets, but I didn't think he meant the place where my children went to school or where I took them to play on the jungle gyms and swings. … Then when I found out the 99th Street School was indeed on top of it, I was alarmed. My son attended that school. … I decided I needed to do some investigating. (Gibbs, 1982)

Because residents came to face all these conditions, I decided to label the category as besieged by wastes. The category attempts to project a deep understanding of the experience as one who lived in the neighborhood at the time. This idea of understanding, Weber refers to as *verstehen*, is one that is placed in a broader context of meaning that is not directly observable alone but also reflects the immediate situation the actor is in (Weber, 1924/1978: 8-9). Residents could not leave; they could not escape; they were trapped; they were surrounded. Residents' lives were consumed in the lived experience of horrible diseases, uncertain of what lay ahead if they remained, unsure if their government or anyone would help, and knowing they could not leave. Residents were caught in a horrific and unimaginable place. The residents felt isolated from others who lived outside the neighborhood. Physicians could not form clear diagnosis, symptoms could not be attributed to specific contaminants, and the emotional stress exacerbated the residents' health (Auyero & Swistun, 2008; Brown & Mikkelsen, 1990; Edelstein, 1988: 77; Vyner, 1988: 16). The category besieged by wastes, therefore, pulls together various underlying codes that give a sense of being surrounded and isolated in an undesirable place.

The codes around besieged by wastes allow me to examine finer grained questions of alternative actions. Having discovered that actors need to find their way around blocked structures (i.e., broken routines), one might ask why the actors choose

one path over another. The data coded around the idea of besieged by wastes suggests that some actors, i.e., the residents, could not leave the undesirable place their homes had become.

Disrupted life Disrupted life is an axial code formed by linking the two above codes for break in routines and besieged by wastes. Axial coding pulls together codes that comprise a concept and the associated categories and dimensions (Strauss & Corbin, 1998).

A break in routines is a form of claims made by residents who were hurt by the accident. The code reflects how residents describe their everyday life was disrupted. Similarly, besieged by waste is a claim residents make when their homes are simultaneously not (1) where they want to be; (2) able to leave; and (3) an ideal place to live. To be besieged by wastes is to be surrounded and suffocated by the feeling that one cannot live a fulfilling life—that life has been disrupted. Because the two codes represent a similar but more abstract idea that life has been disrupted, I labeled the axial code as simply and transparently as I could. Disrupted life, then, represents an abstract concept that is grounded, i.e., linked directly to empirical data, but forms the basis for an emerging theory.

Chapter summary

Qualitative methods of discovery and inference are appropriate for an inquiry that attempts to develop a new theory. Because the phenomenon of study is a nascent topic of study, qualitative methods further help by allowing a deeper examination of fewer cases. The decision to examine fewer cases in more detail is well suited to using a case study

framework. The case study framework is sufficiently flexible to allow the use of grounded theory building as the primary analytical tool to examine textual data from news, social histories, and archives; and to further enhance inference by examining data from public opinion polls. Thus, the case study framework allows the necessary analysis of rich data.

In addition, this chapter describes the development of a few key concepts. The early examination of data provides a basis on which to find theory that may better fit the empirical situations that were initially discovered. Because residents in the first two accidents I examined, Love Canal and Legler, were focused on understanding meaning, I returned to read theories of meaning making. By so doing, I discovered a family of theories that fit epistemologically together. Armed with symbolic interaction theory and perspective, I returned to coding the data. I finally described a specific challenge I faced in coding that eventually will lead to a core contribution. I show readers the development of a concept I label as disrupted life that consists of two underlying concepts: break in routines and besieged by wastes.

CHAPTER 4. EMPIRICAL NARRATIVES

Preface

In recognition that descriptive research is both the initial basis of the theoretical development of any concept and is as important as other research methods (Dubin, 1969: 85), this chapter presents the findings that inform readers about "the *who*, *what* and *where* of events" (Sandelowski, 2000: 339) for each of four cases and the two associated laws that constitute significant institutional change. Even though I have not used ethnographic methods *per se*, I present narratives in a style comparable to ethnographic studies. This is the first of three chapters I use to show my findings.

The four cases described here are Love Canal, Legler, Exxon Valdez, and Guadalupe Dunes. The two laws described are the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980, also known as the Superfund law; and the Oil Pollution Act (OPA) of 1990.

Descriptions of the law are made selectively in order to provide some background, but more importantly to show how the major provisions of the law are responses to the situations in the events. In so doing, I provide additional support for the imprint an event makes on the laws, i.e., how the laws are created in the same context as defined by the event (Stinchcombe, 1965). I shall show how the laws' provisions draw on the same technological, economic, political and cultural resources as those present in the construction of the specific event that led to the law.

Love Canal

Michael Brown, who worked as a reporter for the *Niagara Gazette*, was among the first to explain what happened at Love Canal (Brown, 1980; Gibbs, 1982; Mazur, 1998). He discovered that Hooker Chemical Company had applied for a permit to use an empty tract of land on which to bury industrial wastes; a tract named Love Canal. The wastes that Hooker deposited between 1942 and 1954 in the site were hazardous to humans, animals and plants, and they were well aware of it. As the waste site filled, Hooker buried the wastes under some earth and left it.

Meanwhile, the City of Niagara in New York State was growing. The city is a semi-urban area where many residents live adjacent to several industrial plants. Many young families moved in with increasing industrialization. Census figures show 71,384 people lived in Niagara in 1980; and the mean income was $14,805. See Tables 1 – 4 for more details. One aspect of that growth was to build more schools.

The Niagara Board of Education approached Hooker Chemical to purchase the waste site. Hooker was a little reluctant but decided to donate the land in 1953 in exchange for $1, but made an effort to place a warning on the title deed as well as write to the school board to inform them that there were considerable volumes of toxic chemicals stored under the ground. The school largely ignored the warnings and even ignored the architect's warnings when foul smells and oozing fluids in the ground meant that the school buildings could not be built. The school, however, was adamant and requested the architects to move the buildings back a short distance.

Over the course of about twenty years, neglect, misunderstandings, poor planning and some severe rainstorms began to expose increasing amounts of chemicals on the

surface. Plants died. Tarry fluids found their way into adjacent homes. Potholes caved into larger holes on roads and in backyards. Karen Schroeder's swimming pool popped out of the ground because of unusual chemical movements underneath. Dogs' feet would burn when they stepped too far out in the backyards. Children in the school were warned to wear shoes whenever outside, and from venturing too far outside.

Residents did not understand what was going on. They made several attempts at getting the city to help investigate but the city ignored or explained away the situation in 1977. Reporter Brown then visited the Schroeders, and he explained to them the swimming pool episode was linked to other reports of sickness he noticed. He also linked the incidents to the buried chemical wastes. His articles appeared in the Niagara Gazette over several days.

Meanwhile, homemaker Lois Gibbs read Brown's articles and became quite fascinated with them. She initially thought the school that Brown mentioned was a distance away but on more careful reading she discovered it was the very school that her son attended. Gibbs discussed the articles with her brother in law who confirmed her suspicions that the chemicals could cause all sorts of sickness, including the asthma symptoms her son experienced. Gibbs then tried to transfer her son out of the school but was denied because it was "policy." She decided to become more proactive and began to visit neighbors to see if they might support her petition to the school to allow her son to transfer. In so doing, she heard numerous stories of sickness and damages to homes.

In the ensuing months, she approached Congressional member James LaFalce (D-N.Y.). LaFalce could not help directly, he explained, and was waiting for test results conducted by the Environmental Protection Agency (EPA). A little earlier, he had reports

and complaints from Canada about possible toxic pollutants in the river water that flowed from the U.S. He had pushed for the EPA to conduct tests and they did so at several locations along the river that ran around the city.

As toxicity test results came available on August 2, 1978, the New York Department of Health (DOH) issued a warning for pregnant mothers and children under two to leave the city (McNeill, 1978b). When Gibbs, who was at the public meeting in Albany when the DOH made the announcement, returned home, she found residents had formed an angry mob near their homes. She and several neighbors subsequently constituted the Love Canal Homeowners Association (LCHA) to represent the neighborhood to press government for help. Days afterwards, Governor Carey announced he would buy out the homes closest to the hazardous chemicals (an area known as the "inner ring" of homes). On August 7, President Carter declared a national disaster and promised funding to Gov. Carey to purchase the homes in the inner ring.

Residents outside the immediate area (an area also known as the "outer ring" of homes) were still angry and extremely concerned that the hazardous materials had affected their lives too. The DOH and EPA wanted to conduct more tests but various attempts were abandoned or inconclusive. Residents too, led by Gibbs, conducted their own surveys of sickness and found a pattern of illness along underground channels of water, known as swales. Health officials could neither confirm nor deny the effects of the chemicals in the ground, and the resulting lack of action increased anxiety and anger among residents. Finally, a group of residents took EPA officials hostage for a day but released them when Washington officials promised more action. Pres. Carter issued

another emergency disaster declaration in May 1980 to release more funds to help purchase residents' homes in the outer rings.

On the legislative front, Gibbs and other residents and supporters tried to push their concerns into the media, various government agencies and Congress. Rep. LaFalce tried to introduce legislation to help but the bill became stuck in committee review. Finally, Rep. James Florio (D-N.J.) introduced the law that became Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980.

The area around Love Canal was remediated and chemicals were removed by 1982. Gibbs went on to form another nonprofit dedicated to helping residents of other communities fight to keep toxics away from homes.

Legler

Legler is a small rural community where homes are far apart. Formally, a part of Jackson Township in Ocean County, New Jersey, the residents are mostly older families who wanted to escape the urbanity of New York City and suburbs, and young families who want to find affordable homes. In 1980, Jackson had about 25,000 residents but their mean household income at $21,171 is a little higher than in Niagara (the setting for Love Canal). See Tables 1 – 4 for more census details. The unique aspect about Legler compared to all the other cases is that the homes are fed from backyard wells. The area sits above a huge Cohansey Aquifer, a large underground water store on the coast of New Jersey.

The city had developed one waste disposal site in Jackson quite far from Legler, and then in 1971 nearby residents complained that their well water became contaminated

with foul odors (Edelstein, 1988). As the city closed that dumpsite and opened a new one in Legler in 1972, Legler residents became quite concerned about their own wells. In November 1978, the county Board of Health wrote residents informing them that their well water had been contaminated and they should refrain from using well water. Instead, they were told, clean water would be distributed by truck to homes in the area.

What the residents subsequently discovered is that the city owned dumpsite in Legler had been found to be the source of toxic contaminants. Years earlier, the Glidden Paint Corporation had used the land as a quarry for minerals that were needed in the production of paint. Glidden, like Hooker, had been persuaded by city officials to exchange that land for $1 and the city used the land for a dumpsite. The city took no other precautions but accepted industrial wastes from anywhere and anyone who was merely willing to pay a small dump fee. After some residents had complained about foul smelling water, the health department conducted some tests and discovered several toxic chemicals including benzene, chloroform, trichloroethylene (TCE), tetrachloroethane, and dichlorethylene—all of which are carcinogenic. These chemicals are similar to those found in Love Canal. Also like Love Canal, the chemicals had seeped into groundwater and spread to adjacent homes. Unlike Love Canal that was protected by layers of clay to buffer the chemicals for years (Colten & Skinner, 1996), chemicals from Legler were unprotected and within two or three years appeared in neighbors backyards (Janson, 1980b).

Legler residents, like those in Love Canal, reported many incidents of illnesses including cancer, kidney failure, aborted fetuses and stillborns (Barron, 1980; Janson, 1980b), and considerable psychological trauma and stress (Edelstein, 1988). Residents

formed a neighborhood association as well, named Concerned Citizens of Jackson Township, to file a class action suit against the city and Glidden Paint. Also like Love Canal, a judge dismissed the case because there was insufficient evidence linking the chemicals to illnesses. Legler residents, however, were able to file a suit against the city claiming negligence. In 1983, the court awarded $16 million to residents for damages (Norman, 1983).

Exxon Valdez

The *Exxon Valdez* is an oil tanker that ran aground in the Prince William Sound, a narrow body of water in Alaska, in March 1989. Most accounts of the Exxon Valdez accident begin with either a description of the accident or the lives of the principal characters that were affected by the accident. I shall, instead, begin with a sequence of occurrences that lead readers along a path that better prepares readers for the theory I develop more fully in subsequent chapters.

Legislative interest

Almost exactly 12 years before the Exxon Valdez accident, President Carter wrote to Congress in March 1977 urging them to take up legislation to better protect against oil tanker accidents, improve oil spill and pollution response, create a liability fund, and require double hulls on oil tankers (Carter, 1977). Ironically, all those provisions that Carter proposed in 1977 finally became law in 1990 as part of the Oil Pollution Act only after the Exxon Valdez accident. Carter's actions were prompted by several oil spills in 1976 (Associated Press, 1977; Scott, 1977) of which 19 involved oil tankers (Anderson &

Whitten, 1977). The most dramatic accident occurred when the *Argo Merchant* ran aground off Nantucket Island in Massachusetts in 1976.

The Argo Merchant split in half, spilling all its 7.5 million gallons of oil into the Atlantic and eventually stretching the oil slick 60 miles long and 27 miles wide (Kifner, 1976, 1977). The ship, registered in Liberia, had previously been involved in 18 accidents around the world since 1964. Caught unaware, the Coast Guard had to bring in a special crew from North Carolina to help contain the spill but the cold waters and winter storms made recovery and salvage extremely difficult. The leaking oil threatened tourism, birds, fishing stocks such as scallops, and spawning grounds for haddock, cod, and flounder. As a result, the local fishing industry around Cape Cod filed a $60 million lawsuit against the owners of the Argo Merchant—a shadowy group of owners in Europe, Liberia and the United States, and insured by a Luxembourg entity (Lydon, 1976).

The Argo Merchant oil spill, described as one of the worst in the U.S. then (Lydon, 1976) prompted Congressional hearings but resulted only in unsuccessful attempts to legislate oil spill safety (Kifner, 1977). “All the authorities [with regard to the oil spill response] have said that they are helpless to do anything about the tanker that split on the Nantucket Shoals,” reports one news account (Lydon, 1976). Oil companies, lobbying against the legislation, have relied on 500 oil tankers registered in Liberia and Panama where costs and safety standards are considerably lower than in the U.S (Anderson & Whitten, 1977). Such foreign flag oil tankers have saved U.S. oil companies as much as $140 million each year in taxes alone. In addition, owners save on U.S.-mandated Coast Guard safety inspections, shipyards and unionized crew as well (Kifner, 1977).

After several unsuccessful attempts at legislating the Carter proposals, Congressional member Walter Jones (D-NC) finally brought a new compromise bill (100th Congress H.R. 1632) to a vote in 1987 (U.S. House of Representatives Hearing, 1987; United Press International, 1987) – a bill that was eventually defeated as well. Jones began his effort to legislate oil spill legislation while he had been a lower ranking member of the Subcommittee on Coast Guard and Navigation and the Merchant Marine Committee (of which the Subcommittee is a part of) when President Carter made his proposals in 1977 (U.S. House of Representatives Hearing, 1977). Over the years, Jones developed the expertise, experience and his stature in Congress rising to become Chair of the Merchant Marine Committee. The defeat of the 1987 bill brought an end to active legislative efforts until the Exxon Valdez accident unfolded and opened an opportunity for Jones and colleagues to emerge again with an almost-ready-to-accept Oil Pollution Act of 1990.

Even though attempts to more effectively regulate oil spill protection and response began early, enforcement and regulations were slowly relegated from the national level to individual states by the 1980's because of intense oil industry lobbying (Ott, 2008). Teams that were trained for rapid response to oil spills were disbanded; the U.S. Coast Guard budget for enforcing national regulations was substantially reduced; a vessel tracking radar system (similar to an air traffic control system) was dismantled; and some companies (BP in particular) drilled through the inside of double hull oil tankers so that the carrying capacity was increased[1]. In Alaska, in particular, state agencies that

[1] As a concession to allow the construction of the Alaska pipeline to Valdez, the state of Alaska passed a law in 1976 to mandate double hulls. Some ships were subsequently built with double hulls but the law was challenged and then nullified by a Federal court in

were prepared to work with oil spills were handicapped by state legislators through reduced budgets and enforcement authority, and responsibility was shifted to the oil industry.

In parallel, outside the legislative realm, the Alaska fishing industry was better preparing themselves to fight the oil industry. Against fishing industry wishes, oil from Alaska's North Slope is piped to Valdez, and then transported via oil tankers through the narrow sounds and channels before arriving at refining and distribution ports on the west coast. Oil tanker operations jeopardized the Alaska waters and fisheries in 2 ways (Ott, 2008). First, the oil tankers ballasts had to be cleaned occasionally and or sometimes leaked, and effluents were carelessly (mostly unregulated or unenforced) dumped into waters around Valdez. Second, the volume of vessel traffic, the challenge of navigating in narrow waters especially in poor weather, aging fleet of oil tankers that lacked safety features all contributed to an increasing number of tanker accidents and spills[2]. The local fishing industry around the Prince William Sound was primarily represented by the Cordova District Fishermen United (CDFU) (Keeble, 1999: 26). In 1987, the CDFU wanted to take on water pollution issues in particular against the oil industry because they feared the water pollution would endanger the aquaculture on which they relied on for a livelihood.

In 1987, the CDFU brought a new member, Fredericka (Riki) Ott, into their board of directors (Ott, 2008). Ott was specifically tasked to monitor and represent the fishing interests to rein in the oil industry's careless operations around Valdez. Ott would come

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1978 (Kizzia, 1999). Double hull ships were then converted into single hulls following the 1978 ruling.

[2] Typically 80 ships a month pass through the Prince William Sound (Keeble, 1999: 25).

to play a role comparable to Lois Gibbs in the Love Canal accident. Ott's father was a student of Aldo Leopold (an early pioneer in the conservation movement); and Ott herself earned several academic degrees including a PhD in marine pollution from the University of Washington; and owned and operated a fishing boat based in Cordova. Her academic preparation immediately made her a formidable opponent against local government regulators and Alyeska, the oil industry's joint venture in the Valdez oil terminal.

Several oil spills formed a prelude to the Exxon Valdez accident. In 1988, the *Glacier Bay* ran aground and spilled 207,000 gallons of oil and in so doing closed fisheries and fouled fishing equipment. Even though the ship's owners refused to pay for cleanup and the spill caused the fishing season to be cancelled at the Cook Inlet, state legislative efforts at reducing further threats were defeated (Postman, 1989). In January 1989, two ships spilled 74,000 gallons of oil into the Valdez port during loading operations and easily overwhelmed the local oil spill response team. The accidents sensitized residents, the oil industry, and local regulators to the problems associated with oil spill response as well as the toxic properties of oil.

Ironically, the night the Exxon Valdez set sail from Valdez, several regulatory, civic and municipal leaders had gathered to discuss poor oil spill response from the recent accidents. Riki Ott spoke and warned of impending disaster: it was not a matter of *if* but of *when* the accident might happen (Bushell & Jones, 2009: 165; Keeble, 1999: 28; Ott, 2008: 38). A Congressional testimony showed an Alaska State Representative had held meetings in Valdez with Alyeska warning of the dangerous situation and specifically developed a scenario in 1977 that illustrated what might happen if a supertanker ran aground on Bligh Reef (Michelle Hahn O'LearyBushell & Jones, 2009: 161). Well after

the accident occurred, here is how Coast Guard Rear Admiral Clyde Robbins recalls what he learned from his experience while serving in Valdez in terms of explaining why the accident occurred (Bushell & Jones, 2009: 110):

> As I review my thoughts about the spill, I have several observations: There's no way in the world we can run ships next to each other in areas where there are hazardous obstacles and other traffic and not eventually have an accident. Danger is part of the equation. It'll never be risk free. Double hulls, positive radar control, and other safety measures can never be 100 percent effective. We need to accept this risk but be prepared to clean up the messes we make. In doing that we need to fully evaluate the measures we undertake to ensure that we aren't doing more damage than good. Because we Americans tend to easily forget, we need to make a special effort to constantly update our plans and ensure that we are ready to employ the most advanced technology in prevention and cleanup when a spill occurs.
>
> It's not a matter of "if," it's a matter of "when."

Valdez and its people

Alaska's entire population is less than 600,000 in 1990, and the density is about 1 person per square mile. The Prince William Sound is bay that opens to the Gulf of Alaska and is almost surrounded by islands and the land mass that make up the Valdez – Cordova Census Area. The city of Valdez, population 4,000, is 300 miles by road to the east of Anchorage. The most important geographical feature in the vicinity is Port Valdez—a body of water that remains ice-free. Valdez developed substantially as a port during the Klondike gold rush and again when copper was discovered in the Copper River, but the city boomed when the Trans-Alaska Pipeline System was being constructed in the 1970's and remains primarily a port for oil transport (Keeble, 1999). Each of the city's booms would bring opportunists seeking work and wealth, but would ebb again between cycles leaving a relatively small group of inhabitants who sought to be closer to nature.

Among the inhabitants of the Prince William Sound are large groups of people living off the abundance of the land and water (Davidson, 1990; Keeble, 1999). Mostly indigenous, but also some newcomers, these people hunt, fish, trap, and gather what they need to sustain themselves. They also have a deep spiritual connection with the land—an intertwining between faith, way of life, and place. Being rich in ores, timber, fish and oil, everyone in Alaska depends on nature but the indigenous peoples, in particular, have an intricate relationship with the entire ecology.

One of the larger operations in Valdez is the Alyeska Pipeline Service Company. Alyeska is the joint venture of the 7 largest oil companies in the world, providing terminal services between the pipeline from North Slope oilfields and the ocean routes for tankers carrying crude oil to (U.S.) west coast ports. In 1990, one quarter of the oil produced and one quarter of the oil consumed in the U.S. came off the Alyeska pipeline in Valdez (Keeble, 1999). Because of the contributions from oil production into the state treasury, there is no tax on individuals' incomes and in addition residents get between $800 and $1000 dividend every year. Oil money flooded the pro-development city of Valdez like no other in Alaska: tax revenue from Alyeska alone contributed $30 of the city's $33 million budget (Wohlforth, 1989c). A smaller group of residents, however, had anti-oil sentiments much more like their Cordova neighbors.

Unlike Valdez, the 2,000 residents in Cordova were primarily vested in fishing. Fishing interests had been pitted against big oil over decades since the North Slopes and pipeline development had been debated (Ott, 2008). The town was also home to a strong fishermen's union, the Cordova District Fishermen United (CDFU). The 600 members of the CDFU comprise more than half of the fishermen in town (Keeble, 1999: 26). The city

is about 80 miles south east of Valdez but Cordova has no access road and accessible only by sea or air. These anti-development residents, through the CDFU, had opposed the construction of the pipeline and proposed instead that oil be piped all the way to Canada.

Accident and response

Even though many were aware of the risks and potential impact of an oil spill, no one was prepared when the Exxon Valdez ran aground in March 1989. The Exxon Valdez ran aground a little after midnight of March 24, 1989 on Bligh Reef and within about half an hour 4 million gallons of crude oil poured into the water. Eventually 10.8 million of the 53 million gallon load is estimated to have escaped (Davidson, 1990; Exxon Valdez Oil Spill Trustees Council, n.d.).

To describe the accident as a "spill" might misrepresent the intensity of the oil gushing from the ruptured oil tanker. Mark Delozier, one of the first U.S. Coast Guard officers who were dispatched to the stricken tanker describes the oil spill as he approached the scene:

> When we were within a mile, we started to smell the hydrocarbons. The closer we got, the more intense it became. As we began our approach, maybe 200 to 300 yards from the ship, we started driving into thick oil. … You could see oil bubbling out from underneath the ship. As it came to the surface it made a gurgling noise, and big bloops would leap right out of the water two to four feet. Then, it would settle down to the surface. The thickness of the oil right up against the ship was probably twelve to eighteen inches. It was intense. (Bushell & Jones, 2009: 29)

The ship's fragility on the reef, too, had frightened many who were concerned that the Exxon Valdez would break apart. The tanker was carrying about 52 million gallons of oil; about 11 million of which would eventually spill out—which means about 75-80% of the load remained contained and itself is a remarkable engineering

accomplishment. Here's how a salvage diver sent to survey the tank hull describes the scene from under the ship illustrating how precarious the situation was:

> Most people don't realize that those tankers are fairly fragile. They have multiple cargo tanks, and if the tanks are loaded wrong, the ship will break itself in half even if it's intact. And with the Exxon Valdez, a lot of the bottom was ripped out, with huge gouges and a lot of the framework broken. Additionally, we had these cargo tanks that were loaded, some of which were leaking oil between each other, so we didn't really know which cargo tanks were doing what. The engineers had to figure out the stress level from all this oil, and unload it in a way that would keep the ship from rolling over into that hole, number one, and from breaking itself in half, number two. (Bushell & Jones, 2009: 34)

The spill had confused everyone. Alyeska Pipeline, the Alaska oil companies' joint venture to provide terminal services, was thought to be responsible for any spill cleanup and response but the accident overwhelmed their managers and staff. Alyeska immediately got Exxon executives involved and Frank Iarossi, president of an Exxon subsidiary responsible for spill response, flew to Valdez to take responsibility from Alyeska. Meanwhile, confused Alyeska managers and Coast Guard officials unfamiliar with responding to such a large magnitude spill gave operators conflicting instructions. Operators were ill prepared, could not locate the correct equipment, and seriously understaffed and underequipped. Alyeska employees would later tell investigators that they never expected to put spill response plans into practice (Epler, 1989d)—a concept Clarke (1990, 1999) refers to as "fantasy documents" because such disaster response plans are symbolic gestures that are never substantiated with operational practice. The first responders to contain the spill arrived at the Exxon Valdez a full 7 hours past the contractual service level agreement. In another moment of confusion, Alyeska officials

decided not to follow established response plans and declined an early boom[3] around the tanker to prevent the oil from spreading because they more feared gasification of the oil might be more dangerous. In the moment of the situation, immediate staff and managers were confused about the situation, did not have adequate plans, plans were not executed and distant managers second guessed local decisions.

Later that day more confusion ensued. Alaska Governor Cowper came to an initial meeting suitably oiled from having visited the stranded tanker just before and began making decisions, answering questions from press and angry residents (Bushell & Jones, 2009). Cowper took charge because until then no one had responded to containing or cleaning up oil in the water. Exxon, who had been given permission by the Coast Guard, had begun making initial plans to use a dispersant to break up the oil but those plans were summarily prohibited by the Coast Guard just as Iarossi and Cowper arrived at the meeting. [4] The confusion and disorganized decision-making process for combating the spreading oil spill continued for a few more days, and then Cowper and the Alaska Department of Environmental Conservation (ADEC) helped organize the local fishing community a "mosquito fleet" (Keeble, 1999: 90) armada of fishing vessels (and a ferry) to pick up the oil by hand. Unfortunately, these early days that were occupied by unclear leadership and organizational responsibilities coincided with perfect weather for cleanup after which storms whipped and spread the leaking oil considerably further into hatcheries and more remote islands.

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[3] Equipment (a chain of floating plastic containers) that is used to restrain the oil from spreading

[4] The use of dispersant is still controversial, and a source of much uncertainty in this case. Its use is conditioned by the U.S. Coast Guard who may permit the use on a situation-by-situation basis.

Confusion existed not only between the organizations involved but also within organizations. The Coast Guard, for example, had an unclear mandate in terms of their role in oil spill response. Vice Admiral Clyde Robbins who was sent to Valdez as the Federal On-Scene Coordinator firmly describes the Coast Guard's role as a coordinator and not to take charge:

> I would like to make it very clear what the Coast Guard's responsibility is when a spill occurs. The Coast Guard supervises the cleanup. The spiller, in this case Exxon, was responsible for the actual work involved in the cleanup.
>
> Although there are some limits of liability on the part of the spiller, Exxon assumed the total financial responsibility. The FOSC is a coordinator among the many interests. The fact that he/she is a "coordinator" rather than a "commander" is a weakness in the system that is too complicated to discuss in this short interview. Generally, I tried to get consensus but acted as a "commander" if such consensus wasn't forthcoming in a timely fashion. (Bushell & Jones, 2009: 106)

And yet, his boss Admiral Paul Yost claimed a mandate from President George H.W. Bush to take charge of the cleanup response. Yost claims a radically different idea of the Coast Guard role as he explains to the leadership meeting in Valdez:

> The President has sent me here to clean up this oil spill and I'm going to do everything I can to do it. I know that within this auditorium there are a lot of different ideas of how it should be done. I'm going to listen to everybody, but I'm not going to listen very long because I've got to get to work. Once I listen to everybody, I'm going to make some decisions. When I make these decisions I'm going to give orders to all of you out there. When I give these orders I want to see a big cloud of dust and under that dust I want to see you working as hard as you can to do exactly what I've told you to do.

In addition to the challenges in managing the spill response, conditions for containing the oil were difficult. A U.S. Coast Guard Admiral explained that his first impression of the Alyeska-Exxon operation and equipment were no better than his personal experience in fighting oil spills 15 years earlier—there had been no

improvements in oil spill containment equipment and technology (Bushell & Jones, 2009: 107). In addition, the water was cold but oil degrades better in warm water; heating the water for cleaning the beaches was ineffective; the winter conditions made it difficult to navigate boats and equipment; the wrong equipment was sent and often two pieces of booms could not be connected; and it was nearly impossible to get equipment onto remote island beaches to perform land-based cleanup. The EPA "fast-tracked" the approval of an Exxon cleaning agent, Corexit, but the chemical still remained slightly toxic and testing on beaches showed limited success (Bushell & Jones, 2009: 104). When a French bioremediation chemical was found to be effective, there were insufficient quantities and Exxon had to pay additional fees for the French factory to remain open during that summer to manufacture enough Inipol, the chemical agent that promotes bioremediation of oil.

The cleanup, however, had many aspects that exhibited residents' courage and initiative but also Exxon's negligence, malpractice, and in some cases irresponsibility. Numerous fishermen and residents, who were tired of waiting for official calls for help, decided to act independently even at the risk of violating the Coast Guard restriction to remain at port (Bushell & Jones, 2009). Without proper equipment or training, these fishermen and residents used their initiative with homemade oil booms and skimming devices and some used buckets to retrieve the spilled oil. Others used nets to capture oiled or injured birds. The rescue of otters, however, was severely restricted for several because the U.S. Department of Fish and Game insisted on proper permits, cages and care for otters.

In the end, perhaps attempts to cleanup the oil were futile. Oil cannot be effectively removed from water. Rear Admiral Robbins explains it best: "Once you have a spill in the water you're limited in what you can do, but no one wanted to hear that. They wanted to see action and progress!" (Bushell & Jones, 2009: 107).

One surprising finding is that the Exxon Valdez accident was never formally declared a national disaster. The President of the U.S. has an administrative tool to declare an event as a disaster in order to provide for temporary relief to citizens who have been severely affected by disasters. Even though the Love Canal accident resulted in two separate disaster declarations, no declaration was ever made during the Exxon Valdez accident (U.S. Federal Emergency Management Administration (FEMA), n.d.). A disaster declaration request was informally made by the Mayor of Valdez (Bushell & Jones, 2009: 155), but only official requests from a state governor is valid. There is no evidence the Governor of Alaska neither made such a request nor, if one was made, that the request was denied.

Battles

Several battles followed the grounding and initial spill response. One of the first battles emerged over the implications and how to respond in containing and cleaning up the oil. The use of chemical dispersants was widely disputed. Exxon wanted to use the dispersants since the initial days, and the Coast Guard position vacillated but they finally compromised to allow Exxon to try the chemicals. Dispersants help remove oil from the surface, and in so doing improves aesthetics (thus favored by Exxon) and reduces oiling marine birds and mammals. Millions of migratory birds would be flying into the Sound within weeks. Fishermen, however, were adamant that dispersants merely coagulated the

oil that then sunk to the water bed but would never be properly remediated hence continued to pose a hazard to marine life—including fish and hatcheries on which fishermen depended on. Others wanted to try explosives, and that proved ineffective in the harsh weather and wave action. Biologists then weighed in with a proposed priority list of the wildlife and marine life that was most important to protect (Medred & Bernton, 1989). Dispersants were dropped from further use after results from several tests on the oil slick could not be verified (Wohlforth, 1989a).

The legislative battles were influenced in part by the wide publicity and shared pain of residents around the U.S. Even though many people had never been to Alaska they could nevertheless feel the pain of having lost the aesthetics, the spirit of wilderness, the loss of innocence that accompanied the damaged waters and wildlife (Campbell, 1989a). Many felt angry: "angry at the despoiling of the land, angry at empty oil company promises, angry that it could also happen somewhere else, angry at rising gasoline prices and just plain angry," reporter Campbell writes. A grassroots boycott of Exxon gasoline had begun to spread, and many were cutting their Exxon credit cards. Many felt as though Exxon could have done more but "blew it." People were talking about the oil spill everywhere: "We talk about it every morning at work; we what we saw on TV the night before. Alaska is important to us," explains a person who was interviewed.

Beyond the widespread anger, sadness and despair experienced across the U.S., the sentiments were not lost on politicians working on legislation. State legislators who defeated a bill the year earlier were called out by the media and civic groups. The same legislators who had turned down that bill were now the primary sponsors of a new but

similar bill because they felt cheated (Postman, 1989). As with many Alaskan residents, these politicians had campaigns sponsored by oil lobbyists and companies, but many now had grown to question the benefits of oil exploration. During U.S. Congressional hearings in Valdez, Congressmen Miller (D-CA) and Durbin (D-IL) scolded Alyeska officials and warned that no more oil development would be seriously considered because the public's trust had been violated (Epler, 1989c). Miller warns: "I'll be dammed if we're going to accept the assurances of the past." So too in the wider Congress as well, members whose prior positions were closely aligned with oil interests began to pull towards stronger oil spill legislation. The Oil Pollution Act (in 1990) was passed with an overwhelming majority (376-Yes, 37-No, 18-Absent; Source: Library of Congress, THOMAS database) whereas prior attempts had all failed because the oil industry promises to remain safe were questioned—politicians did not want to be misled again.

Guadalupe Dunes

Diluent had begun leaking in the Unocal's Guadalupe Dunes oil field beginning in 1954 (Wall Street Journal, 1994a). Diluent is a petroleum-based chemical used to dilute crude oil in the ground in order to make it flow more easily. There are no clear accounts for when the oil leaks became problematic for anyone but government records show investigations as early as 1982 (Beamish, 2002). Employees reported later that oil leaks were prevalent throughout the oil field—that it was normal and to be expected. One report showed 194 different leaks (San Francisco Chronicle, 1994a). The oil would

collect into puddles sometimes more than 5 feet deep, and from there oil was later found in the nearby river and ocean (Martin, 1994).

Guadalupe, the place, is a small city of about 6,000 residents set off from the larger San Luis Obispo to the north, and Santa Barbara 60 miles to the south. The oilfield takes up about 4 square miles on the oceanfront. Sparsely populated, the space around the oilfield consists primarily of recreational area—beaches, dunes, and small rivers and streams. The oilfield is surrounded by Guadalupe-Nipomo Dunes, the largest uninterrupted coastal dunes in the U.S., and home to 12 endangered plant and animal species (Beamish, 2002: 23). The city of Guadalupe, three miles away, is the closest population and about 100,000 people live within 30 miles of the area. The extended area within the county consists of rural agriculture, and increasingly giving way to a haven for those who want to escape urban areas to be closer to nature. The Guadalupe Dunes area (outside the oilfields), like Valdez and Cordova near the Exxon Valdez accident, is sparsely populated but still accessible to recreational users.

Joggers, surfers and beachcombers were among the first to notice the stench in the late 1980's (Bellisle, 1999), and then increasingly discolored water became the reason for complaints as well. At one point, an oil slick stretched more than 4 miles long along the California coast (Paddock, 1994). Several government agencies' actions offered little consolation to the public complaints and investigations did not lead to any actions. Unocal systematically denied allegations that the oil even came from their operations[5]. Unocal conducted the oil identification tests themselves and misrepresented the results to investigators, claiming the oil came from an offshore tanker (Paddock, 1994).

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[5] Oil from various parts of the world have unique chemical composition and thus allow investigators to identify the source of an oil.

Where did the oil come from? As part of the Guadalupe Dunes operations, Unocal piped diluent from another one of their nearby Santa Maria oilfields. The crude oil from the ground in the area has a very thick viscosity and does not by itself flow very well along pipes. Unocal used diluent from Santa Maria to thin out the crude oil at Guadalupe and other oilfields. Diluent, for Unocal, was relatively cheap but mostly used because it was easy to obtain. Over time, the value of diluent rose and many other companies suspended the use of diluent, opting instead for water and or steam as a thinner but Unocal's Guadalupe operators persisted. These pipelines carrying diluent sprung leaks, and while seemingly minor, spread toxic effects almost everywhere within the Guadalupe operation and the surrounding river and ocean.

Diluent use began in the 1950's (Editors, 1994) and investigators believe diluent began leaking well before 1985-86 (Beamish, 2002). In order to get criminal charges dropped by the San Luis Obispo County District Attorney, Unocal acknowledged that 8.5 million gallons of diluent leaked out (Einstein, 1994; San Francisco Chronicle, 1994a). In the ensuing civil lawsuit filed by the California Attorney General, the company paid out $43.8 million in settlement, and agreed to bear all cleanup costs (San Francisco Chronicle, 1998). By 1999, Unocal estimated the size of the spill to be about 20 million gallons (Bellisle, 1999), about twice the volume of oil spilled by the *Exxon Valdez*.

Diluent is a carcinogen, i.e., it causes cancers in humans. Diluent found at Guadalupe is refined from crude oil but contains various carcinogenic chemicals: benzene, toluene, xylene, and ethylbenzene (Beamish, 2002: 22; San Francisco Chronicle, 1994b). These underlying chemicals are also known collectively as BTEX. BTEX, even at levels lower than those established to be safe for the public, can cause

higher incidents of cancer, for example among car mechanics because they are exposed for longer periods of time (Badjagbo, et al., 2010; Doyle, 1994). Increased risk of cancer has also been detected among volunteers who merely helped to clean oiled birds from an oil spill off Spain (Laffon, et al., 2006).

Legal proceedings against Unocal began with a "false start" in 1990. That year, the first of two whistleblowers inside Unocal come forward. The first whistleblower, who had worked in the Guadalupe field for 12 years, called state officials (California Fish and Game) in February 1990 to inform them that diluent spills did originate from the Guadalupe operations. The whistleblower had risen through the ranks at the oilfield and was well aware that supervisors and managers had suppressed formal reports and complaints about the leaks. Fearing for his job but still moved by a personal conscience, the whistleblower phoned officials but was overheard by his secretary. The secretary, angry and fearful, then came yelling into the whistleblower's office: "What are you doing! We will all lose our jobs!" The whistleblower was well aware that many other jobs were at risk but he later described his hope that the leaks would be isolated and stopped without causing further damage. This whistleblower's actions, however, was not sufficient for state agents to take any more actions but the whistleblower was isolated and ostracized by peers.

Investigators had always been hindered in getting sufficient evidence. So while the first whistleblower's actions reinforced investigators suspicions, there was insufficient evidence that Unocal was negligent. However, a second whistleblower came forward in July 1992 with considerably more damaging information.

The second Unocal whistleblower, John Smith, came forward with evidence that showed the leaks had begun in the 1970's (Paddock, 1994). In 1986, Smith proposed an easy way to collect leaked diluent for re-use but his foreman not only rejected the idea but also explains: "We don't want anybody to know this is here." Smith was on disability leave when he watched a TV news broadcast that showed a supervisor lying about the extent of the leaks (Beamish, 2002: 52). The whistleblower led investigators to leaks considerably further inland from the leaks they had been investigating. Most important, he led investigators to plume maps, showing where diluent had spread, and logs of leaks that were not reported in official records. The tip led investigators to raid a Unocal regional administrative office outside the Guadalupe field that investigators would never have found. Investigators found 50,000 documents indicating more than 200 leaks throughout the 3,000 acre oilfield.

State officials had always been stymied by the unclear regulations with respect to stopping oil leaks. California officials had approached the U.S. Coast Guard to use the newly enacted Oil Pollution Act (from the Exxon Valdez accident) but the Coast Guard was unsure that the Guadalupe situation fit the definition of an oil spill. The law regarded an oil spill as something that resembled the Exxon Valdez—a spill at sea, large amounts of oil originating at a single source and putting human and wildlife at risk, and an urgent situation that required immediate attention. The Guadalupe situation is not at all like Exxon Valdez, and the Coast Guard declined to act, that is until the second whistleblower's tip led to evidence documenting the vast extent of the spill. In addition, a heavy rainstorm that winter of 1993 raised the water table considerably so that diluent and oil overflowed into the ocean. The diluent that had previously been hidden from view

became very obvious, coating beaches and ocean surface with a sheen. Armed with the Oil Pollution Act and in concert with state officials, the U.S. Coast Guard forced Unocal to take immediate steps to stop the oil leaks.

By late 1993, the San Luis Obispo County District Attorney, acting on behalf of state officials, filed criminal charges against several Unocal employees. A judge, however, ruled that the statute of limitations had expired and the case was dismissed in January 1994 (Daily Breeze, 1994a). Unrelenting, the Attorney General re-filed misdemeanor charges in March against Unocal for failing to report the oil leaks (Editors, 1994). Unocal settled out of court days afterwards and agreed to pay a $1.5 million settlement to have all the misdemeanor charges against employees dropped (Beamish, 2002: 25).

In a marked departure from the other cases studied, Unocal pledged to restore the damaged dunes. At the settlement of the misdemeanors Unocal did apologize for spilling 8.5 million gallons of diluent (Daily Breeze, 1994b; San Jose Mercury, 1994) but this volume would be revised upwards later. Unocal repeated claims there was no institutional cover-up but admitted there were lapses in operational procedures. A Unocal executive explained that employees kept the spills secret in order to protect their jobs for fear the oilfield would be shutdown. The executive also pledged Unocal to spend “however millions of dollars it takes to clean up the very serious condition.” What is remarkable about this case is that Unocal made a genuine effort to remediate and restore the dunes

underneath the oilfield. The settlement and a "no contest" plea[6] appear to be that threshold in a change in Unocal behavior.

The State of California, however, was not finished. In yet another twist in legal maneuvering, the Attorney General then filed a civil lawsuit against Unocal after the criminal settlement occurred (San Francisco Chronicle, 1994b). The state alleged that Unocal had not lived up to its responsibility to self-report the diluent leaks. Unocal admitted: "What occurred at the Guadalupe field should never have happened. …Our cleanup program will do what's needed to set things right to the satisfaction of the Central Coast community and its public agencies." A day after the state action a non-profit group, the Surfers Environmental Alliance, filed a comparable suit (Martin, 1994) but they later dropped the suit in favor of cooperating with the California Attorney General's civil suit.

After 4 years of negotiation and closer inspection of the extent to the diluent spill during the remediation, Unocal settled the suit with a $43.8 million payment to California and a promise to pay for all cleanup costs (San Francisco Chronicle, 1998). By 1999, Unocal estimated the volume of the oil spill to be about 20 million gallons of diluent (Bellisle, 1999), easily making the spill the largest in the U.S. then

Non-event

The Guadalupe oil leak did not generate much media interest until criminal and then civil lawsuits became imminent in 1993-94. Reporters lamented that their readers, and by extension editors and publishers, were not interested in the stories (Beamish,

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[6] A plea of "no contest" is not a public admission of guilt but is treated as a guilty plea for sentencing purposes.

2002: 13, 25). News stories were repeated in smaller local newspapers around the state largely based on news wire services, and there were no investigative reporters assigned to the event as there were in Love Canal and Exxon Valdez accidents. Unlike the other cases, there were no protesters and little drama, if any. No one was "hurt" or injured. Compared to the other cases studied, there were no reports of human lives that were substantially affected. Although some news referred to dead sea lions and seals (Associated Press, 1992; San Jose Mercury, 1992), there appears to be insufficient concern among the public to have prompted any collective action. One common claim among the public, however, was that the beaches around the area had become unattractive from the discolored sand, stench and oily water.

Where the news in the other cases featured many human interest stories that showed the lives of individuals that were affected, Guadalupe stories mostly show a cool and objective side to complaints that were lodged with government officials. The stories depict how Unocal, government agencies and attorneys acted and reacted but little in the way of showing the public reaction is available from the news.

The lack of news of public reaction to the Guadalupe oil spill is partly reflected in how the population is divided on the issue. Some area residents blame Unocal: "Unocal has preferred to be dishonest instead of cleaning things up and allowing us to get on with our lives," and claim the news of contamination has ruined property values and the tourist trade (Martin, 1996). Yet others think the extended fight against Unocal may have more negative consequences:

> I don't think the fighting is doing anybody any good. … [the oil leak is] kind of like a snake – if you leave it alone it might not bother you. But if you start messing with it, you could get more than you bargained for. (Avila Beach resident in Martin, 1996)

The unintended consequence the resident refers to is a concern that the cleanup and remediation of the oil would harm the environment and wildlife even more that it already has. Cleanup and removing beach sand, for example, prevents endangered species from resting and nesting in the area. Yet other residents believe the publicity has more harmed the community than the spill itself:

> The local reviews are mixed, but I personally think they've been a good corporate neighbor. … The spill itself hasn't affected us that much -- there really isn't any health hazard. More than anything else, it's the publicity that's doing us the most damage (Restaurant manager in Martin, 1996)

> No one around here even knew what was going on until they started digging the pit. I just don't think it's as bad as some people have been making it out to be. The company is doing pretty good – they're covering their bases. (Hotel employee in Martin, 1996)

The Guadalupe oil leak actually came to have a positive reaction among local businesses shortly after cleanup operations began. The local economy got a substantial boost of $19 million in business activity as Unocal hired local contractors to perform cleanup and associated operations (Miller, 1995). Local companies even won contracts to film the cleanup operations at various stages from a helicopter at Unocal expense.

In addition, the accident at Guadalupe Dunes did not create any lasting impact when we consider the impact on Unocal's stock prices as the news emerged[7]. On March 17, 1994, the company announced a $5 million charge for cleanup expenses at the Guadalupe field and associated criminal trials for a few executives (Wall Street Journal, 1994b). On March 24 the company amended the estimate and announced that it was

[7] This paragraph is not intended to show a quantitative event analysis of stock price movement but merely to show how the press and analysts reacted.

going to take a $25 million charge against profits. Stock analysts reported that they did not expect to be any more depressed because of the Guadalupe exposure (Adelson, 1994). A little later, on April 26, investors were again reminded of the company's problems with Guadalupe but because Unocal's earning were slightly better than its competitors, the stock price actually rose to $28.375 as investors shrugged off the Guadalupe accident (Sullivan, 1994). When the fiscal year came to an end, more cleanup charges were announced from the Guadalupe oilfield as well as two other locations (in Texas and another undisclosed western state) but stock analysts and the stock market "showed little reaction to the charges" and trading closed at $26.25 (Holden, 1994).

Ultimately, the Guadalupe Dunes accident amounts to no significant institutional change. Unocal did close the Guadalupe oilfield operations in 1994 (Einstein, 1994). Finally, Unocal was acquired by Chevron Corporation in 2005 after a controversial attempt by a Chinese company to acquire the company was denied by Congress (Baker, 2005). No new laws were created, and ultimately many residents believe that the laws worked the way they should have (Leavenworth, 2003). A Sierra Club attorney, who was among the harshest Unocal critics, remarks: "The transformation of the Guadalupe Dunes is nothing less than miraculous" (Einstein, 1994).

Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980

A variety of sources cite the accident at Love Canal as the primary motivation for Congress to enact the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (Grad, 1982; Oswald & Schipani, 1992; Stafford, 1981). The

law addresses abandoned waste sites, and is sometimes also known as “Superfund” program (U.S. Environmental Protection Agency - Superfund, n.d.). This section describes the provisions of the law that specifically arose from the accident.

The CERCLA law is a significant departure from other laws in many ways. Most importantly, the law sets the precedence in a fundamentally radical shift to a legal doctrine known as “polluter pays” whereby a polluter rather than a property owner or the state is responsible for cleaning up environmental damages. There is extensive liability and broadly defines who responsible polluters are. Finally, the law establishes a trust fund to pay for clean up costs when responsible parties are unable to or cannot be identified.

Polluter pays

The polluter pays doctrine is legal philosophy that assigns the responsibility for environmental damages to the party that causes the pollution. The issue of who is responsible for pollution came to the fore during the Love Canal accident, and the CERCLA law sets this polluter pays precedence in jurisprudence.

We imagine that the idea of private property allows a property owner to use property as he or she sees best and western civilization holds dearly to the notion that private property is the best means for development and in particular free market capitalism. However, as early as the mid-19th century, neighbors complained about noise and nuisance from railways and factories and more importantly, the courts began deciding in favor of an economic test to establish whether landowners or neighbors would prevail (Horwitz, 1977). Courts sided with polluters if they believed it served the greater good of society, i.e., social benefits outweigh the costs to a few individual citizens

who are harmed. But, the precedence eventually began to restrain chemical producers in the late 19th century as abatement costs rose higher than the benefits. As modern nuisances[8] increased with development, many municipalities and states enacted local statutes to better constrain environmental hazards such as air, water and noise pollution (Szasz, 1994: 124-125).

The trend towards increased constraint of pollution, however, began to erode with the 1939 Restatement of Torts (Farber, 2005; Humbach, 1993). In a landmark case settled in 1970, *Boomer vs. Atlantic Cement*, the Courts ruled that a "balance of utility" or equity must be considered (Lewin, 1990). Boomer and other neighbors complained that Atlantic Cement[9] produced so much air pollution, dust and noise that it restrained their businesses and quality of life (Farber, 2005). Boomer requested an injunction to stop Atlantic Cement but the Courts decided that an injunction would unfairly put Atlantic out of business and so only awarded damages to Boomer and neighbors.

In essence, the conditions prior to Love Canal suggest that the legal system favored or at least tolerated environmental pollution because of the benefits to society. More important, the legal system had only considered the ramification on *current* owners of property. Pollution, to the legal system, consisted of the actions of ongoing industrial or commercial operations. There was no consideration for previous owners or the owners

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[8] Legally, a nuisance is an unreasonable and substantial interference with the use of land (Farber, 2005: 11). A private nuisance occurs when an individual use of land is harmed. A public nuisance, however, occurs when public health, safety, peace, comfort or convenience is infringed (Humbach, 1993: 12).

[9] Atlantic Cement is a massive operation with 400 workers on more than 3000 acres; and contributes more than half of the city's property taxes and thus almost alone supports funding for local schools.

of abandoned waste sites, for example. The Love Canal accident would challenge this doctrine of "balance of utilities."

Although the principle that a producer should internalize the cost of pollution into a product had appeared earlier, the principle first appears explicitly in law in the provisions provided by CERCLA (Larson, 2005). The concept arose in the 1960's when environmental economists realized that nations and firms could "export" pollution by ignoring or shifting the burden for externalities, in particular environmental degradation, to a consumer or the nation in which the consumer lives (Gaines, 1991). As a result, the Organization for Economic Cooperation and Development (OECD) articulated the concept of polluter pays in 1972 to encourage producers to capture the costs of environmental damage rather than export it. These economists initially framed the idea as a way to promote increased free trade globally by prohibiting nations from subsidizing producers' pollution activities. The OECD concept is merely a philosophy about economics and the internalization of costs. Since then however, the environmental movement and policy makers have capitalized the ideas in various arenas outside of economics.

In CERCLA, the costs of cleaning up wastes and contamination are explicitly assigned to parties who as responsible, i.e., the polluter, as opposed to the current owners of property or the State. In contrast to the OECD economic perspective, the polluter pays doctrine is captured in CERCLA as the assignment of liability.

One of the important provisions in CERCLA addresses liability for abandoned waste sites. The term "abandoned" refers to waste sites that are no longer in active operation. One of the concerns that arose in Love Canal is that the Niagara School Board

had purchased (for $1) land that was previously a waste site used by Hooker Chemical. The combination of Hooker leaving the waste site to the School Board's care and responsibility as well as the School's lack of knowledge of toxic wastes complicated the current legal system's ability to assign the current owner, the School Board, as a responsible party for remediation or damages to Love Canal residents. The legal definitions of nuisance could not be applied to a School, who technically was not infringing on neighbors or the public, nor could liability be assigned to Hooker because they too had shifted ownership to the School. As a direct result of Love Canal residents desire to find a responsible party, Congress took up the discussions and placed the liability provisions into CERCLA.

Extensive liability

When a waste site must be remediated, the U.S. EPA uses the strict liability statutes in CERCLA to force those who contributed the most wastes to the site to pay damages (Colten & Skinner, 1996: 3-5). CERCLA has no statute of limitations—a unique aspect—that emerged from the situation at Love Canal where hazardous chemicals were deposited decades earlier. These initially liable parties subsequently use the same legal doctrine to pursue ever smaller contributors until *all* parties (specifically all the "potentially responsible parties" defined in the statutes), including those with incidental association with the waste site in the historical past, have been identified and forced to share a portion of the total liabilities. The law makes parties retroactively responsible for past acts of pollution. These potentially responsible parties may include small business owners (e.g., a pizza restaurant) who used a waste disposal company who deposited wastes (e.g., pizza scraps) into the waste site.

Superfund trust fund

A trust fund was established by Congress as part of CERCLA to assist with paying for clean up activities. The law compels those responsible to perform clean up for contamination and environmental damage, but lawmakers specifically recognized that liable parties may not be identified with abandoned waste sites. The trust fund is funded through a tax on companies that use crude oil (through 1985) and certain hazardous chemicals (U.S. House of Representatives Bill Summary and Status, 1980). As much as $1.6 billion was collected for the trust fund (U.S. Environmental Protection Agency - CERCLA, n.d.) but the fund is currently empty because successive Congresses have not appropriated sufficient taxes for the program.

Oil Pollution Act (OPA) of 1990

The creation of the Oil Pollution Act (OPA) of 1990 is widely attributed to the *Exxon Valdez* accident (Birkland, 1998b; Collin, 2006; Edelman, 1990; Ott, 2008: 48; U.S. Environmental Protection Agency - Oil Pollution Act, n.d.). The OPA is the primary regulatory framework for protecting against marine oil pollution, and is still the only major law defining and enforcing such environmental protection (Murchison, 2011). Before 1970, the only laws that existed regulated oil spills on land and there were no laws that recognized the risks associated neither with transporting oil over the oceans nor with offshore oil drilling accidents. In 1970 the only minor law that dealt with oil pollution was the Federal Water Quality Improvement Act. To date, there have been no major changes to marine oil pollution regulations since the OPA (Murchison, 2011).

The major provisions of the law provide for mandating liability and compensation for oil spills; marine safety; oil spill response; and recognizes that states (i.e., non-Federal governments) and other regulations (e.g., the Clean Water Act) may supersede specific regulations.

The law clearly defines who is liable and the extent of that liability for oil pollution in marine environments. Liability for oil spills rests on ship owners, and more importantly it is not the owner of the oil who is responsible (Edelman, 1990). Although there are limits to the liability, a liable party has unlimited risk in cases of gross negligence, willful neglect, or when safety and regulatory procedures are violated. Furthermore, the Federal and state governments may recover any costs associated with oil spill response and clean up, use of natural resources, and economic losses from those liable. These liability provisions are a direct consequence of the Exxon Valdez accident.

One of the most significant aspects of the Oil Pollution Act is a pooled compensation fund to pay for damages. The fund operates much like the CERCLA "Superfund" described above. The Oil Spill Liability Trust Fund assesses 5 cents per barrel on the oil industry the U.S. Coast Guard is permitted to draw on these funds to pay for damages or clean up when no specific polluter is found liable (U.S. Coast Guard - National Pollution Funds Center, n.d.). Assessments are capped when the fund reaches $2.7 billion but assessments resume when the balance drops below $2 billion.

Marine safety provisions in the law mandates double hulls for all ships and requires the U.S. Coast Guard to implement a (more thorough) vessel navigation system. The state of Alaska had earlier, in 1976, enacted a state law to mandate oil tankers have double hulls for added protection against oil spills. However, the law was challenged by

the oil industry and was overturned by a Federal court in 1978. The protection of double hulls has been controversial but the U.S. Coast Guard study confirms that the Exxon Valdez, specifically, would have benefited from a double hull and leaked considerably less oil as a result (Kizzia, 1999). Furthermore, the Coast Guard had over the years preceding the accident had ever lower budgets to establish and maintain a vessel navigation system to monitor the paths taken by ships in narrow waters. Criticism that arose during the Exxon Valdez spill response pointed to this weakness, and lawmakers added this safety feature into the law as well. In addition, the Coast Guard had been lax with establishing clear guidelines and enforcement for a minimum crew size and rest periods for crew members—this too was added into the law as a result of the Exxon Valdez accident (Ott, 2008).

Oil spill response during the Exxon Valdez accident was clearly deficient by most accounts (Davidson, 1990; Keeble, 1999), and arguably still is today (Fountain, 2010). Earlier accidents and in particular the Argo Merchant grounding, described earlier, had demonstrated the inadequacy of oil spill response. While the Federal government (through the U.S. Coast Guard) had limited budgets and an ambiguous mandate to combat oil spills, and the oil industry took advantage to offer an "industry" solution. The industry sought to be responsible for fighting oil spills caused by their operations. In so doing, the industry saved themselves additional assessments to fund government response thereby raising profit margins. Many states had considerably stronger standards than the Federal government and thus always defended state laws for fear that a single Federal standard would dilute states efforts to control the industry. As a result, the OPA specifically allows for stronger state standards for oil spill pollution and response. The

OPA only mandates that oil companies and related terminal operators have explicit oil response plans and coordinated activities with state and Federal agencies. This provision in the OPA is only a slight improvement over the pre-Exxon Valdez accident conditions where the industry did not have to coordinate plans and activities with regulators.

The OPA also has some minor provisions that prohibit, for example, specific oil tankers from entering the Prince William Sound. The law (Section 5007) prohibits any oil tanker that had previously spilled more than one million gallons of oil from entering the protected waters. Exxon challenged the provision because the law essentially prohibited a single ship, the Valdez, from operating in Alaska and the U.S. Constitution specifically prohibits laws from punishing a single perpetrator[10] (Carrigan, 2000). A Federal court judge finally dismissed Exxon's charges because the Coast Guard had, by 2002, prohibited 18 ships from Prince William Sound (Associated Press, 2002; Murchison, 2011).

[10] Such a provision is technically known as a bill or writ of attainder

CHAPTER 5. FINDINGS – COMPELLING MEANING IN EVENTS

Preface

This chapter presents findings related to the first major research question: Why do some events lead to significant institutional change while other comparable events do not. The thrust of the chapter is to show that the events differ on the imbued meanings, and that those meanings that are more "compelling" lead to change. I shall show what these meanings are, and present a process for how these meanings are constructed from actors' claims.

Overview

I first present a condensed version of the findings in terms of a theorized story. One or more residents make claims about a condition; typically they assert to others that an environmental accident occurred and that harmful substances have affected themselves or others in the neighborhood. These residents claim that a disruption in their lives has occurred in various ways and they want the undesirable condition removed. These claims are made to neighboring residents to mobilize support and also to others whom they believe can help alleviate the condition. When the claims for alleviation remain unsatisfied, one or more individuals become dedicated to make restoring order (i.e., to seek change) a priority over other tasks. These interested individuals organize others in the neighborhood and make collective efforts to lobby for change. The change effort

subsequently gains wider media legitimacy as a controversy arises between change proponents, e.g., residents, and opponents, typically the government.

Change proponents, however, eventually include both the initial residents as well as a professional policy entrepreneur, who selects the event merely as *cause célèbre* to match an existing desire to see specific change enacted. The residents and their sympathizers play the role of a problem provider; they frame their claims in a particular way to appeal to the policy entrepreneur. The policy entrepreneur selects this specific event because the event is the most attractive in terms of his or her interests; the policy entrepreneur and those with similar interests play the role of a solution provider and make further claims to enact the specific changes that fit their interests.

Together, change opponents and proponents, now a loose alliance among problem and solution providers, debate and make additional claims (and counterclaims) that further imbue the event with meaning. These claims form a pattern that differentiates between Love Canal that leads to change and Legler that does not. The claims include constructions of new logic and cause-and-effect relationships—a new idea of what the event means. These new meanings finally become the mechanisms that compel the creation of a new law and hence significant institutional change.

Several subsections follow to reveal the findings more fully. I next show the similarities and superficial differences between the events, and then show the claims made and the activities among key actors as well as the shared meanings that emerge that lead to institutional change.

Similarities and superficial differences in Love Canal and Legler

The occurrences at Love Canal and Legler are similar in many ways and quite comparable in terms of physical characteristics and conditions. Both occurrences manifest as toxic chemicals that leach from waste disposal sites into the groundwater that spreads contaminants to the neighborhood. A health emergency at Love Canal was declared in August 1978, barely months before a similar declaration is made in Legler in November. In each case, a large industrial company is associated with the occurrence, although the Glidden Corporation in the Legler case is exonerated quite early in the unfolding event. Similar organic chemicals, toxins and dioxins were found in both cases although Love Canal has a substantially large volume of chemicals that was thought to have escaped. Residents at both locations organized themselves relatively quickly as concern spread. Several groups formed at Love Canal ostensibly because there is a larger community there compared to Legler where only one group formed. And, the emotions experienced at both locations are largely similar (Edelstein, 1988). These similarities are summarized in **Error! Reference source not found.**.

There are substantial differences between Love Canal and Legler that form the essence of this study. Superficial differences, i.e., those not thought to have significantly influenced the outcome in terms of institutional change, are briefly outlined here, and the more complex differences that are theorized as factors leading to institutional change are discussed in the following sections.

National media coverage began on Love Canal on the day the health declaration was announced but Legler coverage began almost three months after the declaration and only mentioned in passing. More complete coverage of Legler began 16 months after the

health warning was declared. The geography and demography also differ: Legler is a less-populated rural site whereas Love Canal is much more densely populated suburban and semi-industrial area. Legler residents are unequally divided between longtime residents who sought to escape New York urbanity and young families seeking less expensive homes. Love Canal residents are primarily workers employed at nearby plants. **Error! Reference source not found.** summarizes these differences.

Disrupted life

One set of actors' claims and claims-making activities revolve around a theme labeled *disrupted life*. Disrupted life is defined as a condition in which one interprets a situation where an institution that is important to social life is blocked.

Disrupted life is a condition that occurs when there is a mismatch or misalignment between reality and one's expectations. Disrupted life is recognized in two forms in this study: *break in routines* and *besieged by wastes*.

Break in routines. First, a break in everyday routines blocks individuals from enjoying full and meaningful lives. The break is not a simple, single interruption but persists over a long period of time and the individuals do not find adaptations or alternatives. Disrupted life, therefore, occurs in the form of a break in routines when (a) the interruption persists over a long period; (b) the broken routines have no alternatives and (c) one cannot adapt to the broken routine.

A break in routines is a common claim among the residents in Love Canal and Legler. These residents substantially modified their routine daily lives as the event

unfolded. For example, Love Canal residents who were pregnant and families with children under 2 years were ordered to evacuate their homes. A week after that order, New York State announced that 239 families living closest to the former toxic landfill were to be relocated. More importantly, some routine chores that bring stability to their lives were disrupted: “Leonard Whitenight didn’t plant flowers in his garden in the Love Canal neighborhood this year, and he no longer mows the lawn,” one report shows, and continues with a description of their basement, “where Mrs. Whitenight does the family wash, black stains score a wall where brackish water has seeped in through the foundation.” In another example of breaking routines, Louis Gibbs, who did much canvassing door-to-door, describes the costs of her efforts: “I was losing weight, mainly because I didn't have much time to eat. My house was a mess because I wasn't home. Dinner was late, and Harry [her husband] sometimes was upset” (Gibbs, 1982: 14). People couldn’t use their backyards because kids bare feet or the soles of visitors shoes would get burnt from the chemicals on the ground (McNeill, 1978a).

Altogether, the lives of Love Canal residents are interrupted over long durations in various ways. For some longtime residents, the routines were interrupted for almost thirty years and in the shortest cases a period over many months. Many interrupted routines are those associated with living in a home—routines such as enjoying gardening, safety, security have no substitutes and not something they might have been able to adapt to. Kids who had to switch schools were not well accepted and many thought Love Canal residents were contagious; “tourists” drove by the neighborhoods in attempts to observe residents’ predicaments.

Meanwhile, Legler residents were ordered by their town Department of Health to stop using water from their wells. Water is a basic necessity in daily life—used for drinking, cooking, bathing, cleaning as well as other aesthetics such as gardening. To be prohibited from using water freely became a disruption in their life. Without well water, fresh water was trucked in to 167 families and usage was rationed over a period of 18 months. Rationing varied from 17 to 30 gallons a day per person for about three years. By comparison, an Environmental Protection Agency (EPA) website reports that an average family of four uses 400 gallons a day (Source: http://www.epa.gov/watersense/pubs/indoor.html). The town government made special accommodations for families to use showers at a neighborhood school "from 6 P.M. to 8 P.M. Tuesdays and Thursdays, but there were few takers because the school was five miles away and the shower room was uncurtained" (Janson, 1980c).

A break in routines also arises from having to take care or accommodate those who have been afflicted. Here is how Edelstein (1988: 37) described interviews with Legler residents:

> For many victims, the exposure incident became a central focus of their lives, dominating free time activity; conversations with neighbors, friends, and relatives; and family life itself. The problems faced by the victims required making many decisions, such as whether to stay in the home or what degree of exposure to the tap water was allowable (for example, should the children play underneath a sprinkler?).

In summary, residents in both Legler as well as those in Love Canal demonstrate their claim of a break in routines in their lives.

Besieged by wastes. Disrupted life is also claimed as a violation of residents' sense of place, more specifically a reaction to being besieged by wastes. Actors' "Besieged by wastes" claims and claims-making activities are visible in two ways: a violation of their sense of place and the need to escape, and the inability to escape.

Many residents express a violation of their sense of place. They express repulsion or a strong desire to "get away" from the place. They believe that hazardous wastes, or themselves, are not in the right place. The residents are repulsed by how close they are to an undesirable or offensive object, the hazardous wastes. "I just want to get away," one resident said and later added, "and you can go to any home over here and they can tell you the same story" (Barbanel, 1980). Much as found by Gieryn (2000), people have a culturally established idea about place in normative terms of being in a safe home and the site of pleasant biographical experiences. One resident reminisced about raising children who would go skinny dipping in the Love Canal, and accepted the presence of numerous chemical plants in the city but somehow the thought that toxic wastes would escape and become dangerous never entered his mind. Here is how the long time resident continues: "Chemical plants are a way of life here … My dad worked at the DuPont plant and we accepted them. We never thought of the dangers." Residents might have expected chemicals in nearby plants or in the landfill, but did not expect it to be running under their homes in underground streambeds or seeping into their basements.

Similarly, a Legler resident describes how he was misled about the landfill in his backyard at the time he bought the home, only to be alarmed when he discovered how close he was:

> We never walked to the back of our property because of the weeds. I did ask the real estate agent what was behind the property. He said that there was a closed

> landfill which had just been for local garbage and that the property was going to become a park. We didn't give it a second thought. We didn't even know what a landfill was. We figured it was a pit that you take sand out of. After the first week in the house, I took a look at the back of the property. They were dumping right at the end of our lot—tons of garbage. (Edelstein, 1988: 24)

Residents, fearful of the proximate wastes, want to leave but cannot—adding to negative emotions and disruptions they have. As some residents in Love Canal are evacuated, others left behind feel significant trauma and they cannot escape:

> "Being left behind," she said, "is the most terrible experience, horrifying. You know the dangers are still there. You can't get away from them; we all have benzene in our homes. It's a desperate feeling, one of inadequacy. You go out and see someone carrying in groceries into their home, in another part of town, and they're smiling and happy and you resent them for it, because they have a safe home. Yours is dangerous. You're afraid of your own home. My family is going to pieces, and there are divorces all over this place. My husband is so desperate: There is no way he can get us out, no way for him to protect his family, and that gets to him. That gets to everybody. They [United Way of America] have set up counseling, and hopefully that will help some of them (Brown, 1980: 48).

The residents show they have been traumatized emotionally. They tell of fear from the toxics, hopelessness and abandonment because they cannot move, as well as an isolation and resentment that others, like them, can otherwise lead normal lives.

The residents claim the violation of a sense of place, and the desire but inability to escape, have a bi-directional siege-like effect. On the one hand, toxics force some families to leave but on the other hand most residents cannot afford to abandon homes (Brown, 1980: 48). Residents could not sell their homes because property values plummeted and real estate agents were unwilling to list Love Canal properties (Gibbs, 1982: 62); and an identical situation occurs at Legler (Edelstein, 1988: 67-68). Gibbs (1982: 97) explains the economic perspective as a response to repeated questions about why she didn't just leave:

> I tried to explain that we lived on $150 a week take-home pay. We had sick children, house payments, and other debts. Our situation was similar to that of our neighbors. People just couldn't pick up and leave. It is very hard for others to understand. If you owe five thousand dollars on a thirty-thousand-dollar house, you would be walking away from twenty-five thousand dollars, perhaps your only savings. Even if you were to do that, you couldn't afford an apartment while you were trying to keep up the house payments, the taxes, the insurance – and hope nobody destroyed the empty house. If you defaulted on the mortgage, your credit would be ruined.

In sum, residents claimed they were besieged by wastes in many ways. The wastes had toxic health effects, there was a horror by being close to the wastes, and they were unable to leave. The event had, according to them, damaged their physical health, their economic well-being, and distressed their emotional state. Their accounts demonstrate residents' claims that the danger is inconsistent with an ideal place of where they and the wastes should be. Furthermore, residents could not leave even if they wanted to. For these residents, and many others in the situation, disrupted life in the form of being besieged by wastes is a common claim.

Novelty

Novelty emerges as a key distinguishing claim that separates events that lead to significant institutional changes from other events. Novelty refers to the extent to which the event is new to the claimant (i.e., person making the claim) as well as the audience in a specific aspect or dimension. The Love Canal accident was new in terms of the regulation of waste disposal practices—no one had previously addressed the issues of liability and responsibility in the disposal of hazardous wastes. In contrast, the Legler accident was not new—contaminated well water is an old problem with a known

solution. The two events may be compared along three dimensions: (1) the reference point, i.e., comparisons or analogies made by actors; (2) state of the science; and (3) accommodation by existing institutional arrangements.

Reference point. A reference point is an object or position to which we may compare others with. A reference point may present us with an aspirational target or one to avoid. Actors involved in the event do not compare Love Canal with other events. Love Canal appears to be *sui generis*, a class of its own. Few, if any, claim that Love Canal is similar to another event, but Love Canal is a reference for others to avoid. Love Canal easily became such a reference point for Legler residents. Legler residents followed the Love Canal news closely, and "when we heard that the people at Love Canal took Environmental Protection Agency officials as hostages our hearts and prayers went out to them. We know what they are going through" (Panzer, 1980a). The news reporter also makes the comparison explicit: "*Like the people at Love Canal* in upstate New York, the McCarthys and 166 other families in Jackson Township had been living with what they came to believe was a biological time bomb" (italics are mine for emphasis) (Panzer, 1980a). Another report claims that, "they are afraid that what happened at Love Canal in upstate New York will happen to them, too; that, years from now, damage already wrought will start to show up in them or their children" (Panzer, 1980b). The U.S. Attorney for New Jersey expressed his concern about conditions in his state this way: "Our hope is to forestall further contamination and prevent another Love Canal in New Jersey" (Hanley, 1979). Residents in Bordentown, New Jersey staged protests to prevent the state from permitting a new waste disposal in the city: "Bordentown City Mayor Joseph Malone 3d declares that area is prepared to sue NJ and the company seeking the

dump permit, Earthline Corp, 'all the way to the US Supreme Court.' And, protestors recall Love Canal section of New York's Niagara River where chemical wastes buried years ago were recently found hazardous to local residents" (Waldron, 1978). Finally, a reporter in a Ontario, Canada based newspaper described government plans for a waste disposal site and mentioned Love Canal where "some of the worst waste disposal problems on the continent" (Keating, 1981).

In other words, others are trying to claim their poor condition as being as bad in some way as that experienced at Love Canal, the reference point. Love Canal was perceived as bad as a hazardous waste situation that one could imagine.

Legler is not only compared to Love Canal, but also compared to other more similar events within New Jersey involving closed wells and contaminated water. A few months after wells were ordered shut in Legler, news reports associated the event with other wells that were contaminated or shut around the state in Camden, South Brunswick, Dover Township, Perth Amboy, Fair Lawn, Mahwah, Allendale, and Rutherford (all cities within the state of New Jersey) (Hanley, 1979). The chair of a special Governor's commission to investigate the emerging waste problems estimates that "up to half the drinking water in New Jersey – and perhaps much more has been contaminated to some extent. Hundreds of wells around the state have been closed because of chemical pollution" (Waldron, 1980). In contrast to Love Canal, Legler was not held up as an example of reference point for comparison. The media portrayed Legler as one of many identical situations around the state.

Furthermore, Legler portrayed by the media as a local issue also stands in stark contrast to Love Canal as of national relevance. Love Canal, for example, was frequently

the subject of much nationally broadcast evening news (Hume, 1979; Szasz, 1994: 42-44; Zuesse, 1991). A public opinion poll, for example, shows about half the nation had heard or read about Love Canal about nine months after the initial health announcement (See Question 1 in Appendix A, CRC, 1979), and by comparison the entire nation had heard or read about the Three Mile Island accident within weeks (See Q2 in Appendix A, CBS News, 1979); whereas no opinion polls were conducted with specific items about the Legler accident.

State of science. The state of the science is another dimension of novelty. In the case of Legler, residents claimed they became ill when they drank contaminated water. Contaminants had previously been identified, which is why the City ordered residents to shut the wells, and the chemicals were well recognized as toxic and many were carcinogenic (Hanley, 1979; Janson, 1980c). There was no debate or challenge on the state of the science in this regard. The City's solution to the residents' problems was that residents stop drinking the well water; to which the residents agreed. Residents did claim that the chemicals caused illnesses, but scientific evidence was eventually insufficient to convince a New Jersey Court of Appeals judge (Norman, 1983).

The case in Legler is an event that is framed as a problem of polluted well water. In 1971 long before the event, residents had believed that their wells would be contaminated with pollutants from a waste disposal site, as had happened nearby: "the dump across town was being closed because it had caused water pollution, it smelled, and it was a breeding ground for rats. Legler residents foresaw having the same problems in their area," according to Edelstein (1988: 22). Sure enough, in November 1978 city officials distributed a letter to some residents warning them not to use well water because

it was contaminated with organic chemicals. Consistent with this warning and the polluted water framing, the city government made water tankers available to residents beginning the day after notice (Edelstein, 1988: 34). The chemicals, residents subsequently learned from New Jersey Department of Environmental Protection officials, included cancer-causing carcinogens that leaked from the city landfill (Panzer, 1980a). The media further accentuates the fact that state officials point out that city officials "has known or should have known that dangerous chemicals were leaching … since 1975" (Janson, 1980b). There is no indication in the data to suggest that residents contested or questioned the veracity of this framing. Believing that leachate from landfill was the cause of their illnesses, residents filed class action lawsuits against the city and Glidden Paint, the previous owner of the landfill (Janson, 1980a). The city government admitted that groundwater was contaminated with chemicals from the city-owned landfill, and the state government explained how the chemicals were known carcinogens. Thus, the polluted well water problem framed by media and government officials was never inconsistent with residents' expectations, beliefs and interpretations. As is the case in Love Canal as well, however, several more years of studies and investigations reveal insufficient evidence link the chemicals to residents' illness claims (Clapp, 2009; Gensburg, et al., 2009; Norman, 1983).

The science, however, was much more uncertain and contentious in the case of Love Canal. Love Canal residents were allegedly contaminated through the air, water, and from contact. At the time, a debate revolved around whether or not the chemicals that leached from the landfill caused illnesses among residents. Controversies emerged

regarding (1) the rate of illnesses among residents, compared to other residents of similar demographics; and (2) whether the chemicals caused the illnesses that were claimed.

The controversies are interrelated problems. First, no one knew who was sick. Lois Gibbs, under rudimentary instructions from her scientific advisor, Dr. Paigen, constructed a health survey and trained several assistants to go door-to-door to collect self-reported illness. Some studies over-represented the healthy residents while under-representing those who were seriously ill but did not want to participate in the voluntary study (Dr. Paigen testimony, U.S. House of Representatives Hearing, 1979a). The Department of Health took some blood samples but could not successfully get personal health histories from all residents (Gibbs, 1982). This discrepancy between residents' surveys of illness rates and "official" government studies are largely unresolved (Mazur, 1998). Studies with proper procedures came significantly later (Globe and Mail, 1981)—well after the President ordered a second evacuation and after the enactment of the Superfund law in 1980.

Second, there was no reasonable control group to compare with. The Gibbs-Paigen study had a minimal design and more like a report of who was sick and their locations, gathered from an informal survey where many respondents were prompted for responses based on the personal experience of the survey assistant (Gibbs, 1982: 68). Their survey was subsequently mapped against underground water features (swales) to show clusters of illnesses (Levine, 1982: 87-94). Dr. Paigen did explain that their study (with Gibbs) did include an internal control by comparing those who lived in "wet" versus "dry" areas; where "wet" areas refer to those that built over swales (U.S. House of Representatives Hearing, 1979a). The results, however, were confounded because some

"dry" areas had elevated illness rates because they occasionally became contaminated with toxics from periodic flooding originating in the wet areas. The New York Department of Health study also had no control group, in part because no reasonable comparisons could be found from prior studies (Levine, 1982: 81). Later, the EPA chromosome study conducted in 1980 had no control group as well (Globe and Mail, 1981). Ironically, the EPA chromosome study was the most flawed and criticized by many independent readers (i.e., interested scientists that were not associated with the production of the report) (Kolata, 1980) and yet this was *the* report that led the President to make a final decision to help the Love Canal residents (Mazur, 1998: 153-156). According to Levine (1982: 138-139), the report was motivated by the U.S. Department of Justice to take legal actions against Hooker; and based on subjects selected by Paigen and Gibbs specifically because the data would present more rare and extreme observations. Designed to be a pilot study to estimate worst case scenarios, the study's authors warnings to readers to refrain from making premature inferences were ignored by the media (Mazur, 1998: 150). The fact that the report was leaked to the media by a lab technician sympathetic to the plight of Love Canal residents further fueled the controversy.

The state of the science at Love Canal suggests that the event broke new ground in terms of challenging what we knew then, even though more recent evidence suggests that residents may not have been as sick as alleged. Government scientists' were unable to convince media and residents successfully that illnesses were not caused by the chemicals that leaked.

Accommodation by existing institutions. The extent to which a problem can be easily accommodated by institutions depends on the "newness" of the problem—new problems are not well accommodated while well established problems are. Because institutions routinize a pattern of activities (Jepperson, 1991), exceptions and new problems that do not fit the routine do not fit well into institutional arrangements. As the Love Canal issue emerged, for example, residents went from one government agency to another searching for help and clarification about their condition. Each agency from municipal to Federal level of government denied help because the problem did not appear to be a part of their jurisdiction or responsibility. Government agencies denied having responsibility for identifying or treating unfamiliar illnesses and more importantly, agencies denied having the ability to enforce safety from hazardous materials. This pattern of denial, obstruction, carelessness and obfuscation continued for more than two years for Love Canal residents. During a visit to Washington, Gibbs describes her attempt at getting help from Federal agencies:

> I tried to call Secretary of Health, Education, and Welfare, Joseph Califano, but I couldn't get through to him. He was never around, or he was always in a meeting. I talked to someone else though. I said that getting us out of the Love Canal area was a matter of our health and our welfare, and within the jurisdiction of his department. The man said I would have to talk to the Environmental Protection Agency. By now I knew what the initials "EPA" meant. I told him the EPA wasn't doing anything. It had put up a small amount of money to repair the canal but had nothing to do with health studies. We needed someone to protect the health and welfare of our children. But he just gave me the runaround; there was nothing he could do, he said. I was beginning to learn how fragmented the Federal government is, how far removed the top people are, protected by secretaries, regulations, and paper from contact with ordinary people. (Gibbs, 1982: 75)

After Gibbs had exhausted attempts to get many state and Federal government agencies, she decided to call the White House to speak to Mrs. Carter with a personal

appeal from one mother to another and was summarily denied by gatekeepers. Finally a more accommodating staff member listens to Gibbs's appeal:

> I did see R. D. Folsom, a White House staff member. I told him I had exhausted every avenue of assistance I knew of except the White House. Folsom said he was sorry, but there was nothing he could do. Love Canal didn't fit any category for which there was a policy. He said he would call me back; but I knew from his attitude that nothing would come from it. (Gibbs, 1982: 132)

Gibbs unsuccessful attempts to get help from various government agencies clearly show that the problem she and Love Canal residents faced fell in between the narrowly defined categories that each agencies works on. These government agencies only work within the preset boundaries, and exceptions are pushed away or fall between the institutional interstices.

Another perspective on poor institutional accommodation is the lack of clear financial responsibility for damages and cleaning up toxic wastes. No laws existed at the time to determine such responsibility. The EPA suggested local cities that issued permits should pay for damages. As one EPA official explained to a New York state assembly committee, "As sure as we're sitting here, this state's going to find a lot more landfills leaching. The solution is not just removing the people temporarily as was done at the Love Canal, but who is going to clean things up" (Globe and Mail, 1979). City and county officials denied anyone was sick from leaking toxics (Mazur, 1998: 115-116) even when state officials pointed to exposure levels that were a thousand times higher than normal (60). The current owner of the land, the Niagara School District, continuously denied responsibility, denied knowing that they were aware of toxics on their property, and many board members refused interviews with reporters (Zuesse, 1991).

Hooker Chemicals, whose toxic wastes were poured into the city permitted landfill, too denied responsibility in many ways. First, they clearly made the School District aware of the presence of buried wastes in the transfer deed, recorded discussions in internal memos discussing communications with the School, and by working with the School on several occasions in resolving construction issues (Mazur, 1998: 20-23). Second, Hooker's waste disposal practices were more sound and careful than prevailing practices at the time and considerably more careful than required by law (Mazur, 1998: 23-28). Eventually, the U.S. District Court did levy a high financial penalty on Hooker not because of its recklessness (33) but because the Superfund legislation, enacted almost 30 years after Hooker last used the landfill, was intended to hold polluters liable for past damages regardless of if and when they owned the land (159). Hooker's responsibility, therefore, was not clear at the onset of the event as well but the company became a scapegoat.

In stark contrast, institutional response in the Legler event was much more accommodating. While the city government response was slow and often contentious, it was the city Board of Health who first ordered that residents stop drinking from well water that was contaminated. The city on its own cognizance, took responsibility for the leaching and the solution early on: "On the day after notification, Jackson Township began to supply water to residents in Legler. Later, planning began for a central water system to replace residential wells," according to Edelstein (1988: 34). Subsequently, a court ordered the city to truck clean water to each household. The city's responsibilities were never challenged, neither were those of Glidden Paint, the previous owner of the landfill. Led by residents, New Jersey and U.S. Federal governments worked together to

file a lawsuit against the local city government for damages and to pay for clean up—to which they agreed on conclusion of the lawsuit trial (Norman, 1983). One would therefore conclude that the institutions ably accommodated the emergence of the problems presented by the toxic leak from the Jackson Township landfill in Legler.

In comparing the two cases with respect to institutional arrangements, claims from Love Canal residents represent a new problem that institutions were not set up to accommodate whereas the Legler claims appear to be better established or more typical problem that institutions could accommodate.

Position on the agenda

People do not attend to all events and therefore events have to be processed in some biased priority order (Simon, 1976)—a priority conceptualized as the agenda for change in the context of this study (Cobb & Elder, 1972: 10). Two interrelated agendas are relevant when comparing Love Canal and Legler events: the public agenda, and the congressional legislative agenda. Items on the agenda mean the item is important or significant and thus worthy of more evaluation, attention and or consideration.

Public agenda. The public agenda represents what the public is interested in at a specific time. The public agenda is reflected by the media, and two dimensions are found: the scope of the news, and the amount of coverage. In terms of scope, Love Canal is covered extensively by both local and national level news organizations, while Legler is not covered in the national news. At the national level, Love Canal is covered in several daily newspapers and news magazines widely read across the nation such as the New York Times, Washington Post, and Time Magazine; as well as on national TV news.

Legler, on the other hand, receives marginal coverage in the New York Times, and no other coverage in other nation-wide publications and news outlets. One may therefore infer that Love Canal is of national interest whereas Legler is relatively more interesting to local and less, if any, significant change—consistent with the novelty claims described earlier.

The amount of coverage also varies considerably between Love Canal and Legler. Literally thousands of stories appeared in the news covering Love Canal, while the Legler event is marginally covered. Legler is only first mentioned in the New York Times in February 1979 several months after the municipal health department declares the water unsafe (November 1978), and only in passing during the coverage of another toxic incident (Hanley, 1979). As another indicator, Legler is the primary focus in only a few articles in the New York Times in 1980 and later as lawsuits were settled; almost all articles appeared in the New Jersey section of the newspaper. In contrast, Love Canal is in the national news on the same day the state health commissioner declares the area unsafe for (McNeill, 1978b), and intensely covered for several days following. Love Canal is the subsequent focus of hundreds of articles, magazine articles, TV stories, as well as in books.

The public agenda as reflected in the media is also the result of news organizations' interests. Wanting to cover stories of toxic chemical impact, Sydney Schanberg, a *New York Times* editor, sent a reporter to Niagara Falls specifically to begin investigations and reporting in July 1978 (Mazur, 1998: 129). Coverage in the local newspaper, the *Niagara Gazette*, as well as anticipated hearings about Love Canal had attracted enough attention in the New York Times Albany, NY bureau office and thus

word spread within the *Times* editorial staff. Given that both Love Canal and Legler events are relatively similar at the onset, Love Canal was selected ostensibly because it began just months earlier and, perhaps more important, had already achieved state-level prominence whereas Legler had only attracted local interest at that time—July 1978 when the New York Times editor decided to assign a dedicated reporter to the event.

Love Canal residents used the news media for two specific objectives. First, residents wanted to remain salient to the public and among influential government decision-makers, but also used the media to prompt further action among government officials. Here is Lois Gibbs, a victim-activist, describing how this latter objective works (Gibbs, 1982: 93):

> We were still working with the politicians [governor and commissioner of New York Department of Health], but nothing seemed to be moving. … It occurred to me that they didn't want to find out anything. They didn't want to prove anything. If we were going to get anything, it would be by doing it ourselves. … Every time we did a study, we released it to the press. Then they [NY Department of Health] had to drop everything and run around to find out whether our results were true, just so they could respond to the press.

On another occasion, several residents held U.S. Environmental Protection Agency (EPA) officials as hostages (Mulgrew, 1980). A group of 700 residents occupied and surrounded an evacuated house to hold two EPA officials hostage. Gibbs told reporters that she and the residents only wanted to be heard. They compared themselves to Cuban refugees that had recently been granted safe passage and wanted the White House to offer the same humane treatment, if not better treatment as citizens.

In summary, the residents of Love Canal differ from those in Legler in their use of the news media to promote their objectives. The resulting news coverage raises and maintains a high level of presence in the minds of the public in terms of importance and

to resolve problems at Love Canal. And, the residents could draw on the media to influence government decision makers.

Legislative agenda. The legislative agenda has a more direct influence, compared to the media, on enabling change in terms of national laws and regulations. The data reveals that Love Canal residents and their allies in Congress sought and obtained a high level on the national agenda and accompanying federal level of regulatory change, while Legler residents do not seek such a position on state or federal legislative agenda. In Legler, residents were angered by local municipal elected officials but found generally sympathetic state level support among New Jersey state legislators as well as Department of Environmental Protection (the state level equivalent of the U.S. Environmental Protection Agency). This support appears to have alleviated much of the residents' concerns and therefore the residents did not seek further Federal level help. Furthermore, residents' concerns were sufficiently satisfied within the existing institutional-legal framework and thus no changes were sought or made. Love Canal, however, is a far different situation.

Love Canal residents, in their attempt to find help—to understand health effects and gain financial assistance—reached out to state and federal level of legislative offices because the local government denied all involvement and responsibility. The city is partly responsible for damaging some of the landfill barriers by carelessly excavating earth: "Sometime around 1960, the city, which had received from the School Board a deed to some of the property, hit chemicals as it excavated a ditch across the Canal to build Wheatfield Avenue," according to court records (Mazur, 1998: 32). Residents complaints

were systematically ignored (Gibbs, 1982: 64) and "went nowhere" (Mazur, 1998: 59). The city made repairs reluctantly when ordered by the State and vehemently denied the problem (Gibbs, 1982: 64). The County Health Commissioner was unconcerned and minimized residents' concerns even when questioned by the press (Brown, 1980: 18-21; Mazur, 1998: 115), as well as during a public meeting when the NY Department of Health presented environmental reports showing exposure levels elevated thousands of times greater than a safe lifetime level (Mazur, 1998: 60). In some cases, the County even blamed residents for wantonly spreading hazardous materials. Here is an account:

> Pete [Bulka] had been complaining to the City of Niagara Falls for a long time, but nothing was ever done. Pete explained how his sump pump had to be replaced every few months because it corroded. The county health commissioner wanted to cap everyone's sump pump because they were pumping chemicals from the canal into the storm sewers and then into the Niagara River. He acted as if it were the citizens' fault that they were pumping poison into the river, that it was better that it just stayed in people's basements. (Gibbs, 1982: 42)

The New York State governor and health commissioner also were both reluctant to help Love Canal residents. Here is an example of Gibb's frustration at NY Health Commissioned David Axelrod:

> "I asked Axelrod why nothing was being done about the swales—no cleanup and no construction to stop the leaching. 'How can you leave people in contaminated areas?' He said they were already investigating it. I said, 'You have established that it is contaminated. What are you going to do about it?' He had no answer" (Gibbs, 1982: 111).

And, here is how Gibbs recalls obfuscations typical of state operations, as heard during New York senate hearings. Instead of sending representatives that were well informed, the Governor sent an operations coordinator who could not answer inquiries:

> One of the senators asked him [Mike Cuddy, coordinator for state operations at Love Canal] how long it would take the state to evaluate the swales to convince

> them that it was or was not a health problem. Mike estimated two to two-and-a-half years. That upset some of the senators. They asked him if he really expected residents to live there for two or two-and-a-half years and wait to learn if there was a problem. He said he could not answer that. That was the health department's decision, not his. They also asked him why the state hadn't relocated more families. He could not answer. It was the Health Department's decision. (Gibbs, 1982: 118)

Meanwhile, residents sought and eventually gained the helpful support of U.S. Representative LaFalce, who represented the Niagara Falls area, and much more limited support from U.S. Senators Moynihan (D-NY) and Javits (R-NY). LaFalce and Moynihan lobbied colleagues in both houses of Congress in securing some funds within an already existing legislation, the Resource Conservation and Recovery Act (RCRA) of 1976 (Mazur, 1998: 142). LaFalce places an EPA health study report into the Congressional Record, the official archive of proceedings and debates conducted in the U.S. Congress, an action that officially reminds Congressional members of the gravity of the incident (Molotsky, 1979). Although he introduces 7 bills in 1979 in an attempt to get wider debate and legislation in Congress, none reach the floor for a vote (U.S. Library of Congress - THOMAS, n.d.). He also lobbies the President for financial aid after the release of the chromosome study (NYT, 1980b). Later, LaFalce also testified in the creation of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA or more popularly known as the Superfund law) of 1980 that is a direct response to the Love Canal event.

The bulk of the legislative work related to Love Canal, however, was done by U.S. Representative James Florio (D-NJ). Florio is the author and leading sponsor of the CERCLA law, and he chairs the Subcommittee on Transportation & Commerce, Committee on Interstate & Foreign Commerce in the House of Representatives. Through

his willingness to work with both Democrats and Republicans inside Congress and among industry groups, Florio finds a way for the Ways and Means Committee, the panel that oversees House appropriations, to approve a budget for the CERCLA law to fund a trust fund to clean up abandoned hazardous waste sites (Molotsky, 1980). Florio calls hearings to investigate the Love Canal accident as well as to hear comments from industry groups; and testifies on numerous other hearings in the House as well as Senate as well in trying to reach a compromise that becomes CERCLA.

Division of labor

Actors' claims and claims-making activities reveal another pattern in terms of the division of labor. One set of activities revolve around the claims that an event represents a problematic condition that must be corrected, while another set of activities revolve around claims that a specific solution, i.e., the means through which the goal is to be achieved, should be pursued; and the actors are mostly different people.

Problem providers. I label and define a social role played by various actors as a *problem provider* when these actors make claims and conduct claims-making activities that problematize an event. The concept of role found here in the empirical data is consistent with the literature. Actors take a role based on the situation they find themselves in (Dolch, 2003: 398; Goffman, 1959). The role of problem provider is played by many individuals with different social positions. The most prevalent problem providers in this study are the residents. Love Canal residents were very proactive in terms of their activities and claims; residents at Legler were much less active in pursuing their limited goals. Other problem providers who contributed substantially include Rep.

LaFalce, who spoke on residents' behalf with many local, New York State, and Federal level officials to secure help (Brown, 1980; Molotsky, 1979; NYT, 1980b); reporter and author Michael Brown who was among the earliest to raise attention on Love Canal and helped residents link their illnesses with the toxic waste site (Levine, 1982: 190); and Dr. Beverly Paigen, a cancer researcher at the Roswell Park Memorial Institute, who assisted residents' as well as government-sponsored health surveys, and pleaded for residents' interests at many meetings with state and federal officials (Brown & Mikkelsen, 1990).

Problem providers', specifically residents', goal was to alleviate their health and subsequent housing problems—they want to get away and be made whole. The groups that formed, however, did also make daily life bearable while they awaited a more certain future. For example, one of the largest groups of residents was organized as the Love Canal Homeowners Association (LCHA), and they provided emotional support to residents; coordinated the distribution of news and information among media, government and residents; organized protests, and lobbied government officials. Another nonprofit group, the Ecumenical Task Force of the Niagara Frontier (ETF), was "dedicated to the protection of human and natural resources from chemical and radiological contamination" in the western New York state and Great Lakes region (University at Buffalo (State University of New York) Special Collections Archive, n.d.). This latter group mostly provided public education, as well as some counseling to residents and acted as intermediary between citizens and government officials. In the case of Legler, residents organized themselves as the Concerned Citizens of Jackson and acted primarily as a collective voice in working with the local government and in lawsuit proceedings (Edelstein, 1988; Panzer, 1980b).

In their acts of claimsmaking, problem providers uncover and define the problematic condition that they experience. Their claims of novelty show that society had never before considered that the impact of hazardous wastes would persist beyond the legal responsibilities of an owner-operator of a waste dump, especially when ownership transferred to another legal entity. And, the problem providers showed a previously unimaginable idea that toxic chemicals remain dangerous for long periods and may escape without proper management, even if they did so through less rigorous scientific means. Problem providers' claims that their lives were disrupted further depict the horrors and unanticipated consequences as the problem manifests itself.

These organizations in both Love Canal and Legler make no mention, anywhere in the data, of a desire or preference for one form of solution over another—they accepted any and all forms of help. They accepted government assisted (temporary and permanent) relocation, state buyouts for their property, and remediation of the earth around some homes, for example. Most significantly, they supported and assisted in lobbying for legislative change to prevent similar accidents as yet another means to their goal to alleviate health and housing difficulties. One may speculate on possible alternatives to solve their problems and achieve their goals exist without resorting to new institutionalized regulations. For example, the LCHA and other groups did file several civil lawsuits against Hooker Chemical, the local government and the Board of Education, and the beneficial outcomes suggest this might have been sufficient in so far as to compensate residents financially and enable them to relocate—a substantial response to the claim "to get away and be made whole" without the need for the CERCLA law that was passed to prevent such future accidents. Although the LCHA also

invited several prominent activists such as Ralph Nader and Jane Fonda to visit, the attempt to build a wider support network and further their common interests could but did not materialize (Gibbs, 1982). Most importantly, neither Love Canal nor Legler residents made any claims about how to solve their "problem," they did not *need* new regulations but merely need to restore their lives.

To recap, problem providers make claims about conditions, make their demands known, and pose questions—they uncover and define a problem—but they contribute substantially less to the work of creating specific new legislation and institutional change as a specific solution.

Solution providers. In a scheme parallel to problem providers, I label and define a role played by various actors as a *solution provider* when these actors make claims and conduct claims-making activities that propose a specific solution to a problem. In Legler, there is no solution provider because there is no evidence that anyone performs this role. As explained earlier, I find that the problem at Legler was not constructed or claimed as one that is sufficiently novel to require any institutional change.

In the case of Love Canal, U.S. Representative James Florio (D-NJ) emerges as the dominant solution provider. A New Jersey native and attorney, he held various political offices including Governor in New Jersey as well as in Congress (U.S. Congress Biographical Directory, n.d.). Various other solution providers are industry groups and government officials who contribute relatively less compared to Florio. Industry groups are visible in various Congressional hearings, and government officials, mostly the U.S. Environmental Protection Agency, are in the media spotlight as well.

Rep. Florio is motivated to protecting the environment through legislative action (Heines, 2009). 38 of 99 (38%) hearings he participated in during his Congressional tenure (1975-1990) are devoted to environmental and or energy issues; no other issues take more of his time (Source: LexisNexis search). He authors the initial and subsequently modified Congressional bills that finally become CERCLA, after holding Congressional hearings to receive formal input from industry groups (U.S. House of Representatives Hearing, 1979a, 1979b, 1979c, 1979d, 1980). He sponsors CERCLA because it will be beneficial to his home state, New Jersey, by increasing the Federal funding to remedy "great amounts of toxic wastes and chemicals" that have been disposed of in the state (Burks, 1980), and the authorship of new legislation also raises attention to his personal credibility and political career (Molotsky, 1980).

The CERCLA law has several provisions that are shaped by many solution providers. During Congressional hearings, the insurance industry explains that no liability existed then for risks that arise from *closed* waste disposal sites, as was the case at Love Canal (U.S. House of Representatives Hearing, 1980). Many, including Florio, feared that a direct consequence of the inability to secure affordable risk mitigation would destroy the waste disposal industry. The insurance industry subsequently created new policies and shaped CERCLA. Another solution provider is the U.S. Environmental Protection Agency (EPA). The EPA, who did have a limited but largely unfulfilled legislative mandate, quickly tightened regulations almost immediately after the first Love Canal evacuation order and steadily over the next few years (NYT, 1978, 1980a). The EPA also shaped the scope of the solution by showing how widespread the poor hazardous waste management practices had become (McNeill, 1978b; Shabecoff, 1980).

In summary, solution providers—those who work on specific solutions—show less effort in working on defining the problem but they do substantially show the scope and magnitude of the problem. While the process of institutional change is allegedly a single continuous process (Greenwood & Hinings, 1996, 2006), the empirical data shows that the work or labor of institutional change is divided.

Problem-solution provider divide. The extant literature offers various reasons in support for the observed division of labor. A well established historical trend towards the division of labor in society suggests important functions and tasks in society are increasingly separated but society at large remains cohesive because of mutual dependence among those who have specialized tasks (Durkheim, 1984). This mutual dependence is observed in the relationship between problem providers who claim a problem but do not know how to solve it, and solution providers who have potential solutions but no rallying cause to mobilize wide support. Furthermore, the formal act of changing many institutions may be reserved for those in key positions, such as Congress or a professional body (Lawrence & Suddaby, 2006: 228), as is the case here with enacting formal legislation.

Second, the separate role played by the problem provider increases the credibility and legitimacy that a problem exists. A person who has directly experienced an injury appears much more credible as a leader of others similarly injured (e.g., Weed, 1990) as well as speaks more persuasively with those whom they seek to persuade (Epstein, 1995; Maguire, et al., 2004). Studies of victims suggest that to the extent that victims are credible, they add legitimacy to the "truth" about the existence of the alleged condition or

problem (Karmen, 2010). These first-hand accounts of a problem, therefore, appear much more real and emotionally moving thus more compelling than are secondhand narratives.

Given that the accidents have not directly injured the solution providers in the cases studied here, the problem providers have a unique opportunity to insert themselves into the institutional change process. The data reveals that victims in Legler merely provided a voiced opinion that supported but did little to influence final outcomes in a civil court case. On the other hand, Love Canal victims used their direct injury experience to proactively secure their position in the change process and influence the institutional outcomes as well.

Meanings shared broadly

As the social interaction increases through time and space, actors' claims and activities emerge as more meaningful for institutional change. The interaction occurs as people talk and discuss the events, observe others' behavior, and change their own behaviors in response to the event. In this section, I describe two meanings that emerge: disorder and a new category for hazardous waste.

Disorder: negative society-wide impact. As more claims of illness and health studies emerge, increasing numbers of the public as well as industry analysts become more aware of the consequences of the event and what it means. Meaning at Legler as a form of disorder is not shared widely, and remains localized. News of Legler is predominantly found in the New York Times New Jersey section, and in no other major national newspaper; the lawsuit is filed and remains in courts at the state level. In Love

Canal, by contrast, the meaning of disorder diffuses as a consequence to the general population as well as the economic sector at the national level.

At the level of the economic sector, or more technically the institutional field level, grave concern about the viability of the waste management industry emerges. Problem and solution providers have made numerous claims that link toxic chemicals disposed of in an abandoned waste site, and the extent of the consequences. The site is technically considered abandoned because it is no longer an actively managed waste site; the current owner and responsible party is the Niagara County Board of Education who is not operating or maintaining waste management operations in any form. The implication is that companies that operate waste sites may have a liability for damages that occur well beyond the cessation of dumping activities and technically beyond the existence of a company as well. Congressman Florio understands what this means for the industry:

> If postclosure liability coverage is unavailable or of very limited availability, serious consequences may result. Without the means to insure against long term and potentially serious liabilities, responsible businessmen may be reluctant to enter the hazardous waste disposal industry (Florio testimony at U.S. House of Representatives Hearing, 1980).

Florio thus voices the concerns of many in the waste management and insurance industries. Love Canal means the possible destruction of the entire waste management industry if the problem of risk and liability for wastes are not properly managed.

While risk and liability for a waste disposal site may be shifted from an operating company to insurance company (through insurance), which did not exist then, the same considerations exist, by extension, to the viability of the insurer to remain solvent. An insurance trade association representative explains what Love Canal might mean to the insurance industry more specifically:

> Insurers are comfortable with high frequency, low severity situations … it is predictable. … What we are talking about in this instance [hazardous wastes accidents] is a very low frequency situation with potential for extremely high losses. … It is very difficult to justify your premium to your insured. You may collect premiums for years, and there may never be a loss, but your premium may continue to go up … [there may be] liability for loss of use of national resources or destruction of national resources. … Waste disposal site situations are long latency, slow developing situations. The types of injuries often will be multiple causation types of injuries. … It is very, very difficult … to prove your causal relationship between the event and the injury or diseases … definitions are troubling … does an occurrence begin when disease manifests itself or when the liner breaks and toxic substances begin to leak? (Testimony of James Kimble, Counsel for American Insurance Association in U.S. House of Representatives Hearing, 1980: 34-36)

James Kimble, whose testimony is quoted above, continues with a succinct but grave thought: "If I were an underwriter, I would not ask my company to write that kind of risk."

In addition to the technical difficulties raised above, Kimble continues his testimony that addresses the heart of this widespread disorder in the basic principles of insurance. Principle: "Losses must be definite in time, place and amount" yet "many pollution losses cannot be pinpointed as to time and place, not to any one source." Principle: "Losses must be accidental in nature" and in contrast "some acts are intentional [he means that wastes are intentionally placed into a waste site], but the results are unforeseen. A typical example is the dumping of mercury into streams and rivers, an occurrence that went on for years. It was thought that mercury would sink and do no harm. However, it was subsequently discovered that mercury so dispersed of would produce another harmful substance." Principle: "Losses should not have an unmanageable catastrophe potential" and "there should be a large number of homogeneous exposure units" to allow underwriters to assess risk and premiums, but this

is not possible with toxic pollution. Principle: "Losses should be measurable in terms of money" but it "may well be impossible to determine the proper portion of a total dollar loss that was caused by a particular insured. There may be many causes involved, as well as many different polluters. Moreover, additional problems will surely arise if insurers are required to pay damages for such things as the aesthetic and/or enjoyment value of recreational areas or lakes" (Testimony of James Kimble, Counsel for American Insurance Association in U.S. House of Representatives Hearing, 1980: 42-43).

To corroborate the insurance industry view, a parallel development shows how some entrepreneurs draw the same conclusions about the fate of the waste disposal industry. James Wolfe, a vice president of Nedlog Technology Group in Colorado, planned to build three waste processing facilities in Sierra Leone, Liberia, and Chile to handle wastes exported from the U.S. (Globe and Mail, 1980). The plants, he explained, were initially planned for construction in the U.S. but the recent events seemed to indicate permits would not be granted, and thus the company sought nations that would benefit from foreign exchange as well as increased jobs. The U.S. State Department warns that "the toxic wastes issue is part of a broader problem involving the export of all kinds of poisonous materials." Government officials warn that such a practice may lead many nations to "condemn the United States for dumping its wastes in the black man's backyard" causing much more widespread effects outside the industrial sectors into the public and inter-governmental sectors as well.

In brief, the Love Canal event means much more disorder to the insurance industry that may prevent an underwriter from offering any insurance at all, and thus destroy the waste disposal industry. Simultaneously, increased regulatory stringency was

forcing the more entrepreneurial companies to relocate waste processing abroad thus also destroying the domestic industry. In essence, Love Canal meant widespread disorder from the negative impact of escaping hazardous wastes.

New category: hazardous waste. Historically, societies have treated wastes merely as something undesirable (Colten & Skinner, 1996; Douglas, 1984; Strasser, 1999), but the findings here show a marked change in attitudes towards one category of waste—hazardous wastes. While residents in both Love Canal and Legler claim emotional and physical distress in their lives, their actions towards the events are subtly different. At Legler, residents appear relatively content with the authorities' claims that clean piped water to their homes is the most appropriate solution. Siding with residents and the state Department of Environmental Protection, a New Jersey court ordered the municipal landfill closed in 1979 (Panzer, 1980a) but no one was ordered to leave nor evacuated and no agency was required to remove or remediate the contaminated water that remain deep in the Cohansey Aquifer (Norman, 1983). While the toxic chemicals have disrupted their lives, residents do not appear to treat the wastes, which still remain, any differently than other wastes in the landfill. By comparison, the residents in Love Canal have evoked a different behavior towards the wastes.

The change in attitudes towards what Love Canal means as a new category of waste is most visible during a Niagara School Board director's deposition for a court case. Erma Runals responds to a question about her concerns on purchasing the Love Canal site from Hooker Chemical:

> The kind of concern I would have sitting on a board hearing those words today is vastly different from our understanding of what he was saying then. The fact that there were some chemicals buried under a piece of property and that you shouldn't dig down meant just that. Just leave them alone. It didn't raise any other big

> worries. If you left them alone, everything was going to be all right. Today, you would react very differently.

When asked why she'd react differently today, Runals explains:

> Well, because it would appear that there's more to this chemical seepage and danger than we had thought at that point (Mazur, 1998: 40).

Runals attitudes towards hazardous wastes clearly shifted dramatically from one of nonchalance in the 1950s when the Board of Education contemplated acquiring the Love Canal site, and the 1987 when the deposition occurred (U.S. District Court (Western District New York), 1994). In the 1950s, Runals and others on the Board did not differentiate between hazardous and non-hazardous wastes. Through all the claims, news coverage, legal discussions and various other social interactions, Runals now sees that Love Canal meant a new category of waste exists—that there was considerable danger posed by this category of waste.

Prior to the "discovery" of hazardous wastes at Love Canal, the Resource Conservation and Recovery Act (RCRA) of 1976 was the only law that defined hazardous wastes but was not enforced (Dowling, 1985). Solid wastes, specifically excluding air- and water-borne wastes, were considered hazardous if they caused mortality or serious and irreversible illness—a definition environmental and industry groups did not challenge, according to Dowling. The law, however, was not properly financed nor enforced by the US EPA (Testimony of George Tyler, Director at the New Jersey Department of Environmental Protection, U.S. House of Representatives Hearing, 1980), and as the EPA itself admits (McNeill, 1978a; NYT, 1978) and criticized in a Congressional Sub-Committee report and hearings (Shabecoff, 1979; U.S. House of

Representatives Hearing, 1978). Because of the event at Love Canal, RCRA was subsequently updated in 1982 to reflect the complexities and multiple conditions that affect the dangerous effects of this new waste category (Dowling, 1985).

Editorial interest in hazardous waste also increases markedly in 1978 with the advent of Love Canal suggesting a new category of waste exists after the event begins to unfold. Editorial interest, as measured by the number of articles published, reflects an understanding of readers' interest and level of awareness in the topic. A search for articles with the text "hazardous waste" over 10 years before and after 1978 in the *New York Times*, *Washington Post* and in magazines indexed in the *Readers' Guide to Periodical Literature* is shown in **Error! Reference source not found.**, and graphically in Figure 1. These major newspapers have been selected because they are influential, read widely and broadly represent the news media. The Readers' Guide to Periodical Literature is commonly used among scholars for content analysis, primarily because it is an index to articles in several hundred U.S. magazines of general interest including: American City & County; Architectural Record; Audubon; Business Week; Conservationist; Consumers' Research Magazine; Newsweek; Popular Science; Science; and Environment (HW Wilson, n.d.). No articles are found between 1968 and 1970 when the 1st Earth Day is celebrated. 20 or considerably fewer articles are published annually in these three sources between 1970 and 1977, but the total jumps to 53 in 1978 when the Love Canal accident first appears in the national news, then 189 in 1979, and markedly increases again to 427 in 1980 when the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) law is enacted. The increases in 1978, 1979, and 1980 (all p-value=0) are statistically significant. The significant increase in 1983

occurs after a major amendment in RCRA, the primary law for regulating hazardous wastes, is passed.

The meaning of hazardous waste as a new category is also supported by public opinion. A search through the Roper Center Public Opinion Archives, one of the largest data archives for U.S. national opinion polls, reveals no polls were conducted that contain items related to industrial wastes prior to 1979. In January 1980 as much Congressional debates on the issue emerged, however, a poll showed that most (33%) of the public believed that the chemical industry to have created the largest or 2nd largest industrial waste problem among several sectors (See Questions 3 & 4 in Appendix A, CRC, 1980). **Error! Reference source not found.** more visually shows that the public differentiates among the problems created among various sectors: Chemical (33% believe this sector creates the biggest problem) and Nuclear power (22%) but less among other sectors (Pesticides-9%; Oil-8%; Automobile-5%; Lumber & Paper-4%; Mining-4%; Steel-2%; Aluminum-1%; and Tire-1%). Most of the public (36%) believe industrial chemical wastes are more dangerous than the chemicals they come into contact with at home, although almost as many (34%) believe the dangers are similar (See Question 9). 73% of those surveyed believed regulations on hazardous waste disposal should be made more strict even if it resulted in higher consumer prices (See Question 5 in Appendix A). 69% want to live well more than 10 miles from a hazardous waste disposal site (See Question 6 in Appendix A); and another survey shows the public prefers to be 81 miles away on average (See Question 13E in Appendix A). **Error! Reference source not found.** shows a comparison of how far from their homes the public would like new facilities built. The public by then had gotten fearful or more aware of the risks of such wastes because 76%

wanted existing wastes cleaned up and 62% want the problem solved within the next year (Questions 7 & 8 in Appendix A).

A survey conducted by ABC News in cooperation with Louis Harris in June 1980 further shows the extent to which the public supported tighter regulations on the toxic waste category. 76% of those surveyed believed Love Canal represented a serious national problem and almost universally (93%) favored stricter Federal level regulations at a high priority (86%) (Questions 16 - 18 in Appendix A, ABC News/Harris, 1980).

Surprisingly, the same June 1980 poll by ABC News/Harris also suggests that the majority of the public held the government responsible for the conditions at Love Canal in one way or another. Here is a summary of the public beliefs about who was responsible (Question 19 in Appendix A, ABC News/Harris, 1980):

29%	Federal government did not enforce safety standards
4%	Federal government agencies dumped toxic wastes [* these were un-proven allegations]
22%	State and local governments did not alert public of dangers
55%	Sub-total for government responsibility
23%	Companies dumped toxic wastes
5%	Real estate developers built homes near where wastes were dumped
13%	All were responsible

Alternate constructions for the events

As horrible as the Love Canal event may have been, as we see it in hindsight, the dominant view of Love Canal is the embodiment of an environmental disaster. The event

need not be constructed as an environmental disaster, however. Love Canal may have turned out differently and specifically as a symbol of institutional recreancy.

The concept of institutional recreancy refers to "the failure of institutional actors to carry out their responsibilities with the degree of vigor necessary to merit the societal trust they enjoy" (Freudenburg, 1993: 909). Freudenburg points out that this form of institutional failure encompasses more than the idea of non-performance or mal-performance of a duty but also the idea that there exists a duty that was not even recognized.

Love Canal as an environmental issue

I shall first recap the unfolding of Love Canal to properly expose how actors came to interpret Love Canal as an environmental issue, and then specifically how they may have but did not construct the event as one of institutional recreancy. Two incidents, in particular, occur in early 1978 are pivotal points in the construction of Love Canal as an environmental issue.

The first incident occurs when a reporter, Michael Brown, visits residents in 1977 to investigate the presence of toxic chemicals (Brown, 1980: xii). Early in the spring of 1977, Karen Schroeder noticed her swimming pool in the backyard had risen above the ground. Wanting to find an explanation, Karen's husband, Tim, and other neighbors contacted city officials on several occasions but did not succeed in getting the City to respond. Meanwhile, Brown discovers that another reporter had written stories about the chemical nuisance in the 99th Street School that had been built directly above the buried chemical wastes. Brown subsequently visits Karen in 1978 (Mazur, 1998: 60). In this ensuing interaction, Brown finds that the two families (Karen Schroeder and her parents,

the Vorhees) did not attribute the chemical nuisance with human health, even though the Schroeders had numerous illnesses. Karen, however, came to believe that underground water movement had caused the swimming pool to rise above the ground.

The second incident occurs when Love Canal residents approach Rep. LaFalce. Tim Schroeder's efforts at the City had no produced any new information nor any resolution. Karen Schroeder then visits LaFalce early 1978 to discuss the problem (Mazur, 1998: 60; McNeill, 1978a). LaFalce could not help the residents then and persuaded them to wait for the Environmental Protection Agency to complete testing the air for contaminants along the Canal—an investigation he prompted in late 1977.

These initial meetings set Karen Schroeder's interpretation of the unfolding event as an environmental issue. Prior to Brown's visits, Karen did not link the chemical nuisance with human health. And, the visit with LaFalce directly linked the problem they were facing (i.e., illnesses and property damage and loss) with environmental regulations. In May 1978, Karen begins organizing some of her neighbors to press the city government for action (Gibbs, 1982: 14; Mazur, 1998: 13). Then later in June, activist Lois Gibbs, too, in a similar but independent interaction with LaFalce comes to link her son's health with environmental regulations and begins organizing for change as well.

The role played by reporter Michael Brown and Congressional member James LaFalce in forming residents' interpretations of Love Canal as an environmental issue has a theoretical foundation. Symbolic interaction theory (Blumer, 1998) proposes that shared meaning arises from face to face interactions among people. The interactions among Schroeder, Brown, LaFalce and later with Gibbs as well, show how these key meetings affected each others meaning-making and subsequent actions. The ability for Brown and

LaFalce to influence the residents is not coincidental or circumstantial—both carry important status positions that allow them to exert power and influence. In support, Cast (2003, 2004) shows the definition of the situation depends in part on the interactions with powerful individuals.

Recreancy

Two ideas suggest how Love Canal residents could have constructed their problem as one of recreancy or institutional failure instead of an environmental problem. First, the residents had gone to their local government officials on numerous occasions for help. These efforts led nowhere. Gibbs speculates that city officials had a cozy relationship with Hooker Chemical, a large employer who was planning for an expansion of their headquarters building that would have brought even more jobs into the city. The local city government was not only unhelpful but also part of the cause of the problem. The city had disregarded or misinterpreted surveys that showed the location of buried hazardous wastes, and removed much protective earth above the wastes to make way for a new road.

Second, the news of the unfolding situation informed the broader public. A public opinion conducted in June 1980 shows that the public mostly held the government responsible (Question 19 in Appendix A, ABC News/Harris, 1980). More than half of those polled thought that some government agency was responsible, and 22% believed the local government was responsible for the danger residents were now in.

Together, there is some evidence that supports the idea residents could have but did not construct their problem as the failure of their government officials.

CHAPTER 6. CONSTRUCTING INSTITUTIONS

Preface

This chapter serves three purposes. First, I provide additional case comparisons to provide further support to the findings on the previous chapter 5. These comparisons are drawn from the Exxon Valdez and Guadalupe Dunes cases. I also specifically point out the alternate constructions that may have been made about the Exxon Valdez and Guadalupe Dunes accidents.

Second, I describe the findings related to the second major research question: How do events lead to significant institutional change. Whereas in the previous chapter I theorize that claims and meanings *are* compelling reasons for change, this chapter specifically addresses how the meanings and institution is constructed. They are constructed specifically through two key elements of the emerging theory: the problem provider and solution provider roles; and the interaction between the two roles in a process I label *problem shopping*.

Finally, I define *catalytic events* and explain more explicitly how events become catalytic. This section also draws on the concept of disrupted life from the earlier chapter.

Part I – Claims and shared meanings in Exxon Valdez and Guadalupe Dunes cases

During the Exxon Valdez accident, many people in the U.S. were injured, and on many levels. Many were riveted to the evening news on TV or the morning news in print for months after the oil tanker ran aground. Alaskans took the accident as an affront to

their way of life, and it hurt them in a very deep way. They became angry and almost as quickly, a new radically new law to protect against oil spills was legislated.

Similarly, the Guadalupe Dunes oil spill is about a story of organizational neglect for the environment over a period of 38 years. Over the period, 20 million gallons of diluent, an oil-based chemical, leaked throughout an oilfield and into nearby rivers and Pacific Ocean. Nearby residents were angry but perhaps not sufficiently and the spill turned into a "non-event" with debatable meaning and implications.

These claims from the two cases are also aligned in categories presented earlier: Disrupted life, novelty, meanings of order, and a new category of hazard: the marine oil spill. After presenting the claims, I show the meanings that people drew from the interactions, and show some alternate ways the events may have been constructed. I end this first part with a summary of the comparisons.

Disrupted life

Break in routines

The oil spill had an immediate economic impact on the communities that relied on nature. Fishing was closed off, as were hatcheries and the indirect impact was also shared in those who provided services to the fishing industry. Daily routines of doing work were disrupted.

Here is how author Ott describes an encounter with a neighbor whose economic and family life had been disrupted:

> "We made our first permit payment—just barely," Linden [O'Toole] said. "Sam [Linden's husband] worked in that mess on the Sound until fishing started. And we fished to the very end of the season. We couldn't take the kids with us." Her eyes reddened with tears. "I didn't want to risk them getting into the oil. They

> were so traumatized when we both left them to fish. They wanted to come. They didn't understand. One of us has always been with them." Her voice trailed off. (Ott, 2008: 56)

This form of life—working parents who simultaneously look after children—is quite common among the residents of rural areas. The O'Tooles had been planning to fish during the spring and summer season in order to be able to stock up food and fuel for the winter, during which time they could home school their two young children. Because they could not fish, Sam and Linden had to take part time jobs in Cordova thus preventing them the additional time with the children and sacrificing their education as well. In an unfortunate accident later, a fire onboard sunk the O'Tooles' boat taking with it their entire economic livelihood. A judge would also later deny their claims for lost time for their children because it was legally defined as a non-economic loss and therefore not eligible for claims against Exxon.

The oil spill hurt the fishermen in three ways (Davidson, 1990; Keeble, 1999). First, the oil spill threatened and harmed young hatchlings of pink salmon in the hatcheries. In the second year of a salmon's life, they return from a long migration back into the Sound. This catch of returning salmon jeopardized 80% of a fisherman's catch. Herring, another source of fishing income, has an even longer 4 year cycle that is threatened over the long term. Second, fishermen had dilemma of choosing between finding temporary work with Exxon to do cleanup and facing the uncertainty of waiting for the regulatory agencies to open the waters to fishing. Fishing was permitted on some days and then the agencies would decide to close fishing when they believed the catch might be threatened. Third, fishing throughout Alaska was hurt because many buyers, particularly those in Japan, could not or did not want to differentiate between Prince

William Sound catch from other areas in the state. Here is how one fisherman describes this hardship:

> Salmon is my whole income. They [Exxon] gave us ten thousand for the [loss of] Cook Inlet Drift Net Closure, and that may be all I'll see. In the mean-time I can't leave, I can't get a job, and I can't fish. I've got three kids, and one of them is going to a school in Seattle for dyslexia. The contract for our tender boat makes two-thirds of the payments on the boat, and we've got to find the other third somewhere or lose the boat. [The author then describes the fisherman's break into crying] (Keeble, 1999: 195).

This account typifies the sense of helplessness and that there is no favorable path forward. Their everyday life routines were blocked. Cohen (1999) also found that the severity of the impact on fishing had a more profound effect because it allowed other nations, Chile in particular, to develop competitive industries around the world, thereby extending the economic impact over a very long term.

The oil spill impact also significantly affected the lives of Exxon employees. Perceiving anger and animosity toward the company, many employees began to avoid meeting family and friends; would be embarrassed or avoided disclosing who they worked for; and made their best to get to Exxon offices as discreetly as possible (Campbell, 1989b). One employee was accosted at church. The feelings of shame and guilt, and the resulting stress took a toll on his family. His wife, Fran, spoke to a reporter of their life at home:

> We've talked about what happened. Like anybody else, I think, we asked the same questions. How could it have happened? Surely there should have been some safeguards. We've talked about Exxon's response, the public's response to Exxon. How it's affected our friends in the company who've had to leave home to work on the spill.
>
> So, yes, it has created a strain around the house. You know, I used to think it might end around July. Then, I set my sights on, maybe, October. Now, I envision it going on a long time.

The oil spill had consumed their lives and interactions with others. As Fran describes, the topic of conversation went on and on, over and over again, and always with unanswered questions. And, it went on a long time. The anger people felt towards Exxon was directed at its employees too in not so subtle ways.

Spiritual disruption

Alaska seems to draw awe and inspiration, and also a sense of humans as a small part of a grand scheme. Several authors convey this sense of becoming more aware of some spirituality especially when they go outside (e.g., Davidson, 1990; Keeble, 1999; Ott, 2004; Wohlforth, 2010). Even common people who have never visited Alaska feel this mystical quality when prompted for their impressions (Campbell, 1989a). For the indigenous people, the oil spill not only scarred their land but also broke their spirits. Shortly after the oil spill, Chief Walter Meganack wrote an open letter to the Anchorage Daily News about this painful experience. An excerpt is inadequate but here is a brief attempt to reproduce the native experience (Meganack, 1989):

> Never in the millennium of our tradition have we thought it possible for the water to die but it's true.
>
> We walked the beaches, but the snails and barnacles and the chitons are falling off the rocks, dead. We caught our first fish, the annual first fish, the traditional delight of all; but it got sent to the state to be tested for oil. No first fish this year.
>
> We are invaded by the oil companies offering jobs, high pay, lots of money. We are in shock. We need to clean the oil, get it out of our water, [and] bring death back to life. We are intoxicated with desperation. We don't have a choice but to take what is offered. So we take the jobs, we take the orders, we participate in the senseless busywork.

Chief Meganack speaks to the pain, despair and then desperate attempt to regain their lives. He speaks of an invasion; an assault on their spiritual values and way of life. Then, he too makes a specific criticism about the oil spill response by describing it as "busywork."

The spiritual disruption has another origin related to Exxon's direct spending on cleanup operations, as Chief Meganack alluded too above. As Exxon began to hire locals to combat the oil spill and then cleanup efforts over the next two years, the attraction of high pay drew many spiritual leaders away from their jobs into cleanup jobs. A village health aide explained: "Our spiritual leaders have gone off to work on the spill, making $16.69 an hour.... I don't know if Port Graham will ever be the same. People don't have time to visit. They don't have time for tea. They're too busy. Even the children look lost" (Keeble, 1999: 230).

People were not only detached from the sacred water but also estranged from their attachment to the land. Coast Guard Admiral Yost made a personal discovery when he made a site visit to a deserted beach that was being cleaned on a cold rainy day with freezing temperatures. He met at woman and describes how he too was touched by the close relationship between man and nature:

> I said to her "Ma'am, what are you doing out here?"
>
> She said, "Admiral, this is my land. This is my land."
>
> I had trouble keeping tears from going down my cheeks. She was getting paid, but she wasn't there for the money. This was her land. It went back to her father, her grandfather, her grandmother. As far back as history goes. (Bushell & Jones, 2009: 127)

The Admiral's description tells us about the link between the woman and her ancestors—a link that she appears to be trying to reestablish. Keeping the land clean, for this woman, was not just about doing community service for her neighborhood but about keeping her ancestral home clean. Her claim is that dirt has come into her life and home, and that is not where it should be.

Social disruption

Another form of disruption came from the social problems associated with Exxon's spending. Iarossi, Exxon's executive sent to Valdez had been allowed to spend whatever was necessary to respond to the spill. He understood this mandate broadly, and on one occasion wrote a promise of $1 million on the back of his business card to the hatcheries that were affected (Bushell & Jones, 2009: 94). An Exxon accountant remarked at his surprise that the company was spending as much as $10 million a day; and at one point Exxon had about 11,000 workers in the area consuming 330 tons of food, and who patronized the local bars at night (Keeble, 1999: 160). Such acts may have been immediately helpful to some but many others began to see the Exxon spending as partial, unfair and led to many corrupt practices.

Exxon free spending exposed many fault lines. First, there was a division among those who perceived the spending, compensation and or employment as a means correct or improve the current conditions. Others, however, perceived Exxon as evil and taking any money from them was considered immoral. "Friends argued about it. … the [Cordova Fishermen's Union] board was bitterly divided over whether to ask Exxon for compensation for hundreds of hours for meetings that consumed our lives" explains Ott (2008: 50). Eventually, the union did request and received $250,000 from Exxon, and as

may be predicted, the union became less forceful as an Exxon critic (Wohlforth, 1989a). Second, there was enormous inequity among those who received and benefited from the largesse and accompanying economic multiplier effect (Exxon paid workers who then purchased goods and so on). Wealth was spread indiscriminately, and much did not remain in the community as transient workers took their pay to homes outside the area (Keeble, 1999: 268). Friends and neighbors would grow envious or jealous of others. The inequity also led to charges of corruption as hiring practices became arbitrarily selective. John Devens Jr., a foreman on several cleanup crews, describes a hidden view of the surreal situation:

> A lot of the women who were hired got to hang out with the white hats [Exxon managers supervising the cleanup operations], too. They had us form a special detachment for the good-looking girls. The white hats didn't want them hosing oil all day and coming in all crapped out from having worked on the beach, so we assigned them the easiest jobs so they'd be able to party in the evenings. (Bushell & Jones, 2009: 111)

The situation was surreal in that Exxon wanted to show the public that many were employed doing cleanup and yet mid-level staff were partial in hiring and creating a party atmosphere for their personal pleasure at company expense.

Contrary to a popular belief, Cohen's (1999) study found that the oil spill caused an economic boom and inflated prices. The lure of lucrative Exxon jobs drew waitresses, childcare workers and many transient workers from existing businesses that then had to re-hire new staff at higher wages. Even though the overall economy did improve, however, certain sectors such as fishing were thoroughly damaged while others like the service industries boomed. Obviously, Exxon's spending on labor for cleanup was significant but these workers also spent an extraordinary portion of their pay in Valdez.

Prices for goods went through the roof as opportunists took advantage. Mayor Devens of Valdez describes some unintended consequences of the free-flowing cash (Bushell & Jones, 2009: 153):

> There was a predictable scene every time a plane landed. First people would go to the automobile rental area, try to rent a car, and find out, no, there were none available. Then they'd see somebody-a stranger-and ask, "Hey, do you have a car?" Typically the stranger would be reluctant, but as the amount of money offered kept rising, $100, $125, $150 dollars a day, eventually the keys would be handed over.
>
> Then phone calls were made to hotels, none of which were available either, so the negotiations would begin again. "Do you have an extra room in your house? How much will it cost? How about another $100 a day for the kids' room?" So people were putting their kids out in the camper because the money was irresistible. It was very disturbing.

Everything in Valdez had a price—social and human values were simply set aside. He also explains that sewage became a problem because the city could not keep up with building extensions and many just camped in the parks or under building eaves. Crime, the divorce rate increased, and spousal abuse rates all increased. Because both parents now had to work, children went to inadequate childcare or the fortunate ones went to grandparents but in all, the everyday patterns shifted.

Residents also made claims of disruption in terms of the psychological harm the spill had caused. First, the spill created a great deal of psychological injury. The local hospital saw a fivefold increase in the number of patients who needed treatment because of the spill itself, the destruction of nature or the financial stress (Keeble, 1999: 261). The injuries, too, then led to alcohol and drug abuse, and increased the number of suicides as well (Keeble, 1999: 235). The state Department of Health and Social Services had to hire a disaster psychologist to help communities heal (Wohlforth, 1989b).

No disruption at Guadalupe Dunes

The situation at Guadalupe Dunes could not be more different from the Exxon Valdez case. There were numerous complaints that came from those who used the beaches alongside the oilfield (Beamish, 2002: 110; Bellisle, 1999)—aesthetics were at stake in these claims but they made few claims about their disrupted lives.

Residents were very angry, however, at Unocal's attitude and responsiveness to local concerns. Anger at Unocal had developed over a very long time throughout the region. A large oil spill in Santa Barbara in 1969, for example, had contributed to the general distrust of Unocal, and increased the political opposition to any Unocal development (Molotch, 1970). Here is an example of how residents see Unocal's pervasive misconduct in the whole area:

> Let me make this point. There is no difference between the way they are handling Avila and Guadalupe.... Unocal's constant lying, foot dragging, misleading, and just their whole game-Unocal has no standing at all! (Beamish, 2002: 120)

The resident's anger towards Unocal also arises from a similar situation at Avila Beach. The city just north of Guadalupe is also adjacent to another Unocal oilfield and there too oil had leaked underneath the downtown business district. Overall, residents wanted to see Unocal punished with a civil suit, and long after the Guadalupe Dunes spill was settled, 30 groups started a movement to petition the state to revoke Unocal's permission to operate (Mokhiber, 1998).

Even though there was animosity toward Unocal, the sentiments are actually mixed. Some lay blame on the regulatory agencies and suspected officials were being

partial towards Unocal because the investigations took so long. One resident interviewed by Beamish explains (2002: 121):

> I think that basically the state agencies and the oil companies. ... I don't want to say they are sleeping in the same bed, but I think at the time, there was probably not a lot of direction from the leadership on the state level to really look at corporate pollution.

On the other hand, others believe that Unocal did the responsible thing—paying for remediation. Still others believed that the news attention caused property values to drop and slowed down the tourist trade, while Unocal's behavior was no more reprehensible:

> The local reviews are mixed, but I personally think they've been a good corporate neighbor. The spill itself hasn't affected us that much – there really isn't any health hazard. More than anything else, it's the publicity that's doing us the most damage. (Martin, 1996)

In brief, residents around Guadalupe Dunes did not make any claims about disrupted lives. There may be various reasons why there were no claims of disruption, but I speculate that people did not live that close to the spoiled areas as in other accidents studied. The city was 3 miles away, slightly uphill and inland from the oilfield. Furthermore, the aquifer deep underneath the oilfield is not used for drinking water. Another speculative reason is that people think of an "event" more holistically than of a single occurrence, and so perhaps they see the Guadalupe Dunes oil leak more indicative of a larger problem and event than the leaks by itself. Beamish's (2000, 2002) thesis is that the oil leaks were slowly accumulating hazards that do not suddenly arouse perceptions of risk, fear and drama and thus such accidents become "normalized" and "routinized" over long periods of time.

Novelty

Reference point

The Exxon Valdez accident instantly became a reference for which other accidents are compared to. The oil spill, estimated at 10.8 million gallons, was the largest spill then but is merely an estimate. Some estimates placed that figure at 38 million gallons, but author Ott suggests that the lower figure was simply enough to carry news headlines for a long time (Ott, 2004: 4-5; 2008: 44-45).

The accident was of extraordinary interest to many and together they made the Exxon Valdez an incomparable spectacle. Media came from around the world, some arriving in Valdez before the governor. The Cousteau Society produced a special film on oil spills; National Geographic ran a lead article by Hodgson (1990) and then again in 1999 (Mitchell, 1999); and singer John Denver gave a benefit concert (Keeble, 1999: 260).

The Exxon Valdez oil spill is still a reference point today for others to compare with. Some claim the recent (April 2010) BP oil spill in the Gulf of Mexico is a re-run of the Exxon Valdez accident (Ritchie, et al., 2011). Legal scholars also point out that there have been no significant changes to the law since the accident led to the enactment of the Oil Pollution Act (Murchison, 2011). And, reporters often cite the Exxon Valdez accident to show the relative size of other accidents, such as the oil fires that occurred as the result of the Kuwait Gulf War (Barnaby, 1991); or when Israeli warplanes bombed a power plant in Lebanon (Conlin, 2006); or an oil spill on the Yellow Sea in China (Agence France-Presse, 2010).

In stark contrast, no reports compare other lesser spills to Guadalupe Dunes. Media interest was relatively limited to local newspapers around California, and only a few incidental reports appeared in the Washington Post, New York Times, and Wall Street Journal because of the potential impact on Unocal's stock prices. While some media reports had considerably deeper coverage in the Los Angeles Times, San Francisco Chronicle and San Jose Mercury, these reports do not compare Guadalupe Dunes to lesser other accidents. Instead, the oil leaks at Guadalupe are compared to the Exxon Valdez and Santa Barbara oil spills. A reporter described how Unocal officials bridled at the comparison with the Exxon Valdez spill: "It's not the same thing" (Einstein, 1994). Yet, County Supervisor Delany explains: "It fit into the wholesale disaster camp … on the scale of the Valdez spill." Unocal critics wanted the comparison with the Exxon Valdez to highlight the negative connotations, and to draw the analogy with the Valdez's impact on nature.

Accommodation by existing institutions

One of the most numerous claims made in the Exxon Valdez case relate to the spill response. Superficially, the claims show confusion among the multiple parties who were responsible for fighting the spill, lack of leadership, many operational lapses, and most of important of all, the parties were unprepared. Numerous articles (e.g., Anchorage Daily News, 1989; Epler, 1989c; Epler, 1989d; Jones & Campbell, 1989) and books (e.g., Davidson, 1990; Ott, 2008) analyze and focus on this "problem." The patterns of claims, however, reveal a deeper cause and that is the U.S. Coast Guard's disowned responsibility for oil spills.

Gusfield (1981) provides a sensitizing concept he labels as the ownership of public problems. Ownership means an organization may assert itself in the ability to define and determine what constitutes the problem, and how the problem is to be solved. The greatest power, however, comes from organizations that remain silent to such an extent as to project the belief that it is not at all involved in the problem. Drunk driving as the cause of auto accidents, Gusfield found, completely absolves auto manufacturers of any responsibility, for example. No one ever believes car accidents result from a "bad" car.

In similar way, the claims made by participants in the Exxon Valdez and also Guadalupe Dunes case are leveled at individual companies and not at regulatory agencies one might expect. In neither case does the U.S. Environmental Protection Agency, the Center for Disease Control, or the Department of Health become involved, even though oil is known to contain carcinogens and toxic to humans and wildlife even in small quantities (Badjagbo, et al., 2010; Doyle, 1994; Laffon, et al., 2006). One agency in particular, the U.S. Coast Guard, had actually been shirking its responsibilities since the 1970's with respect to oil transport and safety, and exhibits what Gusfield (1981) calls disowning a problem.

To aid in the development of the Trans-Alaska Pipeline, the oil industry made promises to build a safe pipeline, develop oil spill response (hence the formation of Alyeska), and ensure safe passage for oil tankers (Jones, 1989b, 1989d; Ott, 2008: 19-25). The industry sought and received federal oversight such as the promise that the U.S. Coast Guard would put in place navigational aids and a vessel traffic control system. The oil industry, however, could not prevent some regulatory control moving from the federal

level to the states. Alaska enacted many statutes encouraging double-hull tankers but a federal court overturned the law (Kizzia, 1999). The oil industry, meanwhile, lobbied the U.S. Coast Guard to drop its recommendation that double hull tankers be used. Through more intense lobbying, the Coast Guard budget was reduced, oil spill response teams were reassigned, vehicle traffic control systems were left poorly maintained, minimum crew size was reduced, and less training was required for tanker crews[11] (Jones, 1989b). The Coast Guard had planned for a tracking device on each oil tanker so that its precise location could be transmitted to a monitoring station; a proposal to improve the safety of ships navigating the narrow channels of Prince William Sound. The system was never put in place. Furthermore, the existing radar system was further handicapped by increasing the "resolution" thereby allowing the Coast Guard to see smaller vessels, but counter to the industry trend of building ever larger tankers, and sacrificing visibility in poor weather. In essence, the Coast Guard radar system could not see large ships at a distance (the Exxon Valdez was not visible on the radar 13 miles away), and could not see through rain and snow—the conditions that are most typical of Alaska through most of the year.

One comical example of the Coast Guard's poor ability to manage safety occurs when investigators board the stricken Exxon Valdez shortly after it runs aground. Coast Guard Chief Warrant Officer Delozier, an investigator, describes a situation where he is supposed to perform a sobriety check on the Exxon Valdez' Captain Hazelwood but has no capability to do so (Bushell & Jones, 2009: 28-30). Delozier calls his boss, Commander McCall, who does not have any Coast Guard personnel to conduct the test either. McCall then attempts to locate a state trooper but no such individual is available!

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[11] Ship pilots only had to pass tests on simulators and need not have actual experience

McCall then resourcefully locates a state Fish and Game warden but the warden shows up on board the Exxon Valdez hours later armed and had handcuffs ready to arrest someone, only to be told he was merely supposed to administer a sobriety check. Ironically, it is Captain Hazelwood who informs Delozier that the ship has sobriety check kits in store.

Why the Coast Guard acted in these ways to reduce its own capability is beyond the scope of this study. However, the fishing industry's claims that oil tankers were under-supervised by the Coast Guard and the agency's self-handicapping suggest that the Coast Guard did withdraw from its ownership of oil transport safety.

The second institution that could not properly accommodate the Exxon Valdez' safe passage is Alyeska. A fuller description of Alyeska's shortcomings is covered in Chapter 4. Suffice here to state that Alyeska could not properly respond on the oil spill in a timely manner, and largely failed its mission to clean up oil spills. Regulatory agencies were unclear who was responsible for cleaning oil spills, and the oil industry had sold itself, through Alyeska, as a responsible self regulated party. Alyeska could not fulfill its mission because its owners saw the safety and prevention operations as a threat to profits, and Alyeska was not properly monitored. Alyeska produced plans or "fantasy documents" according to Clarke (Clarke, 1990), and otherwise decoupled symbolic aspects of compliance from substantive operational compliance. Alaska Department of Environmental Conservation Commissions Kelso would later call Alyeska's spill response plan "the biggest piece of American maritime fiction since Moby Dick" (Medred, 1989).

In addition to poor spill response, the U.S. Coast Guard realized that there were no laws forcing ship owners to pay for cleanup. In 1988, the Glacier Bay ran aground,

and spilled 207,000 gallons of oil. The ship's owner simply decided not to cleanup the oil and just left the Coast Guard to cleanup (Epler, 1989a).

In brief, the Exxon Valdez case is a situation in which there were no capable agencies who could respond the oil spill. Alyeska was primarily responsible but perhaps the first to capitulate that responsibility. The Coast Guard was responsible to monitoring and ensuring preparedness for oil transport safety but that mission was effectively disowned.

On the other hand with the oil spill at Guadalupe Dunes, residents' complaints of foul smell, discolored water and later of oiled beaches took an extraordinarily long time to investigate. State regulators, however, initially had insufficient grounds to pursue any legal actions against Unocal. Fortunately, two whistleblowers came forward to provide sufficient evidence of illegal activity. Subsequently, state regulators were able to convince the U.S. Coast Guard to force Unocal to erect a barrier to prevent further diluent leaks into the ocean and nearby river. The Coast Guard had resisted earlier actions because it was not clear that Unocal had violated the provisions of the, then new, Oil Pollution Act.

The Unocal oil leak was substantially different from the spill that was regulated under the provisions of the Oil Pollution Act (OPA). An oil spill, for purposes of the OPA, had a single source, occurred at sea, was an imminent threat to human and or wildlife, and the Guadalupe spill was nothing like that. The OPA was only applicable in one aspect, and that is it pertained to spills that are "large." State regulators, finally, charged Unocal with state civil and criminal misdemeanors violations and did not rely on OPA statutes.

While agonizing to many residents, the Guadalupe Dunes oil spill was largely well accommodated by existing institutions. Investigative agencies had sufficient legal support, albeit poor resources to conduct thorough and effective investigations, and did stop the oil leak eventually. State prosecutors also won civil suits forcing Unocal to remediate the contaminated dunes and beaches. The institutional system seemed to work properly for Guadalupe residents.

Position on the agenda

The Guadalupe Dunes case evoked little, if any, legislative interest, and minimal public media interest. No one attempted to put the case on the legislative agenda because there was little that was novel or attractive to legislators. There appeared to be little disruption, and no one deemed the problem sufficiently important to place onto the legislative agenda. No legislative officials were involved. The media was mildly interested and primarily after civil lawsuits were filed in court. Very little coverage was found in the national media, and much coverage was aimed at California residents.

The Exxon Valdez case, however, was very different from Guadalupe Dunes in that Valdez-Cordova residents wanted *new* protections against future oil spills. The Exxon Valdez case is also significantly different from the Love Canal case.

Where the Love Canal residents sought and received a place on the legislative agenda, the Exxon Valdez "problem" is already on the legislative agenda. Congressional members had been debating oil spills in the 1970's both when the Trans Alaska Pipeline was being proposed and developed, and when numerous oil spills occurred threatening beaches and fisheries. A longer description is found in Chapter 4. According to

Congressional records, the last bill to legislate oil spills was defeated in 1987 for the seventh time; and a news report describes the reason as considerable opposition from the oil industry (United Press International, 1987).

But, congressional members were quick to pounce on the Exxon Valdez accident when it occurred in order to move their preferred solution forward. On March 16, a week before the accident, Congressional member Walter Jones (D, NC), chair of the Committee on Merchant Marine and Fisheries sent a proposed bill to various subcommittees. March 24 is when the Exxon Valdez runs aground, and by April 6, hearings are held in Washington in both House of Representatives and the Senate. Jones sets the tone for the beginning of the hearings:

> The unthinkable has happened, a major oil spill off our shores. The question we must all ask ourselves is "Were we fully prepared for this eventuality?" Regretfully, I am afraid we must answer "No."
>
> Since 1976, the United States Congress has approached the need for comprehensive oil spill legislation … A long held belief has been that it would take a disaster to get others to realize the necessity of such legislation. Well, the disaster has occurred … The spill once again exposes the uncertainties in the crazy quilt system of laws and plans currently in place to deal with disasters such as the Exxon accident. … the sky has fallen and we will all suffer as a result of our unpreparedness. (U.S. House of Representatives Hearing, 1989b)

Notice, Jones points out that this accident is an old problem they have been trying to solve since 1976, and that a primary issue is that of "unpreparedness." Jones also states quite explicitly that some legislators have the propensity to wait until a disaster occurs before acting, thus providing strong support for the notion that solution providers seek out an event to advance a solution.

In the Exxon Valdez case, residents did not have to push hard to get the attention of national legislators because Congressional members were already looking for an event

to support their cause. Instead, we see the residents getting prepared for the Congressional members visit. Three days after the accident, fishing union leader Theo Matthews assigns a board member, Ott, to begin researching materials to prepare for Congressional testimony (Ott, 2008: 48). Sure enough, a little less than a month had passed and several union members were called to testify before Congress (U.S. Senate Hearing, 1989b).

Problem and solution providers

Problem providers

In the Guadalupe Dunes case, an identifiable problem provider does not fully emerge although there is some evidence that one person did try to play the role. The data is surprisingly silent and does not reveal any one or group who tried to organize neighbors, take an advocacy position, or attempt to influence news media, regulators and lawmakers. No one attempts to dramatize or call attention to the unfolding leaks. The case unfolds surreptitiously as residents file complaints with regulators but we hear nothing more until court cases wind their way through the judicial system.

One snippet of news, however, revealed by a news reporter shows a resident activist may have been involved (Martin, 1996). An attorney, Roger Lyon whose house sat adjacent to the San Luis Obispo Creek, had led the charges against Unocal. However, a county official explained that Lyon withdrew his complaints after Unocal purchased his property.

Juxtaposed against Guadalupe Dunes, the Exxon Valdez case is filled with a variety of problem providers. These problem providers define the problem by *describing*, *dramatizing* and *demonizing*.

One problem provider, Michelle Hahn O'Leary, a Cordova-based fisherman, spent considerable time describing the situation to a large audience (Bartimus, 1990). A few days after the accident, she was elected to the CDFU board and was one of the earlier fishermen who helped with the cleanup operations under the Exxon payroll. Subsequently, she spent considerable time testifying on behalf of the union in Anchorage, Valdez, and in Washington. Like Ott, Hahn O'Leary was invited to testify before the Senate (U.S. Senate Hearing, 1989b). The union put her on national TV and radio to conduct interviews. The media often portrays Hahn O'Leary as a "fisherwoman," i.e., drawing on her status as an ordinary working person whose livelihood depends on nature's services like clean water. In these interviews, she typically describes the beauty of the land, and then some drama about the accident and finally a personal reaction to demonize Exxon. Here are snippets from a personal interest story. I have marked the paragraphs in bold to show how each of the activities: describe, dramatize and demonize work into her interview with the reporter (Bartimus, 1990).

> [**describe**] … the Arctic sun rises early over Prince William Sound. It makes the mountains glow like pearls, warms sea otters playing at the water's edge, reveals a bald eagle in a distant tree, exposes a coyote on the prowl. …
>
> Michelle Hahn O'Leary pours $4-a-gallon milk on her $4.79-a-box cereal, spreads $2.13-a-pound margarine on a piece of $2.70-a-loaf bread, she gazes at the panorama and says, to no one in particular, for the several thousandth time, "This is why I live here." …
>
> "I've always loved the outdoors, and I wanted hands-on work. That's why I became a fisherman. The weather's always different, the currents are different.

> Mike and I mostly fish together, we have our own boat. We fish for salmon in Bristol Bay and have herring permits in Prince William Sound." …
>
> "My husband and I were the first fishermen in Cordova to find out about the spill when a friend called from Seattle at 6:30 a.m. He'd heard it on the news. [**dramatize**] I almost threw up. I felt like somebody'd kicked me in the gut. …
>
> "Knowing it could happen didn't help prepare us for the physical, mental, emotional stress and strain to come. [**demonize**] By noon we had 50 fishing boats ready to fight the spill, but Exxon never returned our phone calls.
>
> [**demonize**] "I think Exxon was in a state of denial for the first six weeks. I think they felt it happened in an area where people weren't sophisticated enough to communicate the crisis to the rest of the world, that we'd all sit home and let it go by."

The descriptive activity not only serves to inform the audience about what occurred in the accident but also serves to portray the residents as ordinary working people and in so doing link and help the audience relate to their plight. In this case, a little drama is injected to show her first reactions to the news of the accident. Subsequently, she demonizes Exxon's inaction in spill response then in how they have a condescending perception of the residents. Demonizing is to accuse, blame and denigrate the perpetrator—an act of labeling Exxon as a deviant.

Hahn O'Leary also does some demonizing at Congressional hearings. She lays blame squarely at the oil industry's poor response to oil spills but also characterizes their greedy motivations (U.S. House of Representatives Hearing, 1989a):

> The disruption in our lives has not been caused so much by a drunken captain but really by a lack of planning and foresight on the part of oil companies. I feel that the oil industry has grown fat, lax, and lazy over the years with its zeal for corporate profits; and responding to an oil spill or preventing an oil spill has sort of become a sideline or hobby to them.

Notice how she points out the practices that are at fault: "lack of planning and foresight." And, she characterizes the industry with "its zeal for corporate profits."

Hahn O'Leary is only referred to as a union spokesperson on a few occasions (Associated Press, 1989; Foster, 1989; Rinehart, 1989). The use of "spokesperson" may have been avoided because that would suggest she is a mouthpiece for a special interest and thus put the union in a poorer position as a "victim" of Exxon malpractice. Even though who made such a framing cannot be carefully ascertained, the claims do come across to readers as though Hahn O'Leary is a normal person we should all be able to relate to and identify with. This is what a good problem provider does—describes the situation and establishes a sympathetic bond with the audience.

The problem provider role also includes the dramatization of the event. Dramatization refers to the activities and claims that bring attention and controversy to the event—it helps engage the media and public to follow the unfolding event and thus broadens the shared meanings more widely. Riki Ott performs this activity superbly.

Ott's dramatization is best illustrated when she attended the first meeting when all the leaders of various agencies met for the first time in Valdez for a press conference late on March 24, the day of the accident. She recalls the meeting (Ott, 2008: 43):

> As I listened to reporters ask questions of Exxon Shipping president Frank Iarossi and Exxon scientist Al Maki, it suddenly dawned on me that the press knew nothing—expect what Exxon was telling them—about the effects of oil in a cold-water marine ecosystem or the effects of dispersants on sea life. When Maki started explaining how dispersants, the "miracle cure," would get rid of oil, I sprang to my feet to interrupt their volley of questions.
>
> "My name is Riki Ott. I have a master's and a doctorate in marine pollution. I am a fisherman from Cordova." The press all turned toward me. I learned later that the crowd of fishermen gathered around the radio at the union hall in Cordova cheered.

The poignant appeal to the same knowledge base that Exxon relies on, "scientific fact," about dispersants is the very root of great debate in this case. This piece of scientific

uncertainty, as was the case in the Love Canal case, dramatizes and engages the media. Ott, then, continues her point directed at Exxon's jugular vein:

> "Dr. Maki, you and I were both at the International Oil Spill Conference in Texas last month where the use of dispersants was widely debated by experts. There are trade offs with dispersant use. Dispersants force the oil down into the water column, where it is toxic to fish. Fishermen are concerned that dispersants could harm the herring that are just coming back to spawn."
>
> I sank back into my seat, listening to reporters question Maki about the harmful effects of dispersants—and to the sonorous organ music coming from the Good Friday mass in a nearby room. I thought, "Organ music, like in *The Godfather* just before the killing began."

With a simple statement, led by her credentials, Ott unleashed a forceful drama onto the world media stage.

Keeble (1999), too, finds Ott's pointed questions and ability to create attention and controversy quite prominent. Keeble believes it is Ott's dramatization of the accident and controversies riveted the media and public attention to the unfolding event. Frank Iarossi, the Exxon executive in Alaska, confided to Keeble that he gave up press conferences in part because Ott took up so much press time during the conferences (Keeble, 1999: 86).

Solution providers

No one comes forward in the Guadalupe Dunes case to play the role of solution provider. There is no evidence of any lawmakers who were involved or took an interest in the accident. Beamish (2002), too, found little interest among news reporters and editors seem to suggest that few, if any, were interested in oil leaks at Guadalupe Dunes.

In the Exxon Valdez case, the role of a solution provider is mostly played by Congressman Walter B. Jones Sr. (D-NC). Rep. Jones was elected to the House of

Representatives in 1966. He represents a rural area in northeastern North Carolina that is mostly occupied with agriculture (tobacco & peanuts) and fishing industries; and some ocean-side resorts on the mainland and on the Outer Banks (Associated Press, 1991).

Jones primary interest in congressional politics was initially in agricultural issues but eventually in marine policy (Denton & Allegood, 1992). Jones became the chair of the Committee on Merchant Marine and Fisheries in 1981, but he had begun as a committee member years earlier (Monk, 1992). Jones typically but did not always vote for pro-environmental bills. His interest to work on oil spill legislation, however, is congruent with the need of his constituents who want clean beaches and fishing waters—much like those of the Alaskan residents who were impacted by the Exxon Valdez accident. The Oil Pollution Act, which he sponsored, also prevented oil drilling off Cape Hatteras in the Outer Banks where there are various wildlife refuge (Denton & Allegood, 1992; Gutfeld, 1990).

Rep. Jones, as a solution provider, conducts two kinds of activities: *enlivening* and *encoding*. Enlivening refers to giving life to the project, by means of engaging others into the national debate and thereby securing more legitimacy; and encoding refers to the work of translating the problem and ideas into code or the law. Encoding activities include not only writing legislative bills but also negotiating with other Congressional and regulatory officials in order to accommodate compromises.

Enlivening, or giving life to the change project, occurs in many forms. Rep. Jones gets himself invited as the opening speaker in the first hearings in the House of Representatives held after the Exxon Valdez runs aground (U.S. House of Representatives Hearing, 1989b). Jones and the subcommittees within his direct influence

subsequently hold hearings as well. These hearings invite a much broader range of stakeholders to express their views of the problem and or solution. These invited speakers include government officials (e.g., U.S. Environmental Protection Agency, the U.S. Coast Guard, National Oceanographic and Atmospheric Administration, and officials from the state of Alaska), community groups (e.g., fishing unions, labor unions), industry groups (e.g., the American Petroleum Institute, American Waterways Operators), some company officials (e.g. Atlantic Richfield, Amoco, Alyeska, and Exxon) and environmental groups (e.g., Natural Resources Defense Council, Environmental Policy Institute, Friends of the Earth, and National Wildlife Federation).

This activity that encompasses enlivening is important because it gives voice to various stakeholders and thus builds legitimacy. In contrast to problem providers who demonize Exxon and Alyeska, solution providers engage these companies as well as others in a process that appears fair in terms of procedural justice. The public hearings also provide a sense of balancing rational scientific reports as well as communities' emotional appeals.

Alternate constructions for Exxon Valdez and Guadalupe Dunes

The Exxon Valdez accident is a complex accident but many still primarily see the accident as an oil spill. Problem providers primarily constructed the event, i.e., made claims, to show poor oil spill response, irresponsible corporate behavior (Exxon's negligent or poor spill response), a drunk mariner (Captain Hazelwood), and a Coast Guard that shirked its responsibility. Fewer, if any, consider the accident as a manifestation of regulatory capture. Simply put, regulatory capture is the idea that a

regulatory scheme may be acquired or dominated by an industry for the industry's benefit (Laffont & Tirole, 1991).

Considerable data suggests that the regulation of oil production, and specifically transport, had been captured by the oil industry. Regulatory capture is characterized by a "cozy" relationship between a regulator and the industry that is regulated; and these patterns of behavior emerge from the data analysis. A representative of the environmental lobby pointed out that oil industry wastes are specifically excluded from the statutes in the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) as well as the Resource Conservation and Recovery Act (RCRA) (U.S. Senate Hearing, 1989b: 75). These laws regulate toxic chemicals and oil is toxic and the exclusion of oil suggests that a specific oil industry interest is protected. When a whistleblower at Alyeska approached its regulator, the Coast Guard, about pollution violations he was summarily sent back to his Alyeska managers (Jones, 1989a, 1989b), suggesting that the Coast Guard was not very vigorous in its regulatory efforts. Alyeska had hired quality control inspectors from around the country to help demonstrate that its pipelines were operated within the law. When inspectors instead wrote voluminous reports of "massive breakdown" of the pipelines, they were fired (Ott, 2008: 106-108). The Coast Guard had initially recommended double hull tankers, which is why Alaska passed state level regulations, but the Coast Guard capitulated after industry lobbying (Jones, 1989c). U.S. Coast Guard Admiral Yost then defended his agency's actions by explaining that costs for such double hulls would be considerable and not sufficiently effective but could not explain why then double hulls are required of ships carrying other toxic chemicals (U.S. Senate Hearing, 1989a: 73).

Regulatory captives were not isolated to the federal agencies. The Alaska Department of Environmental Conservation, DEC, routinely stood by as Alyeska demonstrated poor capability to respond to oil spills. The DEC approved Alyeska spill response plans that could contain disasters with “tens of millions of gallons” (Epler, 1989b), but Alyeska disbanded its fulltime spill response team in 1981 and clumsily attempted to clean 400 spills over 12 years (Epler, 1989a). Here’s how reporter Epler summarizes the state of affairs:

> In simulated spills and real ones, DEC has watched Alyeska in action and repeatedly found the company's efforts barely adequate, or worse. Containment booms sank, skimmers clogged and cleanup crews bumbled while oil escaped into open water or washed up on beaches.
>
> Time and again, DEC staffers complained that much of Alyeska’s equipment wasn’t suitable for the harsh Valdez environment and wouldn’t stand a chance against a big spill.

DEC staff routinely complained to managers in Juneau, the capital, but nothing was ever done to force Alyeska to comply or improve. DEC Commissioner Kelso had not even visited Valdez, and the staff did not recognize him when he did arrive with Governor Cowper after the accident (Epler, 1989a).

The Alaska Department of Environmental Conservation was afraid to take oil companies to court. DEC Commissioner Kelso had complained that state legislators had not appropriated sufficient funds to keep Alyeska in check. Yet, an environmental attorney observes that it was not a funding issue but one of fear:

> DEC has no idea what their authority is or isn’t because they’ve never tested it [in court]. If they won’t ever exercise it, it’s as good as not having it. That’s clearly the biggest problem DEC has.
>
> They almost never do surprise inspections. If somebody tells them [DEC] to go away, they just do. (Epler, 1989a)

Reporter Epler also got a response from former DEC Commissioner Ross, Kelso's predecessor, and he explained that "he never liked to go to court because of the time and expense." Furthermore, Dan Lawn, the DEC representative in Valdez, was removed by Juneau managers when Lawn became "too aggressive" against Alyeska. Alyeska had already prohibited Lawn visiting or inspecting their operations before the accident, and done so without repercussion.

As spill cleanup began in earnest, the Department of Environmental Conservation began to fly news reporters to see cleanup sites. The flights, however, were intended to shield Exxon from further scrutiny (Wohlforth, 1989a). Early after the accident, DEC allowed reporters full discretion over where to fly. Later, they curbed specific reporters from any flights, and then later coordinated with Exxon officials to ensure they did not fly over embarrassing sites. Exxon was also able to prohibit independently chartered flights by leasing all the available aircraft.

In the Guadalupe Dunes case, the problem could have been constructed as a failure of self regulation. Some environmental laws in the U.S. are not actively policed nor inspected by regulatory officials, and instead the law relies on users (i.e., companies) to voluntarily report violations to the respective agencies. This basic legal doctrine is based on the idea that some product markets with externalities sometimes fail (e.g., polluters pass cleanup costs to taxpayers or neighbors) and that the appropriate and more cost effective way to deal with such market failures is to enforce disclosures (i.e., so the market can properly price the product and thus determine how much to pay for

environmental protection) rather than norms (Bernstein, 2001; Gaines & Kimber, 2001; Ogus, 1995). Such self regulatory laws were violated when the Unocal Corporation decided to hide their oil leaks.

After a Unocal whistleblower came forward in 1992, the California Office of Oil Spill Prevention and Response investigated and reported that Unocal had willfully hidden diluent leaks that should have been reported (San Jose Mercury, 1992). This news was widely distributed by Associated Press wire services and appeared in various news outlets including the San Jose Mercury (in northern California) as well as the Daily Breeze (in southern California). Here is how a local regulator (on the San Louis Obispo planning department) explains how Unocal could have gotten away without reporting the leaks:

> I'll be frank with you, one of the reasons why this went on so long without anybody saying anything was with most of the monitoring systems in place, the monitoring processes, are self-monitoring. Meaning if you are a discharger—you are Unocal—and you spill something, leak something, it is your responsibility to report it to the Regional Water Quality Control Board. That's just the way the system is set up, it is a self-monitoring system. If you decide that you're not going to tell anyone, no one is going to know. (Beamish, 2002: 88)

Because the law is based on self report, lawmakers do not appropriate budgets for regulation and by extension regulators are not funded nor staffed to conduct inspections or verify whether operations are compliant. The system is based on an honor system.

Problem providers could have made the claim that the root problem is a failure in self regulated laws. The news as it unfolded in the case would have provided problem providers with the knowledge that self regulation was not working the way it is supposed to be. Several residents interviewed in 1996 and 1997 were aware Unocal did not report the leaks as they were supposed to, but residents' anger was directed at regulatory officials whom they perceived as being on Unocal's side instead of protecting the public

(Beamish, 2002: 122). However, my analysis suggests the self regulation problem was not vigorously claimed because there was no such solution provider who came forward.

Shared meanings

The absence of disruption and presence of institutions that accommodated residents' wish to stop the oil leaks at Guadalupe Dunes suggests the event does not mean there is disorder. The findings from Chapter 5 suggest that residents' claims of disruption, when shared widely, eventually lead to a shared meaning that there is widespread disorder. This does not appear in the Guadalupe Dunes case. The accident does not lead to any significant institutional change, and is congruent with the emerging theory that suggests no significant institutional change will occur without disorder.

What does the Guadalupe Dunes accident mean? Ironically, to some members of the public, the accident means Unocal is an example of good corporate behavior. In the accounts provided here so far, Unocal resisted and lied to regulators about its role in an extremely large oil leak over a long time. However, Unocal began to turn its image after misdemeanor charges were filed and that image turned positive as the remediation of the dunes began. Executive Vice President John Imle Jr. personally apologized for the leaks and pledged to "spend however many millions of dollars it takes to clean up" the oil (Daily Breeze, 1994b; Paddock, 1994). The remediation efforts, in conjunction with university scientists, drew praise for developing new technology (Snyder, 2003). Unocal also extended remediation efforts to nearby cities that were affected by similar spills, like Avila Beach (Bellisle, 1999). The company shut operations at the Guadalupe oilfield (Einstein, 1994; Snyder, 2003), purchased the land that they had previously leased, and

donated the land as a trust after the remediation completed (Sneed, 2002). These actions suggest residents' animosity toward Unocal might fade and shared meaning might turn positive. As further support for this shared meaning, reporter Leavenworth reflects on many residents sentiments: "it [the Guadalupe spill] typifies everything right with California's coastal protection laws, the strongest in the nation" (Leavenworth, 2003). Perhaps this one Bear Stearns stock analyst was right in 1994 when he predicted, "Unocal might find a silver lining in turning an environmental catastrophe into a shining example of responsible corporate behavior" (Adelson, 1994).

The Exxon Valdez accident has many meanings. The accident is simultaneously a story about poor oil spill response, irresponsible and reckless corporate behavior and to a minority, a drunken navigator. Poor spill response, by far, is how most people remember the Exxon Valdez, and is the source of most claims made. What poor spill response came to mean more widely is a need to be better prepared (i.e., there exists some disorder), and a need to better contain oil because it is toxic (i.e., a new category).

Disorder The break in routines that occurs in the Exxon Valdez case shows that everyday life became disorderly. What residents did the day before the accident became blocked. The consequences of these blocked routines include a devastated fishing industry, a large contributor to Alaska's economic life. The spill also disrupted the way of life for the indigenous people as well as many who depended on subsistence and a supplementary source of food. These claims resonated among many around the nation. Residents in Rep. Jones' North Carolina, for example, also depended on clean waters for fishing as well as clean beaches for recreation. Ignoring oil spills, which were occurring with increasing frequency, would mean sacrificing other sectors of the economy

throughout many coastal communities around the nation. So, poor oil response means disorder in the way of life for many. A public opinion poll conducted in April 1989 showed that 81% of the public were aware of the Exxon Valdez accident almost immediately after it ran aground (See Question #22 in Appendix A for details); and 84% believe it is a serious problem (See Question #36). And, 59% of the public feared another accident would likely occur again (See Question #24). Two-thirds (69%) of the public also perceived a need to institute reform because they were either not confident or unsure the industry would be able to fight future oil spills (See Question #38); and 72% have an unfavorable opinion of the industry (See Question #43).

New category: toxic oil. The combination of claims of disruption as well as unaccommodating institutions led to a new perception of oil as dangerous. Beginning in 1978, one public opinion has consistently measured the public's attitude towards oil spills that may occur from offshore oil drilling. The U.S. polls show a public that is mostly seen an increasing fear of oil spills. See **Error! Reference source not found.** that illustrates the trend in attitudes towards offshore oil drilling. The figure depicts percentages that favor or oppose offshore drilling knowing that some oil spills will occur. Through about 1987, the public mostly favored offshore drilling even if it meant the possibility of oil spills, but after 1987 more of the public began to see the greater risks of oil spills (See Survey Questions #20, 21, 23, 41, 42, 46, 47, 64, 66-70 in Appendix A for details). The general decline in willingness to accept an oil spill is linked to Congressional debates on regulating oil spills. The last Congressional bill was defeated in 1987, but the public acceptance of oil spills continued declining even though Congress could not pass the bill. After the Exxon Valdez ran aground in late March 1989, public perceptions of the

dangers of oil spills jumped sharply and the proportion of those who opposed offshore drilling increased substantially. In parallel, those who were undecided or unsure about the risks realized the new dangers of toxic oil. The series of public opinion polls suggests that people's perceptions of the dangers of oil spills were increasingly substantially over the years. In brief, the public increasingly shared the meaning that oil spills are dangerous. This new fear of the toxic effects of oil is a new category or classification for how we think of oil.

Summary of comparisons

The two cases are quite similar in terms of the hazards, the way the event was discovered and declared, large company involvement as well as residents' emotions. The differences are quite significant, however. The Guadalupe Dunes is twice as large an oil spill as the Exxon Valdez. The cases unfold very differently: the Exxon Valdez spill is acute and sudden while the Guadalupe Dunes is a long running leak over 38 years.

Because the events unfold differently, the media interest also follows the same pattern. Exxon Valdez media reports are fast and furious; national media reporters and TV crews are onsite within hours. In the Guadalupe Dunes case, reporters had trouble justifying the articles because readers were not all that interested.

See **Error! Reference source not found.** for a summary of superficial similarities and **Error! Reference source not found.** for a summary of superficial differences between the cases.

The Exxon Valdez case exhibits considerably more claims of disruption to people's lives than found in the Guadalupe Dunes. The Valdez-Cordova residents, and

the empathy through much of the nation as well, show disruption in routines, spirit, and social relationships. Moreover, the Guadalupe Dunes case is marked by the institutions that could accommodate the residents' complaints; but this is not the situation in the Exxon Valdez case.

In terms of novelty, the Exxon Valdez case displays a novel breakdown in oil spill response. Unclear responsibilities, liability, leadership, preparedness, and local knowledge all delayed response and prolonged the situation in the Exxon Valdez case. The Guadalupe Dunes does not exhibit these qualities and instead is well accommodated, albeit it took longer to resolve among local and state regulators.

As a result, the findings of the comparison of Exxon Valdez and Guadalupe Dunes support the emerging theory as first emerged in the analysis of Love Canal and Legler. A summary of the case comparisons are found in **Error! Reference source not found.**.

Part II – Constructing compelling meaning and institutions

Events lead to significant institutional change when actors are able to imbue the event with compelling meaning such that change becomes appropriate. What constitutes compelling meaning arises from important roles played by problem and solution providers, and how these two roles match problems to solutions—a process I label *problem shopping*. I first present findings for the roles of problem and solution providers, then on problem shopping.

Problem and solution providers: Role characteristics and emergence

The work of claims making, and thus much of institutional change, is divided between those who are primarily concerned with defining a problem and those who are primarily concerned with implementing a specific solution. Problem providers are typically those who have been injured in the accident, and solution providers are mostly professionals who are routinely involved in public policy. Problem providers want others to recognize a social problem exists, and more specifically they uncover and define problems. Their goal or motivation is to resume and restore their lives and health, to the extent possible, as it existed before the event. Solution providers on the other hand have a different motivation. They have a pre-existing motivation to see their favored solution implemented. In the case of Love Canal, specific legislators, who constitute the most influential solution providers, wanted to be able to tap federal funds for local environmental restoration projects, and gain increased professional/career stature.

The relationship between problem and solution providers is one of symbiosis or mutual dependence. Problem providers seek help to find and implement solutions, and solution providers need a cause célèbre to rally wide support for their pet projects.

Problem providers

A problem provider is defined as a social role to make claims and conduct claims-making activities that problematize an event. Turner (1990) would classify this concept

as a functional group role, i.e., a role that is primarily characterized by the activities conducted by the incumbent (the person playing the role). Key role activities are described in the previous chapter, and this section provides more depth into characteristics of the role and how the role emerges. An archetypal problem provider emerges in each of the Love Canal and Exxon Valdez cases, but there is no account of such a role in the Guadalupe Dunes case and the role played by Jim McCarthy in the Legler case is minimal.

Authenticity

The foremost characteristic that constitutes an ideal problem provider is their authenticity. Lois Gibbs is a homemaker who lived in the Love Canal neighborhood that was most affected by the hazardous chemicals (Gibbs, 1982). While she was not physically injured herself, her son Michael had begun having seizures as soon as he started at the 99th Street School; and later on her daughter Missy was diagnosed with a blood platelet disorder. Gibbs is authentic because she can speak from a first hand experience of one who had been injured by the accident. Gibbs is authentic because she represents a very typical woman homemaker with strong family values in protecting her children who unfortunately got sick from the accident.

Riki Ott has a personal history significantly different from that of Gibbs. Ott is very well educated. Her father was a student of Aldo Leopold, a famous environmentalist and professor at University of Wisconsin who is well known as the author of *A Sand County Almanac*. Her father was intimately involved in the Environmental Defense Fund's effort to stop Wisconsin from using DDT, and it is this link that drew Ott into a series of environmental studies. She went on to earn a master's degree in oil pollution,

and later a doctorate in marine toxicology from the University of Washington (Ott, 2008). Her academic degree gave her an enormous technical edge is dealing with others, but she too had a first hand experience injury from the Exxon Valdez accident. Ott had just years earlier (in 1986) bought a commercial fishing boat, the *Ambergris*, to catch king and red salmon in the Copper River Flats. Home port for Ott was Cordova where she met other fishermen[12] and joined the local union. Her fishing business was severely affected, as were others from Cordova. When other fishermen had turned to cleanup duties paid by Exxon to make ends meet, she decided to forgo that income in order to avoid any Exxon link while her business partner Danny Carpenter continued fishing on a greatly reduced scale. Ott is authentic because of her social values, her education and technical knowledge as well as her economic loss in fishing after the Exxon Valdez ran aground.

Authenticity is important in claims-making because it provides a credible first hand account of what happened. Many media reporters, investigators, regulators, lawmakers and by extension the public want to know what happened and problem providers can definitively and authoritatively speak from experience. Authenticity lends itself very well to humanizing the event as well. The media, in particular, like human interest stories in the press and these authentic individuals present a human face to the public. Reporters flocked to both Gibbs and Ott whenever they needed an opinion from among those injured.

Resources and social skills

[12] Fisherman (and the plural fishermen) is now considered gender neutral where the neutral term once had been confusingly labeled as “fisher”

Problem providers constantly develop and maintain resources, and tap on the incumbent's own social skills. While the data does show problem providers working to raise funds, the resource that appears most important is the incumbent's social network and capital.

Here, Gibbs describes her network of confidants and how she came up with strategies:

> I was meeting regularly with my brother-in-law Wayne [Hadley] and with Matt Murphy and John Daly, both members of the New York State legislature. On Friday mornings, we met at eight around my kitchen table and had coffee. Matt and John were most helpful. They gave us a lot of ideas about how to go about petitioning the state, seeing people, and in general getting action. They also made suggestions about whom to contact. At the same time, I kept them informed. Nineteen seventy-eight was an election year, and it was to their benefit to be informed. Beyond that, however, Matt Murphy and John Daly were genuinely concerned. Neither one was doing it just for votes. We sat around the kitchen table and talked strategy. (Gibbs, 1982: 21)

Her confidants included a political supporters, members of the State legislature, who helped provide access to the state level of government, and her brother-in-law Hadley provided a network of scientists that included Beverly Paigen who eventually helped Gibbs conduct epidemiological studies and testify before Congress. Hadley also introduced an Environmental Defense Fund attorney to Gibbs, and helped organize an early protest with "professional" protesters. Gibbs, on her own, later also fostered a strong relationship with U.S. Representative LaFalce who in turn linked Gibbs to other Congressional members.

The social network, for Gibbs, is particularly necessary to reach out to potential solution providers. Her relationship with Rep. LaFalce, for example, led to her

Congressional testimonies. Likewise, her relationship with reporter Michael Brown led her to other reporters like Donald McNeil at the New York Times.

There is a striking difference in how the problem providers come to gain their social networks. Gibbs, in the Love Canal case, lived in the community and her brother's affiliation with the university in Buffalo extended her network. Ott, in the Exxon Valdez case, however, gained her network by virtue of her expertise and eventually her status position as a union representative.

The literature on resource mobilization in social movements suggests that resources and social skills are very important in the success of a movement (Fligstein, 1997; McCarthy & Zald, 1977). The "side" with the most ably organized resources wins the power struggle, and resources often mean cash and labor. One of the recognized labors that are required is the ability to win sympathizers and members of the elite who might support proponents of change. The finding here reinforce the idea that the relationships that Gibbs and Ott have developed and maintained are specific key resources that are required in order for change proponents to succeed at institutional change. Gibbs, in particular, and her organization had little in cash but she worked hard to win key allies. Ott worked equally hard but is likely to have had more access to cash by virtue of being a well-funded labor union representative.

Motivations

Gibbs was motivated because her personal situation and a sense of duty to help others. Gibbs and her family lived a short distance from where the most severe cases of toxic effects had been reported. Her children too were affected by the hazardous

materials. She had gotten involved in the beginning of the effort primarily because she wanted to but could not transfer her children to another school.

Riki Ott, too, was personally affected by the Exxon Valdez oil spill. She owned a fishing boat and her economic interests were invested in the vitality of salmon and herring stock. She had begun her fishing career just a few years prior and had only turned her first profitable season the year before. Ott, because she had just moved to the area, was new to both fishing and the place. In an attempt to socialize with others in the area, she began to join others who frequented the union hall in Cordova. This is where she got inducted one day to the union board of directors.

Even so, there is a sense of duty to serve the community that both Gibbs and Ott talk about in their own work. Here's an example of Ott's attitude towards her work. She refers to her responsibility to tell others about the personal tragedies she was a witness to, in the form of interviews in her book (Ott, 2004: xix):

> Although these people played a role in creating this story, as author, I was entrusted with maintaining the integrity and honor of the individual stories as I wove these strands into our collective truth. … Only in sharing our truths will we be able to strip away the virtual reality created by the corporate and government spin doctors, identify the real problems that led to it, and find the courage and solutions to prevent another.

Ott not only speaks to the need to share stories of the community but also to prevent another accident from occurring—an altruistic need to help others.

Riki Ott describes how she made her decision to commit to helping the community. At a lull between meetings a few days after the Exxon Valdez ran aground, she stepped outside to get some fresh air and contemplate whether she ought to continue with the frantic pace of crisis management and coordination. Here are her thoughts:

> Finally, I broke away and slipped outside to think. Dazed and overwhelmed, I found solace in the massive mountain peaks, … A thought flooded my mind: *I know enough to make a difference. Do I care enough to commit my life to this?* I sensed there would be no short term fixes for what had happened. I felt a warm wash of love for the Sound and Cordova. I saw how my life had stacked up to put me in this place with this knowledge at this time of need. I was infused with a quiet knowing that I was not alone. With the mountains as my witness, I pledged my commitment. (italics in the original Ott, 2008: 43).

Ott seems to believe that she had come to this point in time and place intentionally, but that she must have been led by some spiritual force. More important, the writing suggests her motivation is to commit her life to her home and community—Cordova and Prince William Sound.

These motivations for problem providers are quite different from those whom the political science literature labels policy entrepreneurs and still different from those whom I label solution providers. Problem providers are motivated by a need to serve their communities—a prosocial collectivist value. Solution providers, like policy entrepreneurs, are driven by more professional-career and political interests. Problem providers' motivation in a sense of duty is absent in policy entrepreneurs, who are more driven by vested interests and professional careerism (Kingdon, 2003; Mintrom, 2000; Mintrom & Norman, 2009).

Problem providers' motivations, specifically Gibbs and Ott, I find are supported by a very recent study of Rachel Carson's life (Kisfalvi & Maguire, 2011). Carson authored *Silent Spring*, a book that catapulted the problem of pesticide (i.e., DDT) use to national and legislative attention. Because of her work, several scholars (Hoffman, 1999; Maguire & Hardy, 2009) consider Carson as an institutional entrepreneur because of her work to reduce the use DDT as a pesticide and the eventual ban of DDT. Kisfalvi and

Maguire (2011) discover that Carson was motivated by a deep sense of duty and need to correct what she personally found to be morally reprehensible. These motivations arise from her life experiences and socialization, as well as her professional interest in writing. Like Carson, I find Gibbs and Ott are driven by their personal sense of duty to help others, and they happen to be at the right place at the right time—a concept I now discuss as emergence.

Emergence

The problem provider role emerges from the situation in which the incumbents, e.g., Gibbs or Ott, find themselves in. Gibbs first directed her activities in order to learn more about what had happened at her son's school. Several articles she read in the Niagara Gazette suggested that hazardous chemicals buried under the school grounds were exposed and causing sickness in nearby homes. In subsequent conversations with her brother-in-law, a biologist at the State University of New York at Buffalo, she realized that the chemicals mentioned in the articles may be those that caused sickness in her family (Gibbs, 1982: 10). She then turned herself first to getting her children transferred out of the school and then when that failed she began canvassing support to allow children to be transferred out. Gibbs just wanted her children to leave the school, but in the ensuing process of talking to neighbors she noticed that many others had sick family members as well. She just found herself in the middle of a messy situation.

Gibbs discovered she was among two or three others who had gone door to door talking to neighbors and it became apparent the neighbors were ready for more collective action. Her confidants had encouraged the group to form a formal association—a homeowners' association—to organize themselves. Gibbs invited neighbors, several

politicians including a governor's representative, members of the Department of Health to meet and help form the Love Canal Homeowners Association (LCHA). Gibbs was elected president and quite unprepared: "I took over the meeting but I was scared to death. It was only the second time in my life I had been in front of a microphone or a crowd" (Gibbs, 1982: 39). We get the impression Gibbs had gone along with many activities without any substantial planning or preparation for the role. She just went about working on tasks that needed to get done. She did not consider whether or not she was the best person for the task nor did she consider what she needs to do in preparation for the task. For example, Paigen, her scientific advisor, suggested Gibbs conduct an epidemiological study but we do not see Gibbs taking a survey methods course or studying statistical analysis.

Riki Ott, too, receives a comparable initiation into the role. Being new to the fishing industry, Ott was trying to learn a little more about the trade and one day decided to join the crowd at the Cordova District Fishermen United (CDFU) board meeting. The issue of what to do about Alyeska came up, and Ott describes the scene in her book:

> "Alyeska? What's going on at Alyeska? Maybe I can help there," I ventured. Eight faces turned toward me, each etched with a mixture of scorn and disbelief.
>
> "I have a master's in oil pollution and a doctorate in sediment pollution," I said defensively. Expressions changed to incredulity.
>
> "I nominate Riki Ott for the board of directors," said CDFU president Bob Blake, a local and longtime political dynamo, widely respected for his dedication to fish politics. … "Second," said Ross Mullins from somewhere deep behind a bushy white beard. Within moments I was on the board.
>
> Bob … quickly briefed me … placed a foot-high stack of papers on my lap. "Here, read these. Then call Chuck Hamel." … "There's an EPA hearing on Alyeska's discharge permit … You can write our comments and testify at the hearing." He heaved a deep sigh of relief. "I'm going moose hunting." … Apparently, it was my turn to be "it." (Ott, 2008: 19).

Apparently, the union was quite informal and Ott happened to be there at the right time and place. There was no plan to get involved with politics or organizing collective action—she just stepped into it.

Activities

The problem provider role is a set of activities that occur outside of the roles of others in the system. Many of Gibbs activities were conducted because those in formal government roles would not perform them. Government agency roles are well institutionalized and there is little room for performing extra-role activities. It is not so much that a problem provider carves out or usurps activities from among other roles but that the role is comprised of activities that accrete from the activities that others do not perform. Media reporters, for example, play a role in society to inform and disseminate "factual" materials but Michael Brown's actions in leading residents to link their sicknesses to buried chemicals is an extra-role behavior for reporters. As a problem provider, Brown acted the way he did because he saw a "need" to identify and construct the problem. He wanted to dramatize or call attention to the problem. Brown's actions are not structurally determined, say by occupational ethics or practices, and instead emanate from his personal attitudes, convictions and motivations. Several reporters at the very same newspaper, the Niagara Gazette, had covered the same story (of exposed hazardous chemicals buried by Hooker) and none of them came forward the way Brown did.

In summary, the problem provider role emerges as individuals see a need to publicize a problem; a need to call attention to an undesirable condition. The basis of this

attitude and set of activities is motivated by personal social values and impress on others the need to restore a moral order, i.e., to make things right. Problem providers "discover" or interpret a situation in which they find themselves in to be problematic or unacceptable, and subsequently work on activities as they see a need to accomplish their objectives. See **Error! Reference source not found.** for a summary.

Problem shopping

The interaction between problem and solution providers may best be described as a process of problem shopping. I label this new concept as problem shopping because it illustrates not only how solution providers look for problems but also how problem providers make their problems appealing. Problem shopping is defined as the iterative process through which change proponents offer and select problems that are most favorable to enable change.

The concept of problem shopping is influenced by policy studies on venue shopping in agenda setting and public policy theories. The concept of venue shopping is based on the idea that policy change proponents can choose the venue or institutional setting (location) that is most amenable to change (Baumgartner & Jones, 1991, 2009; Pralle, 2003). Pralle (2006) describes, for example, how forest conservationists who picked a global audience and appealed to international organizations achieved substantially different results from conservationists who picked a local setting in Northern California.

The concept of problem shopping is most apparent in a situation that occurs very early after the Exxon Valdez accident. On March 28 (the 3rd day after the Exxon Valdez

ran aground); Riki Ott was working in the chaotic union hall to coordinate fishermen who wanted to help clean the oil slick. Everyone's attention is focused on the urgent task of cleaning up. But, even then others are thinking of the strategy:

> Now in Cordova, Theo [Matthews, president of the United Fishermen of Alaska] took one look at the CDFU office with its overwhelming noise and energy level and pulled me out into the street. "Look, there are enough people getting equipment and boats organized. I want you to find somewhere quiet, sit down, and use your brain and your computer. We need someone to think up ideas for the politicians in D.C. so we're ready when they start working on spill legislation." Theo realized fishermen could use the spill as political leverage to push for safeguards that we had lost or had not been able to pass into law because of the powerful oil industry lobby. (Ott, 2008: 48)

Ott's description above shows (1) the beginning of the process of matching what problem providers want with what solution providers may be looking for, and (2) the fishermen's claims-making is motivated in part by their political interests. The fishermen were carrying a legacy of being pushed aside by the oil industry interests during the effort to open Alaska to oil drilling and the pipeline construction linking the North Slope and Valdez. After that turning point meeting with Theo Matthews, Ott begins 3 weeks of intensive research and interviews before finally being called to testify in Congress—essentially delivering what Congressional members (i.e., solution providers) "wanted" to hear about the oil spill.

The concept of problem shopping is most relevant to which of various alternate constructions are selected. In each of the cases, there may be several alternate constructions for a problem but we see one dominant path taken. In the Love Canal case, for example, residents could have claimed that they face a problem of recreancy but instead chose the path of an environmental problem. Gibbs came to see their problem as an environmental problem because of her interactions with reporter Brown and Rep.

LaFalce. These interactions influenced how she thought about the problem, and more important gave her clues about what problems others wanted to solve. There was no one who wanted to solve the problem of recreancy, but there were some—Rep. LaFalce and then later Rep. Florio—who wanted to solve an environmental problem.

Similarly in the Exxon Valdez case, there does not appear to be anyone who wants to solve the regulatory capture problem. Instead, Congress is very interested in solving the problem of oil spill response and liability.

The matching process is labeled problem rather than solution shopping because it better describes the observed phenomena, but also because there is a considerable power difference between problem and solution providers. Solution providers have more power than problem providers because they typically have more resources and legitimacy at their disposal, and they are substantially closer to institutional gatekeepers, i.e., the few legislators who chair committees and set the agenda. Solution providers are already persons with status and authority, whereas problem providers have to compete to establish their legitimacy and authority. Ultimately, solution providers have intimate knowledge in how to create institutions, specifically laws that enable and enforce change. Because solution providers have more power, they are in a better position to choose. Problem providers, on the other hand, have to make their problems appealing enough to be selected.

The process of problem shopping is that of problem providers constructing problems that appeal to solution providers, and of solution providers selecting problems that best fit their solutions. A change project will succeed to the extent to which the "right" problem is matched to a solution at hand. In other words, the event that has been

constructed with the "right," or more accurately "compelling," meanings eventually lead to significant institutional change.

Part III – Catalytic events

After having examined why and how some events lead to significant institutional change, I am finally now able to properly define catalytic events:

A catalytic event is an event whose shared meaning begins with the perception of disrupted life and is settled with a new order.

The concept of a catalytic event encompasses several features that have found in the four cases studied. First, catalytic events are occurrences with shared meaning. They are grounded in an occurrence but their meanings are socially constructed. Second, the concept defines a process that begins with the perception and claims of disruption and ends with new order. Third, there is recognition that debate, controversies and contests will occur over what disruption is or is not, and over whose way of life or whose order prevails.

Of the four events studied, Love Canal and Exxon Valdez cases show catalytic events in all the characteristics defined above. They each begin with residents who seek help to understand what happened and then they make claims that their lives are disrupted. At the end of the change process, the event comes to symbolize a need to enact a new order—laws that protect the residents. See **Error! Reference source not found.** for a summary.

Legler residents did make claims of disruption but the findings do not show the need for any new order. The institutions and current laws were sufficient to satisfy residents' claims of disruption. As a result, no new order arose and Legler is not, by definition a catalytic event.

In the Guadalupe Dunes case, residents did not make claims of disruption or were not visible in the data I found. While it is possible that such data does exist and that I made an error in not locating that data, there is sufficient evidence in the other materials that suggest no disruption occurred. So, the Guadalupe Dunes accident is not catalytic.

CHAPTER 7. DISCUSSION AND CONCLUSIONS

Part I – Discussion

Synthesis of findings

New theory of catalytic events

In order to create significant institutional change, change proponents must construct an event such that it defines a problem that must be solved. The problem definition points out deviant practices that must be curbed. Two key claims were made. First, residents in Love Canal, Exxon Valdez and Legler claim disruption in their lives. Disruption is recognized when residents' claim (a) everyday routines are interrupted or blocked, no alternatives exist and people cannot adapt; and or (b) the experience of being besieged by wastes; and or (c) their relationship with the spiritual world is broken; and or (d) their social relationships with others in the community are severed.

Second, change proponents claimed and demonstrated that Love Canal and Exxon Valdez represent novel events, ones that we must therefore address; whereas Legler and Guadalupe Dunes are not framed this way. Novelty claims occur along three dimensions: (a) the reference point, or a model or extreme point that the focal event is believed to be; and or (b) the state of science, or the ability for science to confirm or disconfirm a new condition exists; and or (c) the extent to which institutions can accommodate the event and associated problems.

As these claims were made and social interactions spread, two widespread meanings emerged: Disorder and a new category. Both Love Canal and Exxon Valdez accidents came to mean disorder in the existing institutional order. Love Canal also came to symbolize a new category for hazardous wastes. In the Exxon Valdez case, the accident came to symbolize a new category for treating oil as toxic. Given such meaning, each event, more specifically the shared meanings embedded in the event, drives further actions that eventually led to institutional change.

The work of constructing claims that led to such compelling meaning is divided between two kinds of change proponents: a problem provider and a solution provider. Problem providers work primarily on describing the problem, dramatizing or generating attention, demonizing the perpetrator who has disrupted the order, and reaching out to solution providers who can help alleviate the problem. Solution providers too, who have pre-existing generic solutions, reach out to problem providers but work primarily on enlivening or giving life to their solutions, and encoding or transforming symbolized meanings into institutional rules, i.e., the law.

The crucial interaction between problem and solution providers is labeled problem shopping. Problem shopping is defined as the iterative process through which change proponents offer and select problems that are most favorable to enable change. Problem shopping directs our attention to the idea that the solution providers influence which problems are worth solving and hence how problems are defined. This process helps explain why some problem constructions become dominant and are solved while other constructions are ignored.

Why do these claims suggest change is necessary?

Once meaning has been embedded into an event, symbolic interaction theory suggests people act on that meaning (Blumer, 1998) but a more specific causal mechanism is needed to link meaning and relevant action. This section more clearly reveals the causal mechanisms at work.

From a theoretical perspective, order is a fundamental tenet of institutions (Scott, 2008) while disorder represents a condition that we want to avoid (Douglas, 1984). It follows, therefore, that if an undesirable disorder arises we are naturally inclined to enact or change institutions to bring about order and stability back into our lives. The residents, in Love Canal, Exxon Valdez and Leger, experienced an undesirable condition—a condition they claim is caused by improper industrial waste management practices. Such claims represent the labeling and definition of a deviant act (Becker, 1973) and effectively draws the boundaries of what constitutes unacceptable practices (Erikson, 1966). The general need for order in society in combination with the successful labeling of deviance thus drives the need for change, i.e. the creation of a new environmental law, to restore order. Given that disorder is observed in Legler but no significant institutional change occurs, this finding suggests that disorder is not the only factor that affects change. Furthermore, disorder is a subjective meaning that may range from what we may consider as inconvenience to some chaotic state such as revolution. The level of disorder, therefore, has to be sufficiently high before we decide to correct the disorder.

Novelty suggests change is necessary for several reasons. First, novelty explains why some events seem to inspire more interest from the media. The media want to report on and seek "new" occurrences. Newsworthiness (Gans, 1980) is a staple for understanding media motivations, and the media play a large role in promoting an event.

Second, novelty, in part through the media, drives high salience that is required for raising and maintaining attention to an event (Hilgartner & Bosk, 1988; Hoffman & Ocasio, 2001). Third, a novel event, compared to a non-novel one, has the potential to change social and power networks within an existing institution (Granovetter, 1985). Novelty will therefore draw out those who want to take advantage of change thus allowing change proponents to form larger and or stronger alliances. Finally, a novel situation suggests we have not previously encountered the means to overcome or prohibit the undesirable situation from occurring and thus requires new interventions. Novel situations no matter how undesirable, however, have to be interpreted as a situation that is anthropogenic, i.e., caused by humans, and correctable by humans as well in terms of a plausible causal story (Stone, 1989) or naturalizing analogy (Douglas, 1986).

Finally, placing an item on the agenda for change is a crucial step towards change. Organizations, e.g., media companies or Congress, cannot possibly process all events and thus a natural solution is to select a few events based on some criteria for further evaluation and processing (March & Simon, 1958). This selection of events for further processing is known as the agenda building or agenda setting process in policy and political science studies (Cobb & Elder, 1972). The agenda is part of a gatekeeping function; items that are not placed on the agenda never come up for discussion and never lead to change. Legler and Guadalupe Dunes accidents suffered this fate because they never gained traction on the public nor legislative agenda. Love Canal residents, on the other hand, managed to win the support of several Congressional members who pushed hard to get onto the legislative agenda. In the Exxon Valdez case, the problem was already on the political and media agenda. Getting onto the legislative agenda legitimizes

work in Congress—allowing committee work, hearings, investigations, bills to be introduced and debated, and finally bills to be enacted into law.

Scope and limitations

What is this a case of?

The scope or the ability to apply my theory of catalytic events lies in whether a person's life[13] is sufficiently disrupted. My study is a case about disrupted life, in an abstract sense.

My study is about a case of disrupted life because it answers a profound question: "what is this a case of" (Ragin & Becker, 1992: 6). Ragin and Becker recommend researchers using the case method to continually ask the question because it helps refine the deep nature of their studies. These authors explain that to describe what the case is of at the beginning of the project is counterproductive because the researcher simply does not know; does not really know the boundaries of the case and may not know what we are about to learn. Instead, the constant and ever deepening examination of the research questions begin to peel away to greater understanding. I began with cases of accidents but discovered that people are not shouting at each other over the accidents. Instead, I found that some people are really angry that their lives have been disrupted. I have studied accidents as events, and showed why events lead to change but the findings also suggest the core motivation is in whether disruption is perceived. In a deep sense therefore, my theory explains what people do when lives are disrupted—we try our best to prevent further disorder by creating new order and institutions to enforce that order.

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[13] Because I did not find scale to be a factor, it may not matter whether a single life or the lives of many are disrupted.

If no disruption or disruption that no one takes seriously then my theory predicts nothing will happen. If, on the other hand, disrupted life is recognized socially, i.e., defines the situation through claims, and draws others to relate or support the claims (i.e., meaning is shared), then my theory goes on to explain how and under certain conditions change may occur. This disruption that is embedded in the events studied is fundamentally why these events take on a catalytic effect—the claims that are made make the rest of us feel as though our lives too have been disrupted. The drama and demonizing, the enlivening and finally encoding draw in increasing numbers of people.

Even though my study is about disrupted life, I would caution readers not to extend or generalize my theory too widely. The following subsections describe some of these limitations.

Theory and data are U.S. based

My study is somewhat limited to understanding phenomena in the United States. This is because the theories and empirical data are U.S.-centric. The theories I have borrowed to frame the study and guide my thoughts have almost exclusively been U.S.-centric. With few exceptions such as Mary Douglas, I have relied on fundamental ideas from pragmatists such as G.H. Mead; symbolic interactionists (e.g., Becker, Blumer, Gusfield, and Erikson); political scientists (e.g., Kingdon); and institutionalists (e.g., Greenwood, Hoffman, Scott, and Suddaby). These theories advocate a culturally sensitive point of view, but I will caution readers not to interpret my work as being immediately applicable everywhere.

Likewise, I have only studied four specific empirical situations in the U.S. at specific times in specific locales. Cultural preferences change, and vary in numerous

ways. The data sources I have drawn on appear comprehensive to me now, but I have not attempted to review other sources such as radio or television news broadcasts and these may reveal new findings. Furthermore, my findings rely on the idea that institutions promote stability and thus imply that people who experience disorder will want to restore order. This basic assumption may not apply among some (unidentified) people.

Thin data in some places

I have analyzed a considerable volume of data but there are still many places where my theory relies on "thin" data. Studies of symbolic interactions, for example, seek to examine interactions in explicit detail but some of my work has little or no such explicit examinations. Meetings between legislators, between say Reps. LaFalce and Florio for example, are undocumented but I rely on circumstantial evidence that they are both legislators working on common topics (i.e., Love Canal) at the same time, and LaFalce was invited to testify at Florio-led hearings. In another example, Louis Gibbs' early impressions are influenced by Rep. LaFalce but only Gibbs mentions this in her autobiography. I have not been able to find another independent source to verify such a meeting took place.

While mostly less consequential, thin data does also affect my ability to develop a richer concept of problem shopping. I have relied mostly on examining activities before and after key meetings but not during these interactions. This is a limitation of using textual data rather than interviews or observations, for example.

Contributions

Constant comparison: methodological improvements

This study is novel in that I have taken various methods to compare and contrast events. First, qualitative methods routinely use theory to frame the research questions and guide the study but I have made an explicit comparison of alternative and rival theories in their ability to explain the phenomenon under study—how some accidents but not others lead to institutional change. I show how a functional approach is not as useful as an interpretive approach using social construction. The use of an explicit comparison of approaches and rival theories strengthens the internal validity of the theory I develop.

Second, studies using social construction purport to show that specific human actors actually give meaning to objects but I take an additional step. I show how alternative constructions may have been possible, were contemplated by specific actors, and explicitly explain why one path or construction was taken instead of alternative constructions. In each case, I trace how problems were defined by key actors early in the change process. I show, for example, how Louis Gibbs was influenced by Rep. LaFalce and reporter Michael Brown in her framing the Love Canal condition as that of an environmental problem. Furthermore, I show how other possible constructions were contemplated, such as when Love Canal residents tried unsuccessfully to get their government agencies to help. These efforts led to considerable distrust among residents as well the broader public. Residents could have but did not construct their problem around the idea of recreancy or institutional failure. Residents did not take this path because no solution provider stepped forward as interested in solving the recreancy problem whereas Rep. Florio came forward to solve the environmental problem.

Explicitly tracing alternate constructions improves studies in two ways: breaks the taken-for-granted view (i.e., does not presuppose that Love Canal is about an environmental problem but explicitly explains how it became to be known as an environmental problem); and prompts researcher and reader to become more reflexive (i.e., raises additional questions about how norms and morals come about or whose definition of the problem is taken).

Finally, I explicitly build the comparison of "non-events" into the research design in order to fully explain why and how events are even involved in institutional change. Perhaps past scholars have been pressed to time and page limits, but studies that exclusively use events that lead to change are deficient because they are not compared to events that do not lead to change. The inclusion of events that do not lead to change allows for better comparison, improved inference, and ultimately better theorization. The use of non-events in a paired case with an event that led to change, for example, shows that the hazard (i.e., oil spill or toxic wastes) or the scale of the accident by themselves are not factors in motivating change.

Direct role of events in institutional change

Events have a direct role in the institutional change process; there is a pattern of activities and claims associated with events that lead to change; and the work of institutional change is better conceptualized as divided between those who offer a problem and those who solve a problem. First, the extant literature linking events to institutional change has not been clear if events actually lead to change. One argument is that events provide a jolt or shock but these concepts are relatively poorly specified. A second argument holds that actors use an event merely as a tool to mobilize support or

generate debate, thus making the event irrelevant to a great extent. This study advances on the current stream of research that employs a social constructionist perspective and more directly links the event to institutional change. I find there is a combination of human agency in terms of constructing claims about putative problems, and these claims eventually imbue meaning on the event. Such meaning embedded in the event directly drives further action, operating much like social structures in constraining alternatives but also enabling directed actions.

Why do events lead to change? Disrupted life

In studying the actions of residents in the four cases, I have discovered that individual residents interpret a disruption in their lives. These residents live in the midst of multiple intersecting institutions: economic or industrial; social; and eventually become embroiled in government and judicial institutions as well. These people try to juggle and balance multiple institutions but not always successfully. Some disruptions block long institutionalized practices in their everyday lives. Because these everyday practices are a fundamental part of their life, blocked practices breaks the institution's hold on their cognition as well. As a result, these residents struggle to find ways to restore order and stability to their lives. In so doing, they form new social order and radically change the accompanying institutions.

Institutional scholars have long been puzzled about how institutions can change radically given the paradox of embeddedness. The concept of an institution rests on a fundamental belief that exchange or economic behavior is embedded in social relationships (Granovetter, 1985). The "embeddedness" implies that individuals in an institution are constrained by the social relationships to the extent that their whole

worldview revolves around those relationships and all phenomena are explained in terms of those relationships (Uzzi, 1996, 1997). How do institutions change when individuals do not "see" a need to change? Incremental change is possible because embedded actors may inadvertently introduce minor variations that become routine. Significant change, however, seems puzzling because the structural forces or social relationships enforce norms and form a rigidity that prevents radical change.

I find, however, that significant institutional change is possible because disrupted life is a break of social relationships that constitute the institution. Once the social relationships that form the structural forces and rigidities are broken, constraints on cognition and behavior are lifted and individuals may form new social relationships, cognition and behaviors that are significantly different from those before. The key contribution, therefore, is disrupted life is a mechanism in the process of significant institutional change and a way to overcome the paradox of embeddedness.

How do events lead to change?

There exists a pattern of activities and claims associated with events that lead to change. These patterns of activities and claims: disruption and novelty emerge clearly and are a unique contribution to the institutional change process. In particular, the finding forms a tight link in the causal process: claims-making activity embeds meaning into an event, and the meaning-as-mechanism compels specific action to enact significant institutional change. This contribution is a departure from three sets of scholarship. First, the organizational institutionalism literature, emphasizing macro or higher level explanations for how change occurs, is mostly silent on the content of claims. There are no studies that show the pattern of claims made across time, geography and discrete

circumstances or "context." Second, studies of social problems have long recognized the role of claims and claimsmakers but seldom link events to the subsequent institutional change. The social problems literature has also focused on definitional processes of what constitutes a problem, my study however shows that the definition is influenced by powerful solution providers who thus select which problem are solved. Finally, political science / public policy scholars have developed much theory on the role of events, but have largely omitted a careful explanation for how events become constructed by human agency. In the past these scholars typically take the transformative or focusing or attention-making nature of events as given.

Division of labor in institutional change

A surprising finding is that the work of institutional change is divided between those who primarily seek to offer a problem, labeled problem providers, and those who primarily seek to solve a problem in a specific way, labeled solution providers. The surprising aspect is that whereas the theoretical literature predicts that the work of change is conducted by an institutional or policy entrepreneur, I found two equally important but differentiated roles embodied by different types of individuals motivated by different interests.

The extant literature linking event to institutional change suggests a central institutional entrepreneur (or an alliance of similarly interested individuals and or groups) who mobilizes and drives support for a particular change. The policy entrepreneur (Kingdon, 2003; Mintrom, 1997; Polsby, 1984), in particular, is thought to develop proposals for change then later take advantage of an opportune time to spring into action with the event as *cause célèbre*. The work of the policy entrepreneur, however, occurs

quite "late" in the process of constructing the event as meaningful enough to compel change. Furthermore, the policy entrepreneur is much more involved in constructing a specific solution than compared to the construction of a problematic event. The work of constructing the event as a problem is conducted by someone that does not fit the description of a policy entrepreneur very well.

Finally, scholars believe disparate institutional entrepreneurs participate together in a single change project *only* when they share common interests (Fligstein, 2001: 109), which is not observed in the cases studied here. Instead, I find the relationship among change proponents (the combination of problem and solution providers) is more characteristic of *mutual dependence* and substantially less on shared or common interests. The empirical findings of the motivations of problem providers, as well as their social status, suggest that the prior conceptualizations of an institutional or policy entrepreneur are incomplete and better conceptualized as two distinct roles.

Problem shopping

This new concept of problem shopping is a crucial process in the interactions between problem and solution providers. Because the labor for change is divided, problem and solution providers need to match their problems to solutions. I label the process of matching problems to solutions as problem shopping. Problem shopping is the process through which change proponents offer and select problems that are most favorable to enable change.

Solution providers, because they typically have more power than problem providers, are in a better position to select a problem of their choice. Problem providers, on the other hand, can construct an event in any way although some are more favorable

than others. The ones that are more favorable are those that are more appealing to solution providers who are looking for specific problems. Thus, solution providers are indirectly able to influence and select which among several alternate constructions of an event. This explains why Love Canal today symbolizes an environmental problem and not a problem of government failure, for example.

Earlier literature on the social construction of events (e.g., Munir, 2005) have not been able to explain why an event is constructed in one way versus another. Munir, for example, explains that the specific interactions among actors determine the significance, relevance, and scope of an event. I have improved on this stream of theory by explaining not only how actors construct significance, relevance and scope; but also how one construction becomes dominant among various alternatives.

Implications

Having articulated the findings and contributions, I turn to making suggestions for how this study, i.e., new theory for linking events to significant institutional change, now enables other studies to advance. These research implications help answer an essential question, "so what?"

Initial interactions as a source of transformation

This study opens a path for future studies to examine when new institutions will emerge. I have traced the origins of meaning-making to the early interactions between problem and solution providers as a source of institutional transformation. These early interactions come to define the situation for many others who subsequently become

involved as well. Now that I have exposed the role of these early interactions, scholars might better be able to search for and understand the nature of these interactions in other ways.

For example, I have used historical data to explain why institutions developed the way they have in the past, but new studies might better study currently emerging debates to develop clues to the nature of institutions that will develop in the future. Scholars can also look for clues for why problem providers are present or emerge in one event and not in another. While institutional entrepreneurship studies examine who these individuals may be, scholars largely examine what the institutional entrepreneurs do. With few exceptions outlined by Hardy and Maguire (2008: 204) these studies have mostly ignored where, when, and how institutional entrepreneurs emerge. My study opens new ground by providing new clues for how these entrepreneurs emerge.

The early interactions among problem and solution providers may also help other institutionalists examine the development of legitimacy in emerging institutions. Some claim that legitimacy arises from diffusion or adoption by powerful and central members of an institutional field (e.g., Deephouse, 1996; Leblebici, et al., 1991), but Suddaby and Greenwood (2005) advocate understanding rhetorical strategies in terms of how actors persuade others. In contrast, my findings suggest legitimacy is socially constructed by those who give voice (e.g., media or solution providers) to certain problem providers, and the combination of problem and solution providers who claim that deviant corporations have transgressed social and moral boundaries. Now that I have linked the early interactions to the development of legitimacy, others may look to comparing more fully

who confers legitimacy in these contexts and how that affects the legitimacy of an institution.

Studying boundaries

My study reinforces several important studies that show how order is subjective (e.g., Douglas, 1984) but more important to organizational scholars is the surprising idea that these boundaries between order and disorder are within an organization's influence. I show explicitly how organizations are involved in breaking social order. Organizational scholars have mostly studied how economic order is maintained or disrupted (e.g., Leblebici, et al., 1991), but other disciplines have studied broader societal order that encompasses organizational behavior. Erikson (1966), in particular, showed how early Puritan settlers make up norms and rules that form moral labels differentiating conformers from deviants; and that deviants are *necessary* because we never really know where boundaries are and it is the deviants who force society to point out deviance in order to clearly demarcate boundaries. I am not suggesting that organizations intentionally push social boundaries merely to discover where boundaries are but my study specifically points out that because order is subjectively perceived and boundaries are often vague, organizational scholars can now contribute to establishing where the boundaries are and better understand how organizations influence where boundaries should be.

Radical innovations

My theory for how problems are constructed around events may inform how radical innovations become accepted or not. Some scholars have linked radical

technological innovations with collective action (e.g., Hargrave & Van De Ven, 2006) and others have found that activists can actually promote or inhibit the adoption of such innovations (e.g., Rao, 2009). Given that I have discovered that the fundamental claim that problem providers make is that some occurrence has disrupted their lives, and radical innovations are known to be disruptive (e.g., Anderson & Tushman, 1990), there may be a fruitful application of my theory to explain how radical technological innovations are more easily accepted or handily rejected.

The implication of my theory of catalytic events for radical innovation is to focus attention on the social and political aspects that allow innovations to be accepted in the marketplace. Where the events I have studied indicate what society does not want, managers likewise need to be able to offer radical technological innovations as events that society wants more of.

Environmental protection

My study shows that environmental accidents need not lead to environmental problems, and this may surprise many scholars who focus on organizations and the natural environment. Studies that focus on organizations and the natural environment (ONE) have largely relied on and produced theories that suggest protecting the environment is morally right and or profitable (e.g., Etzion, 2007; Shrivastava, 1995a), and furthermore, readers may infer that the environmental problem is real, inevitable and obvious[14]. In contrast, the notion that the environmental problem is just one or many alternate claims that are based on a way of life is a fundamental position in using social construction, as I have shown.

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[14] I make this assertion because few, if any, studies use a social constructionist approach.

My study has three implications for environmental protection. First, ONE scholars may find social construction quite beneficial and many scholars outside the field have successfully applied a social construction of the environment (e.g., Redclift & Woodgate, 1997).. Like the constructionist approach used by Gusfield (1981) who studied drunk driving and Becker (1973) who studied marijuana users, I show that there is nothing inherent and so obvious about hazardous wastes and oil spills that we must act on. The approach is beneficial because it tends to strip away hidden assumptions, denies that conditions are inevitable, and most important, searches for the voices that have been silenced (Hacking, 1999).

Second, I find the claims problem providers make are culturally based—they reflect a specific way of life. The immediate implication is that scholars can and should compare behavior and cultural preferences across different cultural groups more frequently. A large body of literature further reveals that different perceptions of risk affect how people act towards different types of hazards (e.g., Auyero & Swistun, 2008; Clarke & Short, 1993; Slovic, 1987; Vaughan & Seifert, 1992). Because organizations deal with various environmental hazards on a daily basis, ONE scholarship can be at the leading edge of understanding how these hazards are perceived and managed.

Third, I identify problem providers who are driven by an environmental accident but this inspires the idea that a corollary concept of an environmental solution provider may also exist in organizations. Innovation champions have been recognized (e.g., Andersson & Bateman, 2000; Bansal, 2003; Egri & Herman, 2000) but the form of an environmental solution provider who has expertise and, more specifically, known environmental solutions may also exist within organizations. These environmental

solution providers may thus seek places in the organization for problems where they may apply their ready-made environmental solutions. ONE scholars may wish to examine the work of specific individuals such as environmental specialists, environmental health and safety managers or newly titled Chief Sustainability Officers in greater detail.

More questions

This studied has raised many more questions that can and should be addressed. Here are just a few that relate to possible extensions for the new theory.

How much disruption is necessary?

The concept that disruption is an important factor leading to institutional change raises questions of quality and quantity. I have found many kinds (qualities) of disruption that were claimed by residents in the communities. Are there more such kinds? Are some kinds better than others in terms of leading to change, and in what ways are they better? There are also questions of quantity. How much disruption is needed before change occurs may seem like an empirical question that is worthwhile pursuing even though scale or size of an occurrence has not been an influential factor in this study.

One of the common myths for explaining how events lead to change is the idea that "major disasters" or "crises" are more likely to lead to change than are "accidents" or "events." Munir (2005), but more generally sensemaking theories (Weick, 1995), remind us that rationalizations are given after an outcome is achieved. In other words the occurrences that eventually lead to major transformations are labeled disasters whereas others are labeled non-events. More importantly, my research design breaks this myth by

comparing a larger oil spill (Guadalupe Dunes) that led to no change with the relatively smaller spill (Exxon Valdez) that does lead to significant change. I have not found any evidence that even hint decision makers are influenced by scale. Everyone and anyone who is injured in these accidents believe their entire life has been forever and totally devastated. Still, no decision maker has acted based on comparing how many people were injured or how much oil was spilled, for example.

I have to admit, however, that the scale of an accident may inform our interpretations of disruption and novelty. Work on normal accidents (Beamish, 2002; Perrow, 1999; Vaughan, 1996), for example, seem to suggest that humans tend to normalize and routinize small variations to such an extent that we do not recognize change very well. The small increments in global warming or from deaths attributed to air pollution, for example, does not alarm decision makers. Conversely, it may be possible that a sudden acute and large rate of increase may catch our attention and lead to claims of disruption.

Furthermore, the scale of an accident directly affects the number of the people who are affected. Not everyone has the skills to be a problem entrepreneur, and the larger the number of people who are affected may increase the probability that someone with the right interests, skills and resources to be an effective problem provider emerges. Scale may then act indirectly as a factor in affecting whether change occurs.

Are problem and solution provider roles always played by two people?

I speculate and propose further research to establish that the two problem and solution provider roles are found in a single person, group, or organization *only* when the

institutional change is relatively simple; and that two (or more) people in the two roles better explain complex social phenomena that involve multiple interacting institutions.

One driver for having two separate individuals in the two roles is that the task of making law, as my solution providers perform, is reserved for certain people—those who have been elected to Congress for example. This finding may be an artifact of this specific study, and some studies of educational reforms (e.g., Mintrom, 2000) suggest that when the task of implementing change is not so reserved, there is a single individual who plays both problem and solution provider roles. On the other hand, a Hoffman (1999) study of corporate environmentalism seems to support the idea that the environmental movement plays the role of problem provider and the chemical industry groups play the role of solution provider. My findings are supported, too, by Maguire and Hardy (2009) who find that numerous people are involved in the work of institutional entrepreneurship and dismiss the idea that single individuals can change institutions. This may be an empirical question but worth considering when single or multiple actors are involved in problem and solution provider roles.

Denying problems

Saying sorry seems to deny problem providers the basis on which to develop claims that lead to institutional change. In the two cases that have not lead to significant institutional change, the common theme appears to hinge on early efforts by the accused organizations, i.e., Legler authorities and Unocal Corporation, to agree to claims of deviance. These organizations apologized publicly. In contrast, organizations that resisted accusations of wrongdoing, i.e., Hooker Chemical and Exxon Corporation, led indignant

critics to develop and mount campaigns to establish a new formal order through which they could label the organizations as deviant.

I have not devoted sufficient attention to studying this phenomenon but the question it raises is how organizations can deny claims and in so doing avoid institutional change. Perrow (1999: 9) believes that "great events have small beginnings," and so there may be some possibility that we can avert disasters with some very simple changes early in the development of events so they do not become catalytic. In support for this kind of phenomena, Munir (2005) shows how some organizations can ignore new developments, and Garud et al (2002) describe how organizations can be coerced to give up dissident views in the forging of new industry standards. Scholars, perhaps driven by the need to reach positive findings, are typically driven to show something occurred but this research question (how problems may be denied) is aimed directly at understanding why some occurrences remain "non-events." This too will further fill a better understanding for what events are by showing what non-events are.

Is there a perfect storm?

One research question that may be on the mind of many in public policy and or practicing managers is whether, when or under what conditions a perfect storm may occur—a condition when the perfect occurrence coincides with capable problem providers who meet powerful solution providers to push through institutional changes rapidly. While my study explains why and how significant institutional change occurs, I have made no attempt to try to develop predictive aspects of my theory of catalytic events. Nevertheless, such a predictive ability may make the theory more appealing to some audiences, and is a worthwhile goal for scholars because the process of getting such

an answer should yield a better understanding of the underlying social mechanisms behind how problem and solution providers emerge and relate their work. Being able to predict the perfect storm of conditions requires understanding whether problem providers can be trained or nurtured (my analysis suggests Louis Gibbs was so "trained"); whether very skilled or resourceful problem providers can compensate for less capable or resourceful solution providers; and whether problem shopping might take a different form depending on the power balance between problem and solution providers, for example.

Part II – Conclusions

By devising a comparative case study of four environmental accidents, I have developed a new theory of catalytic events to explain why and how events lead to significant institutional change. A few people may perceive that an environmental accident has disrupted their lives and make claims to problematize the accident as causing an undesirable condition that must be alleviated. These people, labeled problem providers, then engage others, labeled solution providers, to create new meaning or symbolize the event. Such meanings further persuade others to create new institutions to effectively enforce a new order.

The new theory draws from multiple disciplines and theories. Sociologists and also political scientists have best shown how social problems arise and particular ones are solved. I have brought these theories together to better inform organizational theory because the very basic mechanisms of establishing order apply whether we are inside or outside an artificial boundary we call an organization. This study, as others have (Walsh,

et al., 2006), suggests that organizational theorists have much more to learn from other disciplines.

I find that environmental accidents and problems are constructed by a few who want to preserve their way of life through formal institutions that affect organizations. Organizations, however, need to respect these boundaries because they are no more or less legitimate than a fiduciary responsibility to shareholders. One challenge is that we often do not know where boundaries of acceptable behavior are until we break through them (Erikson, 1966). But, this is precisely where organizational theorists may be able to gain an advantage over other disciplines because organizations seem to be pushing the limits of acceptable behavior all the time causing considerable misery (Margolis & Walsh, 2003). My study is a step to better understanding how these boundaries are established. In a deep sense, I have developed a theory to explain what people do when lives are disrupted—disruptions that occur at the intersection of multiple institutions—and therefore we create new order and institutions to prevent greater disorder.

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APPENDIX A. PUBLIC OPINION SURVEYS

This Appendix contains selected questions from public opinion polls. Questions come from various surveys and organizations; full questionnaires are available from me, the organizations directly or the Roper Center Public Opinion Archive (Source: http://www.ropercenter.uconn.edu).

* The Question ID in this table is generated only as a way to refer to specific items in this study and otherwise meaningless outside this study.

Question ID	Question and Responses
1	In the past several months, there have been stories about the hazardous disposal of poisonous wastes from chemical plants. One such incident occurred in Niagara Falls, New York, where poisonous wastes were dumped into the Love Canal and leaked into surrounding areas, exposing private homes, a school, a playground, and residents to dangerous chemicals. Have you heard about the Love Canal incident, or not? 45% Yes 46% No 9% Not sure Methodology: Conducted by Cambridge Reports/Research International during April, 1979, and based on personal interviews with a national adult sample of 1,500. Sample size is approximate. [USCAMREP.79APR.R148] Data provided by The Roper Center for Public Opinion Research, University of Connecticut (CRC, 1979).

Question ID	Question and Responses
2	Have you heard or read anything about the accident at the Three Mile Island nuclear power plant near Harrisburg, Pennsylvania?

96% Yes
3% No
1% No opinion

Methodology: Conducted by CBS News/New York Times April 5-April 7, 1979, and based on telephone interviews with a national adult sample of 1,158. [USCBSNYT.040979.R09]

Data provided by The Roper Center for Public Opinion Research, University of Connecticut (CBS News, 1979).

This item may provide a basis for comparison with Question #1.

3 Let's consider for a moment the problem of industrial wastes. Please look at this card. Which one of the industries listed on the card do you think is currently creating the biggest industrial waste problem?....Lumber and paper, Chemical, Mining, Tire, Aluminum, Electronics, Plastics, Pesticides/insecticides, Oil, Steel, Nuclear power, Automobile

4% Lumber and paper
4% Mining
1% Aluminum
8% Oil
2% Steel
22% Nuclear power
5% Automobile
33% Chemical
1% Tire
*% Electronics
9% Pesticides/insecticides
1% Other (vol.)
*% None (vol.)
6% Don't know

Methodology: Conducted by Cambridge Reports/Research International during July, 1980, and based on personal interviews with a national adult sample of 1,500. Sample size is approximate. [USCAMREP.80JUL.R162]

Data provided by The Roper Center for Public Opinion Research, University of Connecticut (CRC, 1980).

Question ID	Question and Responses
4	(Let's consider for a moment the problem of industrial wastes. Please look at this card. Which one of the industries listed on the card do you think is currently creating the biggest industrial waste problem?)...Which would be second?) Lumber and paper, Chemical, Mining, Tire, Aluminum, Electronics, Plastics, Pesticides/insecticides, Oil, Steel, Nuclear power, Automobile

6%	Lumber and paper
5%	Mining
1%	Aluminum
6%	Plastics
6%	Oil
4%	Steel
13%	Nuclear
7%	Automobile
24%	Chemical
1%	Tire
1%	Electronics
19%	Pesticides/insecticides
*%	Other (vol.)
*%	None of these (vol.)
6%	Don't know

Methodology: Conducted by Cambridge Reports/Research International during July, 1980, and based on personal interviews with a national adult sample of 1,500. Sample size is approximate. [USCAMREP.80JUL.R163]

Data provided by The Roper Center for Public Opinion Research, University of Connecticut (CRC, 1980).

Question ID	Question and Responses
5	(When the federal government passes various regulations, they may be beneficial, but they may also increase the prices consumers pay for products or services that are regulated. For each regulation I mention, tell me whether it should be eliminated if it increases prices, kept but made less strict to hold down prices, kept just as it is, or made even more strict than it currently is.)...Controls on hazardous waste disposal

2% Should be eliminated
5% Kept but made less
17% Kept just as it is
73% Made even more strict
3% Don't know

Methodology: Conducted by Cambridge Reports/Research International during July, 1980, and based on personal interviews with a national adult sample of 1,500. Sample size is approximate. [USCAMREP.80JUL.R170]

Data provided by The Roper Center for Public Opinion Research, University of Connecticut (CRC, 1980).

6	Let's say a company produced a very hazardous waste product but was taking every known precaution to safely dispose of hazardous wastes. How close to the disposal site would you be willing to live? 01. (Less than a mile) 02. (1-3 miles) 03. (4-7 miles) 04. (8-10 miles) 05. (More than 10 miles) 06. (Would live nowhere near it at all)

4% Less than a mile
6% 1-3 miles
5% 4-7 miles
7% 8-10 miles
20% More than 10 miles
49% Would live nowhere near it at all
9% Don't know

Methodology: Conducted by Cambridge Reports/Research International during July, 1980, and based on personal interviews with a national adult sample of 1,500. Sample size is approximate. [USCAMREP.80JUL.R174]

Data provided by The Roper Center for Public Opinion Research, University of Connecticut (CRC, 1980).

Question ID	Question and Responses
7	Thinking about the problem of cleaning up chemical wastes that already exist, how important is it that we clean up those wastes: is it very important, somewhat important, only a little important, or not important at all? 76% Very important 19% Somewhat important 3% Only a little important 1% Not important at all 2% Don't know Methodology: Conducted by Cambridge Reports/Research International during July, 1980, and based on personal interviews with a national adult sample of 1,500. Sample size is approximate. [USCAMREP.80JUL.R178] Data provided by The Roper Center for Public Opinion Research, University of Connecticut (CRC, 1980).
8	How urgent a problem do you think it is that we clean up chemical wastes? Do you think the problem has to be solved in the next year, or wouldn't it make much difference if we take 5 to 10 years to solve it? 62% Solve in the next year 25% Take 5 to 10 years to solve it 13% Don't know Methodology: Conducted by Cambridge Reports/Research International during July, 1980, and based on personal interviews with a national adult sample of 1,500. Sample size is approximate. [USCAMREP.80JUL.R179] Data provided by The Roper Center for Public Opinion Research, University of Connecticut (CRC, 1980).

Question ID	Question and Responses
9	Do you think the dangers to you personally from possible exposure to chemical wastes are greater, less, or about the same as possible dangers to you from exposure to other chemicals that you come in contact with in your home or work? 36% Dangers greater 17% Dangers less 34% Dangers the same 13% Don't know Methodology: Conducted by Cambridge Reports/Research International during July, 1980, and based on personal interviews with a national adult sample of 1,500. Sample size is approximate. [USCAMREP.80JUL.R180] Data provided by The Roper Center for Public Opinion Research, University of Connecticut (CRC, 1980).
10	In the past several months, there have been stories about the hazardous disposal of poisonous wastes from chemical plants. One such incident occurred in Niagara Falls, New York, where poisonous wastes were dumped into the Love Canal and leaked into surrounding areas, exposing private homes, a school, a playground, and residents to dangerous chemicals. Have you heard about the Love Canal incident, or not? 69% Yes 22% No 10% Not sure Methodology: Conducted by Cambridge Reports/Research International during July, 1980, and based on personal interviews with a national adult sample of 1,500. Sample size is approximate. [USCAMREP.80JUL.R181] Data provided by The Roper Center for Public Opinion Research, University of Connecticut (CRC, 1980).

Question ID	Question and Responses
11	The safety and adequacy of methods of hazardous waste disposal are dependent on present laws and technology. However, laws and technology change. If in 20 years, for example, a disposal site that is considered safe today is ruled unsafe, who should pay to correct the problem?...01. The company which produced the waste 02. The firm that was responsible for disposing the waste 03. The local government 04. The federal government

29% The company which produced the waste
20% The firm that was responsible for disposing the waste
4% The local government
11% The federal government
30% Combination (vol.)
6% Don't know

Methodology: Conducted by Cambridge Reports/Research International during July, 1980, and based on personal interviews with a national adult sample of 1,500. Sample size is approximate. [USCAMREP.80JUL.R175]

Data provided by The Roper Center for Public Opinion Research, University of Connecticut (CRC, 1980).

This item reflects mixed attitudes towards the “polluter pays” doctrine for who should pay for environmental damages. See also Question 12.

12 In cases like Love Canal, who should be responsible for any damages to the community and to human health caused by the disposal of poisonous chemical wastes--the community itself, the company responsible for safely disposing of these wastes, the company that produces the wastes, or the government?

3% The community
29% The company responsible for safely disposing of wastes
23% The company that produces these wastes
7% The government
28% Combination (vol.)
1% Other (vol.)
9% Don't know

Methodology: Conducted by Cambridge Reports/Research International during July, 1980, and based on personal interviews with a national adult sample of 1,500. Sample size is approximate. [USCAMREP.80JUL.R182]

Data provided by The Roper Center for Public Opinion Research, University of Connecticut (CRC, 1980).

Question ID	Question and Responses
13	(Finding new places to build new industrial and power plants is sometimes difficult these days. I'm going to mention five types of buildings or sites. Assuming that they would be built and operated according to government environmental and safety regulations, you might or might not feel strongly about living close to them. For each type of plant please tell me the closest such a plant could be built from your home before you would want to move to another place or to actively protest, or whether it wouldn't matter to you one way or another how close it was?)... A. First, what about a ten-story office building? Mean = 5.8 miles B. A power plant that uses coal for fuel? Mean = 20.5 miles C. A nuclear power plant? Mean = 91.0 miles D. A large industrial plant or factory? Mean = 13.9 miles E. How about a disposal site for hazardous waste chemicals if the government said disposal could be done safely and that the site would be inspected regularly for possible problems? Mean = 81.4 miles Survey by Council for Environmental Quality Methodology: Conducted by Resources for the Future January 26-April 5, 1980, and based on personal interviews with a national adult sample of 1,576. Sample design, field work, and initial data preparation performed by Roper Organization and Cantril Research. [USRFF.80ENVR.R32A-E] Data provided by The Roper Center for Public Opinion Research, University of Connecticut (CEQ, 1980).

Question ID	Question and Responses
14	Would you please tell me approximately how far away the following are from your home?... A. The nearest freshwater lake? Mean = 18.8 miles B. The nearest river large enough for boating? Mean = 23.3 miles C. The nearest industrial plant or power plant? Mean = 7.9 miles D. The nearest nuclear power plant that is either operating now or under construction? Mean = 90.8 miles Survey by Council for Environmental Quality Methodology: Conducted by Resources for the Future January 26-April 5, 1980, and based on personal interviews with a national adult sample of 1,576. Sample design, field work, and initial data preparation performed by Roper Organization and Cantril Research. [USRFF.80ENVR.R33A-D] Data provided by The Roper Center for Public Opinion Research, University of Connecticut (CEQ, 1980).

Question ID	Question and Responses
15	I'm going to read you a short list of topics and incidents that have been mentioned in the news media over the past year or so. As I mention each, if you happen to have heard or read about it, would you please tell me what it refers to?...Love Canal, near Niagara Falls, New York: can you tell me what happened there? (Do not read list) 22% Correct: abandoned hazardous waste dump, chemical or toxic waste dump, place where chemical wastes have harmed people or made them move, where drums of toxic chemicals have leaked into the soil 22% Partially correct: people moved out of their homes, place where there was a problem with soil. 4% No reference to chemicals 8% Incorrect 65% Not sure Subpopulation: Asked in 'Y' version (47%) Survey by Council for Environmental Quality Methodology: Conducted by Resources for the Future January 26-April 5, 1980, and based on personal interviews with a national adult sample of 1,576. Sample design, field work, and initial data preparation performed by Roper Organization and Cantril Research. [USRFF.80ENVR.R28A] Data provided by The Roper Center for Public Opinion Research, University of Connecticut (CEQ, 1980).

Question ID	Question and Responses
16	As you know, residents near the Love Canal, in the Niagara Falls, New York, area, were reported to have stillbirths, cancer, deformed children, and chromosome damage as a result of the dumping of hazardous chemical wastes. The people who live near Love Canal want to move out and are suing the chemical company there and the federal government for $3 billion for damages done to them. How serious a problem do you think the dumping of toxic chemicals is in the country today--very serious, only somewhat serious, or hardly serious at all? 76% Very serious 20% Only somewhat serious 2% Hardly serious at all 2% Not sure Methodology: Conducted by ABC News/Louis Harris and Associates June 5-June 9, 1980, and based on telephone interviews with a likely voters sample of 1,493. [USABCHS.070780.R1] Data provided by The Roper Center for Public Opinion Research, University of Connecticut (ABC News/Harris, 1980).
17	Would you favor or oppose...Federal standards prohibiting such (toxic waste) dumping made much more strict than they are now? 93% Favor 6% Oppose 1% Not sure Methodology: Conducted by ABC News/Louis Harris and Associates June 5-June 9, 1980, and based on telephone interviews with a likely voters sample of 1,493. [USABCHS.070780.R3A] Data provided by The Roper Center for Public Opinion Research, University of Connecticut (ABC News/Harris, 1980).

Question ID	Question and Responses
18	Would you favor or oppose...Giving this problem of toxic chemical dumps and spills and a very high priority for federal action? 86% Favor 11% Oppose 3% Not sure Methodology: Conducted by ABC News/Louis Harris and Associates June 5-June 9, 1980, and based on telephone interviews with a likely voters sample of 1,493. [USABCHS.070780.R3C] Data provided by The Roper Center for Public Opinion Research, University of Connecticut (ABC News/Harris, 1980).
19	If you had to pick one, who do you think is most to blame for conditions such as those found at Love Canal--companies which dump their toxic wastes near where people live, agencies of the federal government which have also dumped hazardous wastes in such places, the federal government for not enforcing safety standards on toxic chemicals, real estate people who have built housing near places where such dumping has taken place, or local and state government for not being alert to hazardous waste dangers? 29% Federal government for not enforcing safety standards. 23% Companies which dump toxic wastes 22% Local and state government 5% Real estate people 4% Agencies of the federal government which have dumped hazardous wastes 13% All (vol.) 4% Not sure Methodology: Conducted by ABC News/Louis Harris and Associates June 5-June 9, 1980, and based on telephone interviews with a likely voters sample of 1,493. [USABCHS.070780.R2] Data provided by The Roper Center for Public Opinion Research, University of Connecticut (ABC News/Harris, 1980).

Question ID	Question and Responses
20	Some people oppose offshore drilling for oil and gas because they fear pollution. Other people say the need for oil is so pressing that we should be willing to suffer an occasional oil spill in order to get more oil. If offshore drilling meant that a major spill would occur about once every 5 years, would you favor or oppose more offshore drilling? 38% Favor 44% Oppose 18% Don't know Methodology: Conducted by Cambridge Reports/Research International during April, 1987 and based on 1,500 personal interviews. Sample: National adult. Sample size is approximate. [USCAMREP.87APR.R097] (Cambridge Reports/Research International, 1987)
21	Some people oppose offshore drilling for oil and gas because they fear pollution. Other people say the need for oil is so pressing that we should be willing to suffer an occasional oil spill in order to get more oil. If offshore drilling meant that a major spill would occur about once every 5 years, would you favor or oppose more offshore drilling? 37% Favor 46% Oppose 18% Don't know Methodology: Conducted by Cambridge Reports/Research International during April, 1988 and based on 1,500 personal interviews. Sample: National adult. Sample size is approximate. [USCAMREP.88APR.R082] (Cambridge Reports/Research International, 1988)

Question ID	Question and Responses
22	Have you heard or read anything about a recent oil spill, or not? (IF YES, ask:) Where did this oil spill occur? 81% Yes, Prince William Sound, Alaska or similar response 4% Yes, other 6% Yes, don't know (vol.) 5% No 3% Not sure Methodology: Conducted by Cambridge Reports/Research International during April, 1989 and based on 1,500 personal interviews. Sample: National adult. Sample size is approximate. [USCAMREP.89APR.R096] (Cambridge Reports/Research International, 1989a)
23	Some people oppose offshore drilling for oil and gas because they fear pollution. Other people say the need for oil is so pressing that we should be willing to suffer an occasional oil spill in order to get more oil. If offshore drilling meant that a major spill would occur about once every 5 years, would you favor or oppose more offshore drilling? 26% Favor 54% Oppose 19% Don't know Methodology: Conducted by Cambridge Reports/Research International during April, 1989 and based on 1,500 personal interviews. Sample: National adult. Sample size is approximate. [USCAMREP.89APR.R094] (Cambridge Reports/Research International, 1989a)
24	Do you think it is likely or unlikely that another major oil spill will occur in Alaska in the next 10 years? 59% Likely 34% Unlikely 7% Not sure Survey by Time, Cable News Network. Methodology: Conducted by Yankelovich Clancy Shulman, April 4 - April 5, 1989 and based on 1,012 telephone interviews. Sample: National adult. [USYANKCS.89APR3.R24]

Question ID	Question and Responses
25	When accidents like this (oil spill in Alaska) occur, whom do you think should be mainly responsible for cleaning up--the company or the federal government? 84% Company 9% Federal government 7% Not sure Methodology: Conducted by NBC News/Wall Street Journal, April 16 - April 18, 1989 and based on 1,447 telephone interviews. Sample: National adult. [USNBCWSJ.042089.R20]
26	Do you happen to know which of these categories best describes how large an area has been affected by the Alaska oil spill, or are you really not sure? 2% An area the size of a few acres 7% An area the size of a few square miles 72% An area the size of a small state 19% Not sure/Don't know Survey by Times Mirror. Methodology: Conducted by Gallup Organization, May 4 - May 7, 1989 and based on 1,239 telephone interviews. Sample: National adult. [USGALLUP.589TM.R27]
27	Have you had occasion to discuss... the Alaska oil spill... with friends, family, or co-workers, or hasn't it come up in conversation? 79% Discussed story 21% Has not come up Survey by Times Mirror. Methodology: Conducted by Gallup Organization, May 4 - May 7, 1989 and based on 1,239 telephone interviews. Sample: National adult. [USGALLUP.589TM.R10A]

Question ID	Question and Responses
28	Which one of the stories I just mentioned have you followed most closely? 36% A. The Alaska oil spill 26% B. The Oliver North trial 3% C. The Ethics Committee's investigation of Speaker of the House Jim Wright * D. The scandal involving the Japanese Prime Minister and other high ranking officials 10% E. The attack and sexual assault on a female jogger in Central Park, New York, by a group of youths 8% F. The Supreme Court's hearing of arguments in a Missouri abortion case 10% G. The explosion and fire on the U.S. battleship Iowa 7% Can't say Subpopulation/Note: . * = less than .5 percent Survey by Times Mirror. Methodology: Conducted by Gallup Organization, May 4 - May 7, 1989 and based on 1,239 telephone interviews. Sample: National adult. [USGALLUP.589TM.R08]
29	Have you considered or stopped buying gasoline from Exxon gas stations because of Exxon's role in the oil spill in Alaska? 11% Yes, have considered 11% Yes, have stopped 72% No 6% Not sure Survey by Time, Cable News Network. Methodology: Conducted by Yankelovich Clancy Shulman on May 4, 1989 and based on 504 telephone interviews. Sample: National adult. [USYANKCS.89MAY.R14] Data provided by The Roper Center for Public Opinion Research, University of Connecticut (Yankelovich Clancy Shulman, 1989)

Question ID	Question and Responses
30	Do you happen to know what oil company is responsible for the oil spill in Valdez, Alaska? 76% Exxon 4% Other 17% No 3% Not sure Survey by Time, Cable News Network. Methodology: Conducted by Yankelovich Clancy Shulman on May 4, 1989 and based on 504 telephone interviews. Sample: National adult. [USYANKCS.89MAY.R13] Data provided by The Roper Center for Public Opinion Research, University of Connecticut (Yankelovich Clancy Shulman, 1989)
31	How would you rate Exxon as an oil company you can put your confidence in--excellent, pretty good, only fair, or poor? 41% Excellent/Pretty good 57% Only fair/Poor 2% Not sure Methodology: Conducted by Louis Harris & Associates, May 12 - May 16, 1989 and based on 1,247 telephone interviews. Sample: National adult. [USHARRIS.052889.R3] Data provided by The Roper Center for Public Opinion Research, University of Connecticut (Harris Poll, 1989)

Question ID	Question and Responses
32	How would you rate the job that Exxon has done on... cooperating with the local, state, and federal government agencies in trying to contain the damage (from the Exxon Valdez accident)--excellent, pretty good, only fair, or poor? 31% Excellent/Pretty good 66% Only fair/Poor 3% Not sure Methodology: Conducted by Louis Harris & Associates, May 12 - May 16, 1989 and based on 1,247 telephone interviews. Sample: National adult. [USHARRIS.052889.R2D] Data provided by The Roper Center for Public Opinion Research, University of Connecticut (Harris Poll, 1989)
33	How would you rate the job that Exxon has done on... being willing to pay most of the costs for the clean-up (from the Exxon Valdez accident)--excellent, pretty good, only fair, or poor? 42% Excellent/Pretty good 53% Only fair/Poor 5% Not sure Methodology: Conducted by Louis Harris & Associates, May 12 - May 16, 1989 and based on 1,247 telephone interviews. Sample: National adult. [USHARRIS.052889.R2C] Data provided by The Roper Center for Public Opinion Research, University of Connecticut (Harris Poll, 1989)

Question ID	Question and Responses
34	How would you rate the job that Exxon has done on... being willing to put an environmentalist leader on its Board of Directors to be sure the environmentalist point of view is represented at the highest levels--excellent, pretty good, only fair, or poor? 44% Excellent/Pretty good 46% Only fair/Poor 10% Not sure Methodology: Conducted by Louis Harris & Associates, May 12 - May 16, 1989 and based on 1,247 telephone interviews. Sample: National adult. [USHARRIS.052889.R2B] Data provided by The Roper Center for Public Opinion Research, University of Connecticut (Harris Poll, 1989)
35	How would you rate the job that Exxon has done on... taking the blame for the (Exxon Valdez) oil spill in the first place--excellent, pretty good, only fair, or poor? 46% Excellent/Pretty good 51% Only fair/Poor 3% Not sure Methodology: Conducted by Louis Harris & Associates, May 12 - May 16, 1989 and based on 1,247 telephone interviews. Sample: National adult. [USHARRIS.052889.R2A] Data provided by The Roper Center for Public Opinion Research, University of Connecticut (Harris Poll, 1989)

Question ID	Question and Responses
36	How serious was the impact on the environment from the oil spill created in Alaska (in the Exxon Valdez accident)--very serious, not very serious, or not serious at all? 84% Very serious 13% Somewhat serious 2% Not very serious * Not serious at all 1% Not sure Methodology: Conducted by Louis Harris & Associates, May 12 - May 16, 1989 and based on 1,247 telephone interviews. Sample: National adult. [USHARRIS.052889.R1] Data provided by The Roper Center for Public Opinion Research, University of Connecticut (Harris Poll, 1989)
37	Do you think the environmental damage created by the recent oil spill in Alaska is irreparable, or will it be possible to clean up the oil and return the environment to about the same condition as before the spill? 54% Damage irreparable 32% Can be returned to about the same condition 13% Don't know Methodology: Conducted by Cambridge Reports/Research International during July, 1989 and based on 1,500 personal interviews. Sample: National adult. Sample size is approximate. [USCAMREP.89JUL.R091] Data provided by The Roper Center for Public Opinion Research, University of Connecticut (Cambridge Reports/Research International, 1989b)

Question ID	Question and Responses
38	The major oil companies have recently announced that they will spend $250 million to develop a plan and provide regional facilities to deal with major oil spills anywhere in the United States. Do you think this effort will be able to prevent substantial environmental damage even if there is another oil spill like the one in Alaska, or not? 31% Yes 43% No 26% Not sure Methodology: Conducted by Cambridge Reports/Research International during July, 1989 and based on 1,500 personal interviews. Sample: National adult. Sample size is approximate. [USCAMREP.89JUL.R092] Data provided by The Roper Center for Public Opinion Research, University of Connecticut (Cambridge Reports/Research International, 1989b)
39	As you may know, a portion of the Alaska coast line was polluted by an oil spill this past spring when a tanker owned by the Exxon Corporation ran aground in Alaska's Prince William Sound. To the best of your knowledge, is Exxon doing enough to help clean up that oil spill, not doing enough or don't you know enough about the situation to say? 17% Doing enough 60% Not doing enough 23% Don't know/No opinion Methodology: Conducted by ABC News/Washington Post, August 17 - August 21, 1989 and based on 1,509 telephone interviews. Sample: National adult. [USABCWP.358.R57] Data provided by The Roper Center for Public Opinion Research, University of Connecticut (ABC News/Washington Post, 1989)

Question ID	Question and Responses
40	Do you think the environmental damage created by the recent oil spill in Alaska is irreparable, or will it be possible to clean up the oil and return the environment to about the same condition as before the spill? 55% Damage irreparable 38% Can be returned to about the same condition 7% Don't know Methodology: Conducted by Cambridge Reports/Research International during March, 1990 and based on 1,250 telephone interviews. Sample: National adult. Sample size is approximate. [USCAMREP.90MAR.R33] Data provided by The Roper Center for Public Opinion Research, University of Connecticut (Cambridge Reports/Research International, 1990a)
41	Some people oppose offshore drilling for oil and gas because they fear pollution. Other people say the need for oil is so pressing that we should be willing to suffer an occasional oil spill in order to get more oil. If offshore drilling meant that a major spill would occur about once every 5 years, would you favor or oppose more offshore drilling? 26% Favor 70% Oppose 4% Don't know Methodology: Conducted by Cambridge Reports/Research International during March, 1990 and based on 1,250 telephone interviews. Sample: National adult. Sample size is approximate. [USCAMREP.90MAR.R34] Data provided by The Roper Center for Public Opinion Research, University of Connecticut (Cambridge Reports/Research International, 1990a)

Question ID	Question and Responses
42	Some people oppose offshore drilling for oil and gas because they fear pollution. Other people say the need for oil is so pressing that we should be willing to suffer an occasional oil spill in order to get more oil. If offshore drilling meant that a major spill would occur about once every 5 years, would you favor or oppose more offshore drilling? 34% Favor 60% Oppose 6% Don't know Methodology: Conducted by Cambridge Reports/Research International during September, 1990 and based on 1,250 telephone interviews. Sample: National adult. Sample size is approximate. [USCAMREP.90SEP.R34] Data provided by The Roper Center for Public Opinion Research, University of Connecticut (Cambridge Reports/Research International, 1990b)
43	(Now, I'm going to read you a list of various institutions or types of industries. After each one, I'd like you to tell me whether you have a very favorable, somewhat favorable, somewhat unfavorable, or very unfavorable opinion of each.)...Oil industry 6% Very favorable 16% Somewhat favorable 32% Somewhat unfavorable 40% Very unfavorable 5% Don't know Methodology: Conducted by Cambridge Reports/Research International during September, 1990 and based on 1,250 telephone interviews. Sample: National adult. Sample size is approximate. [USCAMREP.90SEP.R12] Data provided by The Roper Center for Public Opinion Research, University of Connecticut (Cambridge Reports/Research International, 1990b)

Question ID	Question and Responses
44	(Now, I'm going to read you a list of various institutions or types of industries. After each one, I'd like you to tell me whether you have a very favorable, somewhat favorable, somewhat unfavorable, or very unfavorable opinion of each.)...Chemical companies 7% Very favorable 22% Somewhat favorable 32% Somewhat unfavorable 28% Very unfavorable 11% Don't know Methodology: Conducted by Cambridge Reports/Research International during September, 1990 and based on 1,250 telephone interviews. Sample: National adult. Sample size is approximate. [USCAMREP.90SEP.R13] Data provided by The Roper Center for Public Opinion Research, University of Connecticut (Cambridge Reports/Research International, 1990b)
45	As a result of the 1989 Exxon Valdez oil spill in Alaska, the Exxon Corporation agreed to pay a $100 million criminal fine as well as a $1 billion civil penalty. On Tuesday, a federal judge rejected the agreement for the $100 million fine saying it was too lenient. Do you agree with the judge's ruling that the fine was not enough, or do you think the amount agreed upon was adequate? 56% Amount of fine too small 35% Amount of fine adequate 9% No opinion Methodology: Conducted by Gallup Organization, April 25 - April 28, 1991 and based on 1,005 telephone interviews. Sample: National adult. [USGALLUP.03MAY.R1] Data provided by The Roper Center for Public Opinion Research, University of Connecticut (Gallup Organization, 1991)

Question ID	Question and Responses
46	Some people oppose offshore drilling for oil and gas because they fear pollution. Other people say the need for oil is so pressing that we should be willing to suffer an occasional oil spill in order to get more oil. If offshore drilling meant that a major spill would occur about once every 5 years, would you favor or oppose more offshore drilling? 24% Favor 72% Oppose 4% Don't know Methodology: Conducted by Cambridge Reports/Research International during March, 1992 and based on 1,250 telephone interviews. Sample: National adult. Sample size is approximate. [USCAMREP.92MAR.R38] Data provided by The Roper Center for Public Opinion Research, University of Connecticut (Cambridge Reports/Research International, 1992)
47	Some people oppose offshore drilling for oil and gas because they fear pollution. Other people say the need for oil is so pressing that we should be willing to suffer an occasional oil spill in order to get more oil. If offshore drilling meant that a major spill would occur about once every 5 years, would you favor or oppose more offshore drilling? 28% Favor 69% Oppose 3% Don't know Methodology: Conducted by Cambridge Reports/Research International during March, 1994 and based on 1,250 telephone interviews. Sample: National adult. Sample size is approximate. [USCAMREP.94MAR.R29] Data provided by The Roper Center for Public Opinion Research, University of Connecticut (Cambridge Reports/Research International, 1994)

Question ID	Question and Responses
48	Would you say that you have recently been taking a good deal of interest in current events and what's happening in the world today, some interest, or not very much interest? 49% Good deal 37% Some 13% Not very much * Don't know Methodology: Conducted by Roper Organization, February 15 - March 1, 1975 and based on 2,003 personal interviews. Sample: National adult. [USROPER.75-3.R01] Data provided by The Roper Center for Public Opinion Research, University of Connecticut (Roper Organization, 1975)
49	Of course, everyone is more interested in some things being carried in the news than in others. Is news about...President Ford and his Administration...something you have recently been following fairly closely, or just following casually, or not paying much attention to? 47% Following closely 43% Following casually 9% No attention or don't know Methodology: Conducted by Roper Organization, February 15 - March 1, 1975 and based on 2,003 personal interviews. Sample: National adult. [USROPER.75-3.R02A] Data provided by The Roper Center for Public Opinion Research, University of Connecticut (Roper Organization, 1975)

Question ID	Question and Responses
50	(Of course, everyone is more interested in some things being carried in the news than in others.) Is news about...Talk of a possible depression...something you have recently been following fairly closely, or just following casually, or not paying much attention to? 70% Following closely 23% Following casually 6% No attention or don't know Methodology: Conducted by Roper Organization, February 15 - March 1, 1975 and based on 2,003 personal interviews. Sample: National adult. [USROPER.75-3.R02D] Data provided by The Roper Center for Public Opinion Research, University of Connecticut (Roper Organization, 1975)
51	(Of course, everyone is more interested in some things being carried in the news than in others.) Is news about...Relations between Israel and the Arab countries...something you have recently been following fairly closely, or just following casually, or not paying much attention to? 37% Following closely 40% Following casually 23% No attention or don't know Methodology: Conducted by Roper Organization, February 15 - March 1, 1975 and based on 2,003 personal interviews. Sample: National adult. [USROPER.75-3.R02E] Data provided by The Roper Center for Public Opinion Research, University of Connecticut (Roper Organization, 1975)

Question ID	Question and Responses
52	(Of course, everyone is more interested in some things being carried in the news than in others.) Is news about...News about job layoffs and unemployment...something you have recently been following fairly closely, or just following casually, or not paying much attention to? 76% Following closely 20% Following casually 4% No attention or don't know Methodology: Conducted by Roper Organization, February 15 - March 1, 1975 and based on 2,003 personal interviews. Sample: National adult. [USROPER.75-3.R02L] Data provided by The Roper Center for Public Opinion Research, University of Connecticut (Roper Organization, 1975)
53	(Of course, everyone is more interested in some things being carried in the news than in others.) Is news about...Proposals for ways to cut U.S. oil and gasoline use...something you have recently been following fairly closely, or just following casually, or not paying much attention to? 60% Following closely 29% Following casually 11% No attention or don't know Methodology: Conducted by Roper Organization, February 15 - March 1, 1975 and based on 2,003 personal interviews. Sample: National adult. [USROPER.75-3.R02M] Data provided by The Roper Center for Public Opinion Research, University of Connecticut (Roper Organization, 1975)

Question ID	Question and Responses
54	(Of course, everyone is more interested in some things being carried in the news than in others.) Is news about...News about oil tanker spills in various parts of the world...something you have recently been following fairly closely, or just following casually, or not paying much attention to? 29% Following closely 43% Following casually 28% No attention or don't know Methodology: Conducted by Roper Organization, February 15 - March 1, 1975 and based on 2,003 personal interviews. Sample: National adult. [USROPER.75-3.R02N] Data provided by The Roper Center for Public Opinion Research, University of Connecticut (Roper Organization, 1975)
55	There's been talk about various kinds of shortages which may mean that we will have to live a more austere life than we have grown accustomed to. Some people say this is bad because life will be more difficult without some of the important conveniences of life. Others say there are some good things about it, and that a simpler life would be better. What do you think--that on the whole, doing without some things and living a more austere life would be a bad thing or a good thing? 21% Bad 55% Good 20% Mixed (Vol.) 4% Don’t know Methodology: Conducted by Roper Organization, February 15 - March 1, 1975 and based on 2,003 personal interviews. Sample: National adult. [USROPER.75-3.R03] Data provided by The Roper Center for Public Opinion Research, University of Connecticut (Roper Organization, 1975)

Question ID	Question and Responses
56	Recently there has been a lot of controversy about oil spills and tanker accidents in the oceans. How serious do you think this problem is: very serious, only somewhat serious or not really serious at all? 71% Very serious 22% Only somewhat serious 4% Not really serious at all 3% Don't know Methodology: Conducted by Cambridge Reports/Research International during January, 1977 and based on 1,500 personal interviews. Sample: National adult. Sample size is approximate. [USCAMREP.77JAN.R071] Data provided by The Roper Center for Public Opinion Research, University of Connecticut (Cambridge Reports/Research International, 1977)
57	Which of these do you think is most to blame for the (oil) tanker accidents?...01. Foreign ship owners who skimp on equipment 02. The major oil companies 03. The Coast Guard 04. Simple bad luck and bad weather 55% Foreign ship owners who skimp on equipment 12% The major oil companies 2% The Coast Guard 13% Simple bad luck and bad weather 7% Other (vol.) 11% Don't know Methodology: Conducted by Cambridge Reports/Research International during January, 1977 and based on 1,500 personal interviews. Sample: National adult. Sample size is approximate. [USCAMREP.77JAN.R072] Data provided by The Roper Center for Public Opinion Research, University of Connecticut (Cambridge Reports/Research International, 1977)

Question ID	Question and Responses
58	Using the same scale, which is second (most to blame for the oil tanker accidents)?...01. Foreign ship owners who skimp on equipment 02. The major oil companies 03. The Coast Guard 04. Simple bad luck and bad weather 21% Foreign ship owners who skimp on equipment 28% The major oil companies 6% The Coast Guard 24% Simple bad luck and bad weather 5% Other (vol.) 16% Don't know Methodology: Conducted by Cambridge Reports/Research International during January, 1977 and based on 1,500 personal interviews. Sample: National adult. Sample size is approximate. [USCAMREP.77JAN.R073] Data provided by The Roper Center for Public Opinion Research, University of Connecticut (Cambridge Reports/Research International, 1977)
59	Would you favor or oppose each of the following solutions for dealing with the problem (of oil tanker accidents?... Increased Coast Guard regulation of foreign shipping, even if it causes some international problems 71% Favor 15% Oppose 14% Don’t know Methodology: Conducted by Cambridge Reports/Research International during January, 1977 and based on 1,500 personal interviews. Sample: National adult. Sample size is approximate. [USCAMREP.77JAN.R074] Data provided by The Roper Center for Public Opinion Research, University of Connecticut (Cambridge Reports/Research International, 1977)

Question ID	Question and Responses
60	(Would you favor or oppose each of the following solutions for dealing with the problem (of oil tanker accidents)?... Banning foreign tankers unless they meet strict safety standards, even if this causes a slight increase in fuel prices 81% Favor 8% Oppose 11% Don't know Methodology: Conducted by Cambridge Reports/Research International during January, 1977 and based on 1,500 personal interviews. Sample: National adult. Sample size is approximate. [USCAMREP.77JAN.R075] Data provided by The Roper Center for Public Opinion Research, University of Connecticut (Cambridge Reports/Research International, 1977)
61	(Would you favor or oppose each of the following solutions for dealing with the problem (of oil tanker accidents)?...Government research on cleaning up oil spills 77% Favor 13% Oppose 10% Don't know Methodology: Conducted by Cambridge Reports/Research International during January, 1977 and based on 1,500 personal interviews. Sample: National adult. Sample size is approximate. [USCAMREP.77JAN.R076] Data provided by The Roper Center for Public Opinion Research, University of Connecticut (Cambridge Reports/Research International, 1977)

Question ID	Question and Responses
62	(Would you favor or oppose each of the following solutions for dealing with the problem (of oil tanker accidents)?...Legislation that would force those who spill oil to pay all the costs of cleaning it up 87% Favor 5% Oppose 9% Don't know Methodology: Conducted by Cambridge Reports/Research International during January, 1977 and based on 1,500 personal interviews. Sample: National adult. Sample size is approximate. [USCAMREP.77JAN.R077] Data provided by The Roper Center for Public Opinion Research, University of Connecticut (Cambridge Reports/Research International, 1977)
63	On the whole, would you say that material you read in a newspaper is more believable than what you see on television? 15% Newspaper better 24% Television better 42% Same (vol.) 14% Neither (vol.) 5% Don't know Methodology: Conducted by Cambridge Reports/Research International during January, 1977 and based on 1,500 personal interviews. Sample: National adult. Sample size is approximate. [USCAMREP.77JAN.R087] Data provided by The Roper Center for Public Opinion Research, University of Connecticut (Cambridge Reports/Research International, 1977)

Question ID	Question and Responses
64	Some people oppose offshore drilling for oil and gas because they fear pollution. Other people say the need for oil is so pressing that we should be willing to suffer an occasional oil spill in order to get more oil. If offshore drilling meant that a major spill would occur about once every 5 years, would you favor or oppose more offshore drilling? 59% Favor 25% Oppose 16% Don't know Methodology: Conducted by Cambridge Reports/Research International during July, 1978 and based on 1,500 personal interviews. Sample: National adult. Sample size is approximate. [USCAMREP.78JUL.R065] Data provided by The Roper Center for Public Opinion Research, University of Connecticut (Cambridge Reports/Research International, 1978)
65	During the past several weeks an oil well off the coast of Mexico has been spurting oil into the Gulf of Mexico. As a result of this spill, several areas may suffer ecological damage. Would you favor or oppose discontinuing all oil drilling in the Gulf of Mexico because of this spill and the possibility of future ones occurring? 29% Favor 52% Oppose 19% Don't know Methodology: Conducted by Cambridge Reports/Research International during July, 1979 and based on 1,500 personal interviews. Sample: National adult. Sample size is approximate. [USCAMREP.79JUL.R125] Data provided by The Roper Center for Public Opinion Research, University of Connecticut (Cambridge Reports/Research International, 1979)

Question ID	Question and Responses
66	Some people oppose offshore drilling for oil and gas because they fear pollution. Other people say the need for oil is so pressing that we should be willing to suffer an occasional oil spill in order to get more oil. If offshore drilling meant that a major spill would occur about once every 5 years, would you favor or oppose more offshore drilling? 54% Favor 31% Oppose 15% Don't know Methodology: Conducted by Cambridge Reports/Research International during July, 1979 and based on 1,500 personal interviews. Sample: National adult. Sample size is approximate. [USCAMREP.79JUL.R124] Data provided by The Roper Center for Public Opinion Research, University of Connecticut (Cambridge Reports/Research International, 1979)
67	Some people oppose offshore drilling for oil and gas because they fear pollution. Other people say the need for oil is so pressing that we should be willing to suffer an occasional oil spill in order to get more oil. If offshore drilling meant that a major spill would occur about once every 5 years, would you favor or oppose more offshore drilling? 64% Favor 22% Oppose 14% Don't know Methodology: Conducted by Cambridge Reports/Research International during April, 1980 and based on 1,500 personal interviews. Sample: National adult. Sample size is approximate. [USCAMREP.80APR.R060] Data provided by The Roper Center for Public Opinion Research, University of Connecticut (Cambridge Reports/Research International, 1980)

Question ID	Question and Responses
68	Some people oppose offshore drilling for oil and gas because they fear pollution. Other people say the need for oil is so pressing that we should be willing to suffer an occasional oil spill in order to get more oil. If offshore drilling meant that a major spill would occur about once every 5 years, would you favor or oppose more offshore drilling? 56% Favor 32% Oppose 12% Don't know Methodology: Conducted by Cambridge Reports/Research International during April, 1981 and based on 1,500 personal interviews. Sample: National adult. Sample size is approximate. [USCAMREP.81APR.R107] Data provided by The Roper Center for Public Opinion Research, University of Connecticut (Cambridge Reports/Research International, 1981)
69	Some people oppose offshore drilling for oil and gas because they fear pollution. Other people say the need for oil is so pressing that we should be willing to suffer an occasional oil spill in order to get more oil. If offshore drilling meant that a major spill would occur about once every 5 years, would you favor or oppose more offshore drilling? 55% Favor 32% Oppose 13% Don't know Methodology: Conducted by Cambridge Reports/Research International during July, 1982 and based on 1,500 personal interviews. Sample: National adult. Sample size is approximate. [USCAMREP.82JUL.R068] Data provided by The Roper Center for Public Opinion Research, University of Connecticut (Cambridge Reports/Research International, 1982)

Question ID	Question and Responses
70	Some people oppose offshore drilling for oil and gas because they fear pollution. Other people say the need for oil is so pressing that we should be willing to suffer an occasional oil spill in order to get more oil. If offshore drilling meant that a major spill would occur about once every 5 years, would you favor or oppose more offshore drilling? 49% Favor 37% Oppose 14% Don't know Methodology: Conducted by Cambridge Reports/Research International during July, 1985 and based on 1,500 personal interviews. Sample: National adult. Sample size is approximate. [USCAMREP.85JUL.R050] Data provided by The Roper Center for Public Opinion Research, University of Connecticut (Cambridge Reports/Research International, 1985)

Table 1 Niagara and Legler Population Census by Race

	Niagara Falls	Pct	Jackson Township	Pct	New York State	Pct	New Jersey State	Pct	United States	Pct
Total Population	71384	100.0%	25662	100.0%	17558072	100.0%	7364823	100.0%	226545805	100.0%
Urban	71384	100.0%	13042	50.8%	13793214	78.6%	6291944	85.4%	139182696	61.4%
Rural	0	0.0%	12620	49.2%	2699548	15.4%	807153	11.0%	59491167	26.3%
By race										
White	61086	85.6%	24579	95.8%	14033644	79.9%	6154833	83.6%	189035012	83.4%
Black	9079	12.7%	681	2.7%	2405818	13.7%	924909	12.6%	26482349	11.7%
American Indian	854	1.2%	29	0.1%	43508	0.2%	10028	0.1%	1478523	0.7%
Eskimo	0	0.0%	12	0.0%	208	0.0%	131	0.0%	42098	0.0%
Aleut	0	0.0%	0	0.0%	271	0.0%	41	0.0%	13715	0.0%
Japanese	7	0.0%	26	0.1%	24754	0.1%	10263	0.1%	716331	0.3%
Chinese	72	0.1%	112	0.4%	147250	0.8%	23492	0.3%	812178	0.4%
Filipino	0	0.0%	100	0.4%	35630	0.2%	24470	0.3%	781894	0.3%
Korean	0	0.0%	7	0.0%	33260	0.2%	13173	0.2%	357393	0.2%
Asian Indian	75	0.1%	0	0.0%	67636	0.4%	30684	0.4%	387223	0.2%
Vietnamese	35	0.0%	0	0.0%	5849	0.0%	2846	0.0%	245025	0.1%
Hawaiian	25	0.0%	7	0.0%	1950	0.0%	579	0.0%	172346	0.1%
Guamanian	0	0.0%	0	0.0%	1017	0.0%	199	0.0%	30695	0.0%
Samoan	0	0.0%	0	0.0%	151	0.0%	112	0.0%	39520	0.0%
Other	39	0.1%	0	0.0%	13475	0.1%	3565	0.0%	183835	0.1%

Table 2 Niagara and Legler Population Census by Age

	Niagara Falls	Pct	Jackson Township	Pct	New York State	Pct	New Jersey State	Pct	United States	Pct
Total Population	71384	100.0%	25662	100.0%	17558072	100.0%	7364823	100.0%	226545805	100.0%
By age										
Persons Under 1 Year	978	1.4%	293	1.1%	238031	1.4%	96625	1.3%	3510249	1.5%
Persons 1 and 2 yr	1875	2.6%	848	3.3%	447733	2.6%	182641	2.5%	6474604	2.9%
Persons 3 and 4 yr	1931	2.7%	753	2.9%	443297	2.5%	182203	2.5%	6313497	2.8%
Persons 5 yr	872	1.2%	469	1.8%	218728	1.2%	92643	1.3%	3151620	1.4%
Persons 6 yr	942	1.3%	458	1.8%	216833	1.2%	93070	1.3%	3098725	1.4%
Persons 7-9 yr	2947	4.1%	1483	5.8%	742962	4.2%	320661	4.4%	10404644	4.6%
Persons 10-13 yr	3969	5.6%	2040	7.9%	1106837	6.3%	477378	6.5%	14462883	6.4%
Persons 14 yr	1079	1.5%	581	2.3%	305143	1.7%	130217	1.8%	3821954	1.7%
Persons 15 yr	1152	1.6%	505	2.0%	319246	1.8%	137584	1.9%	4093371	1.8%
Persons 16 yr	1253	1.8%	686	2.7%	325172	1.9%	140178	1.9%	4215279	1.9%
Persons 17 yr	1107	1.6%	562	2.2%	324863	1.9%	139099	1.9%	4245499	1.9%
Persons 18 yr	1208	1.7%	553	2.2%	313466	1.8%	129296	1.8%	4240873	1.9%
Persons 19 yr	1353	1.9%	432	1.7%	317843	1.8%	125967	1.7%	4383106	1.9%
Persons 20 yr	1214	1.7%	476	1.9%	315195	1.8%	123067	1.7%	4382236	1.9%
Persons 21 yr	1481	2.1%	269	1.0%	307171	1.7%	123307	1.7%	4276900	1.9%
Persons 22-24 yr	4412	6.2%	1009	3.9%	894540	5.1%	366640	5.0%	12634678	5.6%
Persons 25-29 yr	5600	7.8%	1627	6.3%	1422329	8.1%	570165	7.7%	19471494	8.6%
Persons 30-34 yr	4612	6.5%	2309	9.0%	1365005	7.8%	570484	7.7%	17709880	7.8%
Persons 35-44 yr	5905	8.3%	3650	14.2%	2047279	11.7%	879670	11.9%	25637555	11.3%
Persons 45-54 yr	7622	10.7%	2361	9.2%	1904055	10.8%	821043	11.1%	22732301	10.0%
Persons 55-59 yr	4672	6.5%	947	3.7%	981461	5.6%	435558	5.9%	11651267	5.1%
Persons 60 and 61 yr	1883	2.6%	398	1.6%	358648	2.0%	156508	2.1%	4256183	1.9%

	Niagara Falls	Pct	Jackson Township	Pct	New York State	Pct	New Jersey State	Pct	United States	Pct
Persons 62-64 yr	2761	3.9%	551	2.1%	486714	2.8%	213711	2.9%	5878621	2.6%
Persons 65-74 yr	6538	9.2%	1658	6.5%	1293032	7.4%	530639	7.2%	15590108	6.9%
Persons 75-84 yr	3043	4.3%	610	2.4%	672046	3.8%	256472	3.5%	7715599	3.4%
Persons 85+ yr	975	1.4%	134	0.5%	190443	1.1%	69997	1.0%	2192679	1.0%

Table 3 Niagara and Legler Household Information Census

	Niagara Falls	Pct	Jackson Township	Pct	New York State	Pct	New Jersey State	Pct	United States	Pct
Household information										
Total households	27353	100.0%	7692	100.0%	6345951	100.0%	2550290	100.0%	80467427	100.0%
Married w/children	6268	22.9%	3657	47.5%	1731768	27.3%	774778	30.4%	24779964	30.8%
Married w/o children	8462	30.9%	2340	30.4%	1764848	27.8%	799572	31.4%	24210335	30.1%
Male (No Spouse) w/children	240	0.9%	67	0.9%	56405	0.9%	22492	0.9%	759897	0.9%
Male (No Spouse) w/o children	522	1.9%	73	0.9%	115225	1.8%	47990	1.9%	1234658	1.5%
Female (No Spouse) w/children	2421	8.9%	277	3.6%	473089	7.5%	168576	6.6%	4932478	6.1%
Female (No Spouse) w/o children	1441	5.3%	178	2.3%	326696	5.1%	128700	5.0%	3272801	4.1%
Nonfamily household	7999	29.2%	1100	14.3%	1877920	29.6%	608182	23.8%	21277294	26.4%
Educational achievement										
Among persons 25 & older (total)	43611	100.0%	14245	100.0%	10721012	100.0%	4504247	100.0%	132835687	100.0%
Completed Elementary (0-8 yr)	8607	19.7%	2117	14.9%	1962158	18.3%	797935	17.7%	24257683	18.3%
Completed HS 1-3 yr	8939	20.5%	2115	14.8%	1653751	15.4%	670414	14.9%	20277514	15.3%
Completed HS 4 yr	16798	38.5%	6282	44.1%	3651739	34.1%	1615424	35.9%	45947035	34.6%
Completed Coll 1-3 yr	5284	12.1%	2047	14.4%	1529817	14.3%	594434	13.2%	20794975	15.7%

	Niagara Falls	Pct	Jackson Township	Pct	New York State	Pct	New Jersey State	Pct	United States	Pct
Completed Coll 4+ yr	3983	9.1%	1684	11.8%	1923547	17.9%	826040	18.3%	21558480	16.2%

Table 4 Niagara and Legler Household Income Census

	Niagara Falls	Pct	Jackson Township	Pct	New York State	Pct	New Jersey State	Pct	United States	Pct
Median HH Income In 1979	14805		21171		16647		19800		16647	
Family income										
By White (total)	16754	100.0%	6385	100.0%	3631717	100.0%	1657767	100.0%	50644862	100.0%
Under $5,000	1244	7.4%	284	4.4%	196134	5.4%	65390	3.9%	2841348	5.6%
$5,000-$7,499	1004	6.0%	291	4.6%	193301	5.3%	64850	3.9%	2798872	5.5%
$7,500-$9,999	1258	7.5%	340	5.3%	215681	5.9%	79894	4.8%	3249669	6.4%
$10,000-$14,999	2585	15.4%	737	11.5%	482903	13.3%	187325	11.3%	7272088	14.4%
$15,000-$19,999	3004	17.9%	910	14.3%	531533	14.6%	226653	13.7%	7771655	15.3%
$20,000-$24,999	2754	16.4%	1052	16.5%	533887	14.7%	241158	14.5%	7572279	15.0%
$25,000-$34,999	3175	19.0%	1761	27.6%	746403	20.6%	381517	23.0%	10225059	20.2%
$35,000-$49,999	1376	8.2%	784	12.3%	460501	12.7%	260255	15.7%	5791722	11.4%
$50,000+	354	2.1%	226	3.5%	271374	7.5%	150725	9.1%	3122170	6.2%
By Black (total)	2279	100.0%	135	100.0%	565644	100.0%	216479	100.0%	6105698	100.0%
Under $5,000	437	19.2%	16	11.9%	108093	19.1%	37157	17.2%	1181527	19.4%
$5,000-$7,499	261	11.5%	12	8.9%	59044	10.4%	20436	9.4%	672987	11.0%
$7,500-$9,999	255	11.2%	0	0.0%	52858	9.3%	19219	8.9%	604093	9.9%
$10,000-$14,999	317	13.9%	3	2.2%	96092	17.0%	34144	15.8%	1033313	16.9%

	Niagara Falls	Pct	Jackson Township	Pct	New York State	Pct	New Jersey State	Pct	United States	Pct
$15,000-$19,999	334	14.7%	17	12.6%	74935	13.2%	28774	13.3%	815004	13.3%
$20,000-$24,999	213	9.3%	21	15.6%	59502	10.5%	24099	11.1%	621868	10.2%
$25,000-$34,999	304	13.3%	39	28.9%	70675	12.5%	31345	14.5%	722650	11.8%
$35,000-$49,999	119	5.2%	21	15.6%	34242	6.1%	16042	7.4%	344484	5.6%
$50,000+	39	1.7%	6	4.4%	10203	1.8%	5263	2.4%	109772	1.8%
By Native American (total)	230	100.0%	15	100.0%	10249	100.0%	2598	100.0%	341401	100.0%
Under $5,000	51	22.2%	0	0.0%	1576	15.4%	225	8.7%	54628	16.0%
$5,000-$7,499	31	13.5%	0	0.0%	1139	11.1%	210	8.1%	35400	10.4%
$7,500-$9,999	46	20.0%	4	26.7%	926	9.0%	250	9.6%	34139	10.0%
$10,000-$14,999	22	9.6%	6	40.0%	1818	17.7%	496	19.1%	60194	17.6%
$15,000-$19,999	32	13.9%	5	33.3%	1737	16.9%	437	16.8%	49372	14.5%
$20,000-$24,999	23	10.0%	0	0.0%	1012	9.9%	356	13.7%	38433	11.3%
$25,000-$34,999	20	8.7%	0	0.0%	1215	11.9%	316	12.2%	42564	12.5%
$35,000-$49,999	5	2.2%	0	0.0%	610	6.0%	207	8.0%	18966	5.6%
$50,000+	0	0.0%	0	0.0%	216	2.1%	101	3.9%	7705	2.3%
By Asian & Pacific Islander (total)	75	100.0%	38	100.0%	77368	100.0%	25755	100.0%	818029	100.0%
Under $5,000	16	21.3%	0	0.0%	5912	7.6%	1210	4.7%	62268	7.6%
$5,000-$7,499	14	18.7%	0	0.0%	4632	6.0%	707	2.7%	40118	4.9%
$7,500-$9,999	0	0.0%	0	0.0%	5555	7.2%	790	3.1%	45705	5.6%
$10,000-$14,999	0	0.0%	0	0.0%	12108	15.6%	2052	8.0%	97701	11.9%
$15,000-$19,999	14	18.7%	6	15.8%	10283	13.3%	2743	10.7%	101837	12.4%
$20,000-$24,999	0	0.0%	11	28.9%	9447	12.2%	3178	12.3%	106226	13.0%
$25,000-$34,999	31	41.3%	0	0.0%	12959	16.7%	6847	26.6%	166935	20.4%
$35,000-$49,999	0	0.0%	7	18.4%	9540	12.3%	5022	19.5%	123218	15.1%
$50,000+	0	0.0%	14	36.8%	6932	9.0%	3206	12.4%	74021	9.0%

Table 5 Summary of Similarities between Love Canal and Legler Cases

Similarities	Love Canal	Legler
Occurrence	Toxic chemicals leached into groundwater thus spreading contaminants into nearby homes	Toxic chemicals leached into groundwater thus contaminating drinking water wells
"Event" declared	NY Department of Health declares health emergency on August 2, 1978	Jackson Township Board of Health orders Legler residents to stop using well water on November 8, 1978
Large company involvement	Hooker Chemical (parent is Occidental Chemical) owned site until transferred to Niagara Board of Education for $1 in 1953	Glidden Paint Corporation (parent was Smith-Corona) owned site before being transferred to Jackson Township for $1 in 1971
Origins	Industrial wastes disposed into an inadequately protected (but permitted) site. Site transferred to School district for $1.	Industrial & household wastes disposed into city (Jackson Township) owned landfill. Landfill transferred from paint company for $1.
Hazard discovery	US EPA officials responding to request from Canada; earlier complaints from residents ignored	Ocean County (NJ) officials responding to residents complaints & subsequent NJ DoH investigations
Hazardous materials found	>21,000 tons total volume of waste; benzene; dioxin; trichlorophenol (TCP)	Benzene; chloroform; trichloroethylene (TCE); tetrachloroethane; dichlorethylene
Homeowners organized	Several groups form; one is led by Lois Gibbs (the most prominent of the homeowner-activsts); residents conduct health survey & analyze results officials refuse to do	One group forms, led by Jim McCarthy ; residents conduct health survey & analyze results officials refuse to do
Residents' emotions experienced	Anger at officials; disease-related	Anger at officials; disease-related anxiety, fear

Table 6 Summary of Differences between Love Canal and Legler Cases

Differences	Love Canal	Legler
Initial national news generated	NY Times August 2, 1978 (same day as declaration) on p. 1, column 1.	NY Times February 7, 1980 (16 mths after declaration) on p. 1, column 1. An offhand remark was made in NY Times February 18, 1979.
Political context: Elections	Gov. Carey (D) incumbent was returned in 1978 to finish 2nd term in 1982; made promise to purchase Love Canal homes during the campaign period. President Carter (D) incumbent lost to Reagan (R) in 1980; made decision to purchase more homes in this election year & pass several pro-environmental regulations.	No impact on US Senate elections in 1978
Major political actors involved	Various levels: President Carter (D); Gov. Carey (D); US Rep. LaFalce (D-NY) & Florio (D-NJ); US Senator Moynihan (D-NY); NY Senators Daly & Murphy; NY DoH Commissioners Whalen & Axelrod	State level: NJ legislators Russo (D) & Doyle
Residents major interests	Want to know what happened; want to be relocated/reimbursed for damaged homes; they want to leave	Want landfill to be remediated & monitored for at least 20 years; they want to remain; want medical health trust for 60 years
Residents involvement	Extensive, involving organized protests & political pressure. Significant influence on many political actors up to US Presidency	Minimal, involving residents to form class action lawsuit. Minimal influence
Residents demands (excluding lawsuits) made on these parties	Hooker Chemical; State of New York; United States (via President's office)	Jackson Township (Ocean County, NJ)
Place	Suburban/semi-industrial; mostly single family homes but densely populated	Rural; single family homes on large lots; sparsely populated

Table 7 Public Opinion on the Sectors Creating Biggest Industrial Wastes

Sector	% believe the sector creates the biggest problem	% believe the sector creates the 2nd biggest problem
Chemical	33	24
Nuclear	22	13
Pesticide/insecticide	9	19
Oil	8	6
Don't know	6	6
Automobile	5	7
Lumber & paper	4	6
Mining	4	5
Steel	2	4
Aluminum	1	1
Tire	1	1
Other	1	N/A
Plastics	N/A	6
Electronics	N/A	1
None of these	N/A	N/A

Source: Cambridge Research Corporation survey conducted in July 1980; Questions 3 & 4 in Appendix A (CRC, 1980)
Note: Sample size 1500 adults nationwide

Table 8 Mean Distance the Public Wants to Live from these Facilities

Facility	Distance (in miles)
Nuclear power plant	91
Hazardous waste disposal site	81.4
Power plant that uses coal for fuel	20.5
Large industrial plant or factory	13.9
Ten-story office building	5.8

Source: Council for Environmental survey conducted in January through April 1980; Questions 13 in Appendix A (CEQ, 1980)
Note: Sample size 1576 adults nationwide

Table 9 Hazardous Wastes Articles Published 1968-1988

Term	New York Times	Washington Post	Magazines	Total	% Increase	Significance (p-value)
1968	0	0	0	0		
1969	0	0	0	0	0%	0.5
1970	0	0	5	5		
1971	1	1	2	4	-20%	0.86
1972	1	0	6	7	75%	0.00 ***
1973	3	2	3	8	14%	0.22
1974	4	5	8	17	113%	0.00 ***
1975	3	0	10	13	-24%	0.90
1976	4	1	6	11	-15%	0.80

Term	New York Times	Washington Post	Magazines	Total	% Increase	Significance (p-value)
1977	14	4	2	20	82%	0.00 ***
1978	29	17	7	53	165%	0.00 ***
1979	86	92	11	189	257%	0.00 ***
1980	237	182	8	427	126%	0.00 ***
1981	205	114	8	327	-23%	0.90
1982	208	173	10	391	20%	0.14
1983	399	341	43	783	100%	0.00 ***
1984	275	296	39	610	-22%	0.88
1985	276	303	69	648	6%	0.37
1986	283	302	67	652	1%	0.49
1987	353	260	30	643	-1%	0.53
1988	349	243	58	650	1%	0.48

Notes: Significance tested with null hypothesis $H_0 = 0$ (i.e., no change) using t-distribution. (*** p-value<0.001)
Source: ProQuest database for New York Times and Washington Post; Readers' Guide to Periodical Literature for magazines

Table 10 Summary of Similarities between Exxon Valdez and Guadalupe Dunes

Similarities	Exxon Valdez	Guadalupe Dunes
"Event" declared	First news reports in major media on March 25, 1989	Oil leaks thought to have begun 1954 until use stopped in 1992
Large company involvement	Exxon	Unocal (part of Chevron since 2005)
Hazard discovery	Captain makes distress call to Coast Guard	Two whistleblowers come forward in 1990 & 1992
Hazardous materials found	Crude oil (contains carcinogens)	Diluent (oil thinner contains carcinogens)
Political context: Elections	No impact	No impact
Residents' emotions experienced	Anger at Exxon, Alyeska & Coast Guard; anxiety, stress	Anger at Unocal, state agencies

Table 11 Summary of Differences between Exxon Valdez and Guadalupe Dunes Cases

Differences	Exxon Valdez	Guadalupe Dunes
Nature of accident	Acute; punctuated	Chronic; crescive
Origins	Tanker runs aground March 24, 1989	Diluent leaks from pipes over 38 years
Occurrence	10.8 million gallons of crude oil spilled in ocean	20 million gallons of diluent (oil thinner) into soil, groundwater & ocean
Initial national news generated	Most national newspapers day after Exxon Valdez ran aground	San Jose Mercury Nov 23, 1992; various major national newspapers in 1994
Major political actors involved	Pres. GHW Bush (R); Gov. Cowper (D); Reps. Jones (D-N.C.), Miller (D-Calif)	None
Residents major interests	Want water & beaches cleaned; better oil spill response	Want beaches & dunes cleaned
Residents organized	Residents represented by local unions	None
Residents involvement	Minimal direct involvement; unions form political pressure. Pressure on Congress and state legislature	None
Residents demands (excluding lawsuits) made on these parties	Exxon, Alyeska, State of Alaska, U.S. (via Congress)	Unocal
Place	Heavy forest; minimally populated	Rural; sparsely populated

Table 12 Characteristics of Problem and Solution Providers

Characteristic	Problem provider	Solution provider
Typical member	Resident (e.g. Gibbs, Ott); local legislative representative (e.g. LaFalce)	Legislative representative (e.g. Reps. Florio, Jones); EPA
Motivations	Individual disruption; collective good	Want new legislation; want to protect or enrich constituents
Claims	Disruption to life (health, relationships); novelty (no solution exists now)	
Demands	Want to know what "it" means; want to be reimbursed for injury; want to stay (or leave)	Want new legislation; want to protect or enrich constituents
Activities	Describe; demonize; dramatize	Enliven, encode (make new law)
Skills required	Relationship building; advocacy	Bargaining/negotiating; building consensus
Knowledge	Experiential - particularized	Law/institutionalized field - generalized

Table 13 Case Comparison Summary

Claim / Meaning	Love Canal	Legler	Valdez	Guadalupe
Disrupted life				
Break in routines	☑	☑	☑	
Besieged by wastes	☑	☑		
Spiritual disruption			☑	
Social disruption			☑	
Novelty				
Reference point	☑		☑	
State of science	☑			
Accommodation by institutions		☑		☑
Position on agenda				
Public	☑		☑	
Legislative	☑		☑	
Division of labor				
Problem providers	Gibbs; Brown; Rep. LaFalce	McCarthy	Ott; S Jones; Epler	
Solution providers	Rep. Florio		Rep. Jones	
Shared meaning				
Disorder	☑	☑	☑	
New category	Hazardous waste		Toxic oil	
Institutional change	CERCLA		OPA	

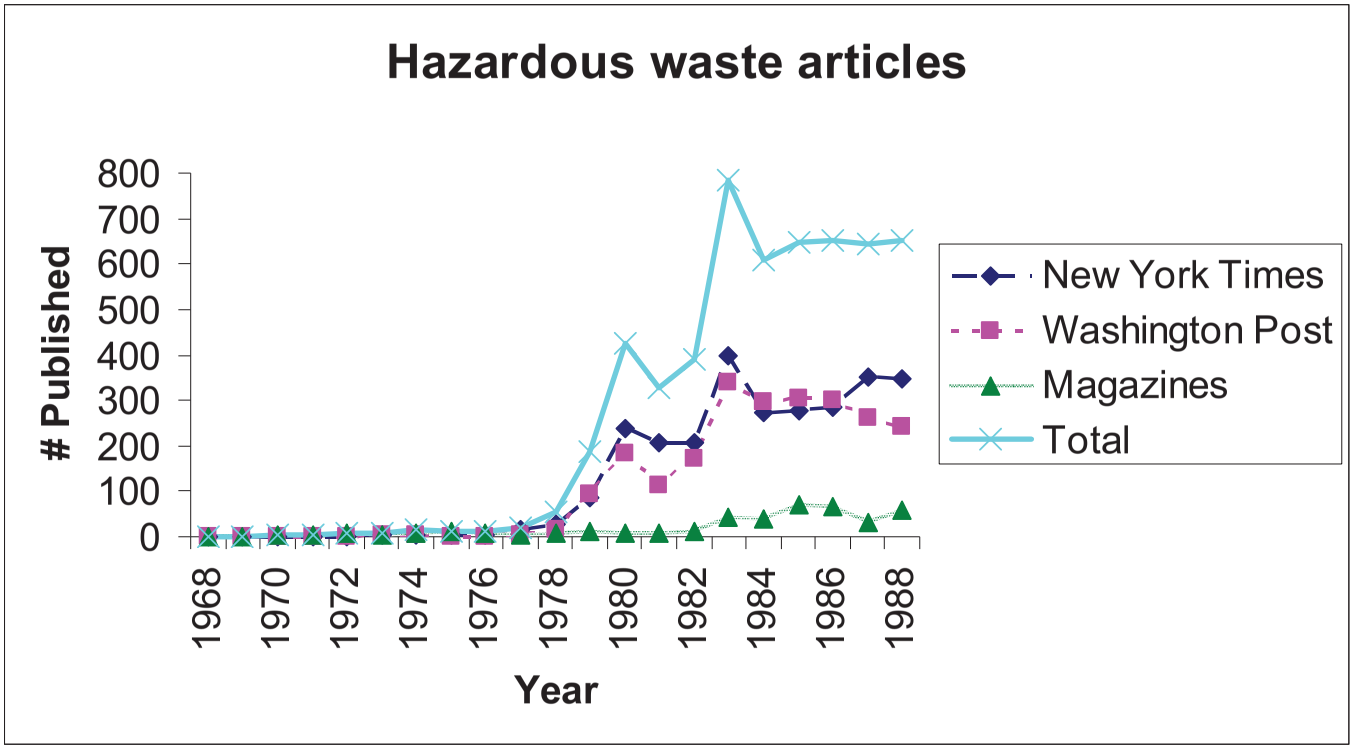

Figure 1 Hazardous Waste Articles Published 1968-1988

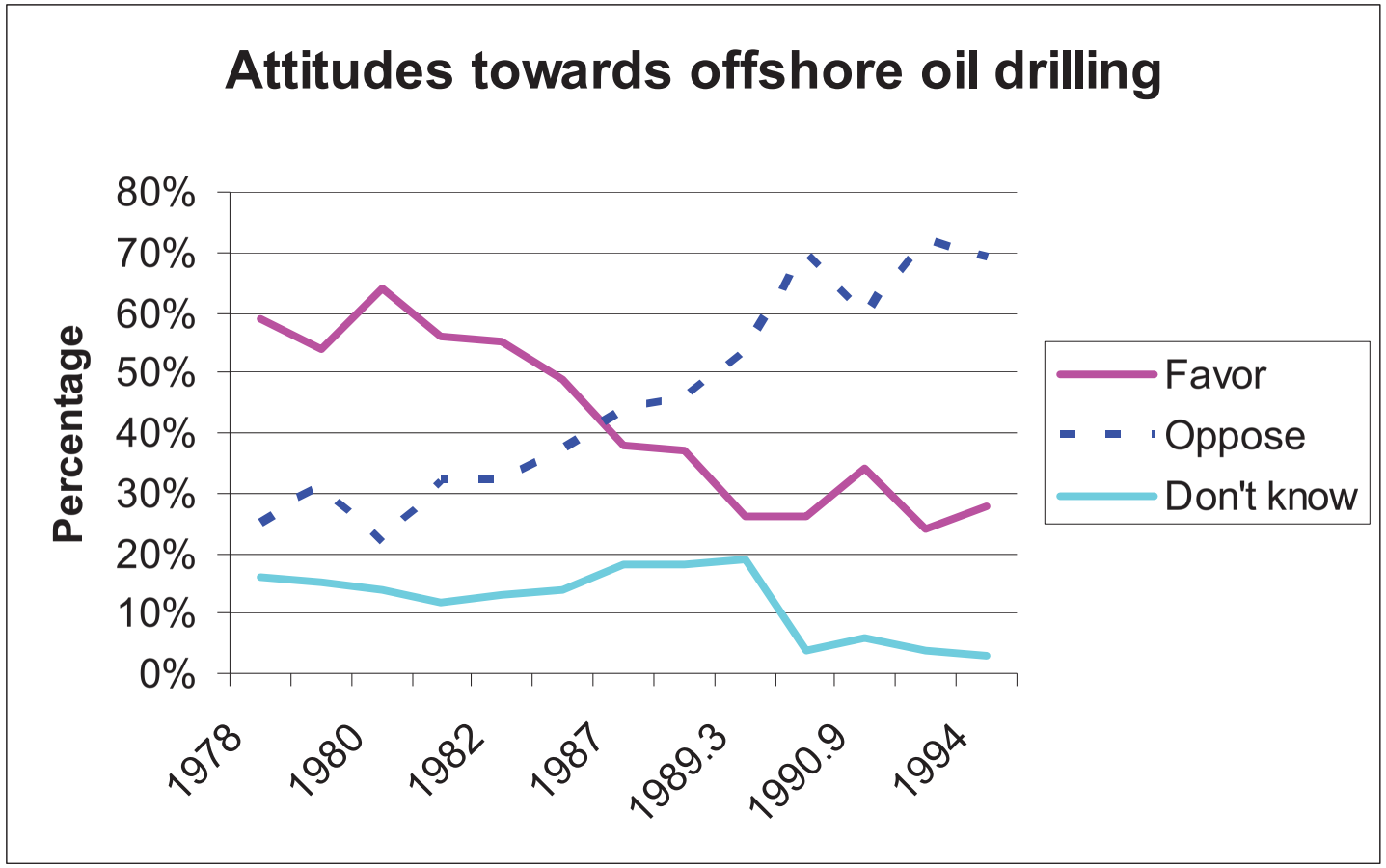

Figure 2 Attitudes Towards Offshore Oil Drilling

CURRICULUM VITAE

Ken Chung

1962	Born in Dovercourt, United Kingdom
1978	Graduated Angle-Chinese School, Singapore
1983	B.Sc., Nuclear Engineering, University of California, Berkeley
1983 - 1986	Systems Analyst / Management Consultant, KPMG Management Consultants, Singapore
1987 - 1995	Senior Systems Analyst, Tandem Computers, San Francisco, Calif.
1995 - 2000	Self-employed; Founder, Foris Adventures, Oakland, Calif.
2000 - 2003	Product Marketing Manager, Hewlett-Packard, Cupertino, Calif.
2003	M.B.A., Syracuse University, N.Y.
2006	Product Manager, Tranax, Fremont, Calif.
2006 - 2012	Graduate studies in Strategic Management, Rutgers University, Newark, N.J.
2011 - 2012	Assistant Instructor (full time faculty), Rutgers University, Newark, N.J.
2012	Ph.D. in Organization Management, Rutgers University, Newark, N.J.