

TRUST RELATIONSHIPS AND DRINKING WATER: DRINKING WATER CHOICES IN
WALKERTON, ONTARIO

By

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ABSTRACT

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In this thesis, I have combined political ecology with the interpretative medical anthropology literature and the literature on trust to develop a new model, the political ecology of trust, which I then apply to the community of Walkerton, Ontario to analyze how residents' relationship with the institutions that treat, monitor, and regulate their drinking water influences their drinking water choices.

Walkerton experienced an *E. coli* contamination of their drinking water in 2000, which resulted in seven deaths and thousands ill. As a result of the Walkerton Inquiry, the government inquiry that followed, both the local and the provincial government implemented a number of infrastructure and policy changes in order to re-establish safe drinking water in Walkerton and to prevent other communities from sharing a similar experience. The *E. coli* contamination and changes afterward alter the relationships residents in and around Walkerton have with the institutions responsible for their drinking water.

To analyze the Walkerton case, I draw from political ecology the concepts of examining environmental health from within the framework of politics, economics, environmental conditions, and social relationships. These various entities, including the environment, are active participants in these relationships and influence each other, and interact within a context of unequal power. These relationships are also shaped by culturally constructed meanings which are discursive and conflicting. I also draw and expand on the trust literature for an understanding of what trust is and how it works. I expand and adapt five measures of trust and distrust, which I

call fidelity/infidelity, competence/incompetence, honesty and transparency/dishonesty and opacity, accountability/immunity, and global trust/global distrust. I use these measures to examine how collectively they shape relationships of trust and distrust. Within this model, I address power in trust relationships, the tension between individual agency and contextual relationships, conceptualization of risk, how the construction of knowledge and meanings influences trust, and the way trust can operate in relationships with the natural environment.

I apply these measures to the people of Walkerton, examining their relationship with and the perception of their local and provincial government and government agencies, private businesses contracted to manage local water supplies, private companies who bottle and market water, and untreated, natural spring water. Competence, accountability, and honesty/transparency are all measures that are part of power relationships, and unequal power in the trust relationship can undermine these measures.

I find that the Walkerton residents I spoke with are highly ambivalent about their trust in their government but still feel that it is the government, rather than private enterprise or the market, that is best suited to protecting the quality of their drinking water. Few of the people I spoke to routinely drink the tap water unfiltered, and half of those who drink water from another source do so because it tastes better and the rest because they feel the other source is safer. Many of those who do not drink the tap water prefer to drink water from an untreated, nearby natural spring. These decisions are grounded in a combination of trust, constructed meanings, and political and economic relationships. Lessons learned from Walkerton can inform future research and policy to better understand and cope with environmental health issues.

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Dedicated to my husband, W. Kevin Vicklund, for supporting me from the very beginning

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KEY TO ABBREVIATIONS

CBC—Canadian Broadcasting Corporation

CDC—Centers for Disease Control and Prevention

CELA—Canadian Environmental Law Association

C. jejuni—*Campylobacter jejuni*

CNN—Cable News Network

CWC—Concerned Walkerton Citizens

E. coli—*Escherichia coli*

FDA—Food and Drug Administration

GMO—Genetically Modified Organism

HUS—Hemolytic uremic syndrome

Hydro—Hydro-electricity

IBS—Irritable Bowel Syndrome

Inquiry—Walkerton Inquiry

MOE—Ministry of Environment

MP—Member of Parliament

NAFTA—North American Trade Agreement

NDP—New Democratic Party

NGO—Non-government organization

OCWA—Ontario Clean Water Agency

ODWO—Ontario Drinking Water Objectives

PUC—Public Utilities Commission

PTSD—Post Traumatic Stress Disorder

Qtd.—Quoted

Residents—Walkerton residents, including people who live in and around Walkerton

WCWC—Walkerton Clean Water Center

CHAPTER 1

TRUST RELATIONSHIPS AND WATER CONSUMPTION

In 1969 and 1970, my father went backpack–canoeing near the Chapleau Game Preserve in Ontario. He said that the water was so pure back then that he could drink straight from the rivers. When we went backpack–canoeing together in Minnesota’s Boundary Waters in the mid-1990s, he no longer trusted the water. All of our drinking water was either boiled or chemically treated. Times had changed.

While most people today do not get their water directly from the source, the majority of those living in relatively wealthy, industrialized nations turn on their taps without any qualms regarding its quality. If they think about their water at all, they generally assume that their countries have the finances and infrastructure to provide, monitor, and regulate drinking water in order to ensure that the water at their taps is safe. Yet while impoverished countries have a higher percentage of water problems, affluent countries are not exempt from the effects of contamination, even in their drinking water. Canadians and U.S. citizens may take their water quality for granted, but that does not mean that the drinking water is always safe. As the residents in and near the rural town of Walkerton, Ontario discovered, human error, negligence, and the failure of oversight organizations to follow through can result in serious illnesses, even death, from contaminants in their drinking water.

In May 2000, approximately 23 hundred people became seriously ill and seven died as a result of a particularly toxic strain of *Escherichia coli*, O157:H7, in Walkerton’s tap water. *E. coli* O157:H7 is a dangerous strain of bacteria found in contaminated food and water that can cause acute abdominal cramping, bloody diarrhea, kidney failure, and even death. For weeks,

the Walkerton hospital was overwhelmed with patients. Doctors and nurses came in from outside the community as many of the local ones were also sick from the water. Residents came to dread the sound of helicopters taking the worst of the sick to larger hospitals. For six months after the contamination, residents could not use their tap water—the system had to be completely upgraded and sanitized. Bleach in the water destroyed clothing and they had to rely on bottled or boiled water for drinking, cooking, and bathing. Many of those who survived continue to struggle with long term complications, including, in some cases, kidney failure (Perkel 2002; O’Connor 2002a; Burke 2001; interviews).

The contamination resulted from a complex series of circumstances at both the local and provincial level. The immediate cause of the outbreak was a combination of heavy rains, malfunctioning machinery, improper operating practices by the local water utility, and miscommunication between the testing laboratory, the Public Utility Commission (PUC), the Ministry of the Environment (MOE), and the Public Health Unit about the *E. coli* in the tap water. These local problems occurred, however, because the provincial budget cuts and changes in environmental policy had undermined the government’s ability to enforce the legislation intended to ensure tap water quality. In the early days immediately following the contamination, none of the political parties, individual politicians, or representatives of the various government agencies wanted to be held responsible for what had happened, resulting in political maneuvering to deflect blame (Perkel 2002; O’Connor 2002a; interviews).

The contamination had not only immediate and long-lasting health effects on the small rural community, but it changed their relationship with the institutions that provide, test, and regulate their drinking water. This breach in trust was not easily mended and caused people to reevaluate their relationship with these institutions. What happened in Walkerton was not the

result of a single freak accident, but rather a widespread breakdown in the system intended to protect them. Not only did the residents suddenly realize that their water was not as safe as they had assumed before then, but it called into question the government's ability and desire to protect them.

The water contamination in Walkerton is an abrupt example of changing relationships with drinking water and related institutions, but the trend toward privatizing public drinking water systems (Bakker 2007), the rapidly expanding bottled water industry (Jaffee and Newman 2013), and the growing prevalence of neoliberal reforms (Snider 2004), are together transforming relationships with water and related institutions in important ways, moving water from the public sphere to the private one, which operates under different rules and assumptions. Understanding the role trust plays in these changing relationships can help scholars better comprehend how and why people make their drinking water choices. Depending on where the water comes from, its relative cost, and its quality, these choices have implications beyond taste and convenience; they have consequences for public health, personal finances, and the environment.

Water consumption choices are embedded in relationships that can leave the consumers exposed to potential risk. Trust enables individuals to make decisions in their self-interest in situations of vulnerability and uncertainty (Hardin 2001). It informs the strategies people employ to reduce their vulnerability and uncertainty when dealing with others (Heimer 2001). While many factors affect these relationships, trust is a fundamental component of human interactions that has been underutilized by anthropologists. Because of this, I have combined political ecology, interpretative medical anthropology and the trust literature from sociology, political science, and psychology to create an anthropological approach to trust in order to better

understand environmental health issues. I developed a model to examine how trust influences decisions made within the larger context of environmental issues, politics, economics, and health concerns. By combining the trust literature with the political ecology and interpretative medical anthropology frameworks, I have situated these trust relationships within a multilevel analysis of the role of power, local and non-local interactions, and the cultural construction of the meanings that inform decisions affecting resource use and environmental health.

Years after the boiled water advisory ended, Walkerton's municipal water system was sanitized and upgraded, and Ontario had passed laws tightening the water related regulations in order to prevent another water contamination similar to what happened in Walkerton, I knew that many people living in and around Walkerton (referred to from here on as Walkerton residents) continued to drink only bottled water. I wanted to understand why. The goal of my research was to understand whether it was because they had become used to the way bottled water tasted, or if it was because of deeper underlying distrust in the public water systems as a result of their experiences during the *E. coli* contamination. I wished to know if they preferred bottled water because of its convenience, its taste, or because they felt it was safer to drink than the tap water. I wanted to know if it is because they do not feel that the new water policies addressed the underlying issues, or if it is that they prefer their drinking water to be natural and untouched. I intended to contextualize their choices within a larger political ecology framework and the cultural construction of such meanings as risk, health, purity, and nature to help understand how power, discourse, and the decisions of other actors collectively influenced their water choices.

While Walkerton residents' experiences with the *E. coli* contamination are unusual in wealthier, more industrialized nations, many people in these countries prefer bottled water to tap. In the United States alone, nearly 9 billion gallons of bottled water were sold in 2008 (Gleick

2010). The main reasons for why people prefer bottled water over their tap water are convenience, taste, and health. Many bottled water consumers drink bottled water because they believe that the bottled water is safer than their tap water (Gleick 2010; Chapelle 2005; Royte 2008). While the literature on bottled water explores the construction of bottled water as natural and healthy (e.g. Gleick 2010; Chapelle 2005; Royte 2008; Opel 1999), as part of Canada's national identity (e.g. El Ayoubi and McNiven 2006), as indicative of social identities (e.g. Gleick 2010; Gould 1999), and as part of a larger neoliberal discourse and the commodification of water (e.g. Kaplan 2011; Opel 1999), it does not explore how relationships of trust and distrust inform consumer habits. They do not explore *why* bottled water consumers trust private bottled water companies over municipal water providers to provide safe drinking water. Trust is a fundamental part of how consumers navigate multiple water choices and make water consumption choices. Water choices are not just based on consumer trust in the individual institutions that regulate, distribute, and test their drinking water but also in different sources of information about the water quality, such as the news media, neighbors, and scientific reports.

Using the data collected in open-ended interviews and participant observation while living in Walkerton, Ontario, I examine how the *E. coli* contamination changed trust relationships within the community, whether or not the political changes since then have helped repair damaged trust relationships, and what further measures, if any, locals think are necessary before they can trust their tap water again. From there, I explore how relationships of both trust and distrust influence individual water choices. Through my fieldwork, I discovered that water choices are more complex than I had anticipated. These choices are further complicated by the existence of a nearby, untreated artesian well which allows many residents to bypass human systems entirely. The reasons behind their decisions are embedded in complex, multilayered

relationships of trust, constructed meanings, and social, economic, and political relationships. My model allows me to explore how these various facets of trust interact and, ultimately, influence water consumption choices.

My model not only makes it possible to better understand the experiences and choices of people in Walkerton today, but also can be used to understand environmental health issues in other communities and to facilitate communication between the government and the community about their concerns. It can be used in future studies to better understand how and why people make choices in situations of uncertainty and potential risk, such as decisions that can affect their health.

The Political Ecology of Trust

Human relationships with water and the institutions that distribute, monitor, and regulate it are complicated. While some of people may get their water directly from the source, such as private wells, many rely on a multilayered system of institutions to extract, process, distribute, monitor, and regulate their drinking water. Many people depend on the same water resources: people who need water for domestic uses, who want it for recreational uses, who use it to generate electricity, who rely on it for commercial fishing, and who require it for industry and agriculture. While the interests of these various groups may overlap—all want safe and pure water, preferably soft water without sediments or contaminants—their interests may also conflict, especially when water resources are limited.

Before the water contamination of May 2000, residents in and around Walkerton believed that their water was of excellent quality. Even as people started to fall ill, they had a hard time believing that it was their water that was making them sick. They believed that the processes that treated and regulated their drinking water made that impossible; perhaps more importantly

they believed that the politicians and operators who were responsible for maintaining and monitoring their water treatment and distribution system were both able and motivated to ensure that this water was safe and healthy. Learning that this system was not infallible was only the first crack in that trust. In the weeks and months that followed the contamination, residents felt that politicians were more interested in shifting blame than in finding answers while the Walkerton Inquiry (referred from here on as the Inquiry; see O'Connor 2002a and O'Connor 2002b for the full report of the Walkerton Inquiry), the official government investigation of the contamination, uncovered lies, evasions, and falsification of data (Perkel 2002; O'Connor 2002a; interviews). It reached a point that it was difficult to know who to trust.

Humans live in a complex social system where their dependency on one another is vital. People depend on the government to enforce laws to keep everyone healthy and safe; they depend on private business to provide them with food and water; they depend on school systems to teach their children and their doctors to provide them with top quality health care. While there are strategies people can implement to minimize their own vulnerability (Heimer 2001), knowing who to trust and when to act on that trust are important skills because they allow people to make good decisions (Hardin 2001). Without trust, people can become frozen, trapped in uncertainty and vulnerability to risk because they do not know who they can depend on.

When a person trusts another person or institution, that person believes that the trust partner is not only motivated to act in his or her best interests, but that the partner is capable of doing so. In order to trust someone, people need to have a relationship of some sort with the other person (Weber and Carter 2003; Hardin 2006). While the trust literature tends to focus on personal interactions, a relationship can also be established through impersonal interactions such as consumer behavior or voting patterns. Like interactions in personal relationships, these

impersonal interactions allow for people to invest in these relationships and can make it easier to predict the institution's future actions, reducing uncertainty in the relationship. This allows people to develop an indirect trust relationship with other people and institutions they have never met but are nonetheless dependent on. People can even have trust in a type of individual (such as doctors, teachers, or priests) but not have trust in an individual within that category. They can also have trust in systems, such as the free market, without necessarily trusting in individuals operating within the system, such as business owners (Sztompka 1999; Hall et al. 2002).

For trust research involving environmental health problems, political ecology is a useful framework because it allows scholars to situate environmental health issues within the larger context of social, economic, political, and environmental relationships. It gives researchers the tools to critically analyze how people interact with political, economic, and environmental organizations and processes (Robbins 2006; Leatherman 2005; see also Forsyth 2003). In political ecology, political institutions, economic institutions, local agents, and the environment make up a holistic system where each component changes and is changed by each of the other parts. It is a multiscale analysis that studies how local environmental conditions are shaped by decisions, including decisions made by people from remote locations (Robbins 2006; B. King 2010). Political ecologists often study groups with similar interests, such as farmers, industrialists, workers, and domestic users, and how they interact with the environment (see for example Robbins 2006; Bryant and Bailey 1997) but, except for the environment, each group and institution is made up of individuals who make choices, acting in their best interests as they perceive them. These actions are both affected, even limited by, the choices made by other people and while simultaneously affecting, even limiting, the choices made by these other people

and institutions. The environment, while lacking the conscious agency necessary to make choices, still influences and is influenced by the choices made by human agents.

One of the biggest contributions of political ecology, besides examining environmental issues within this holistic framework, is that it critically examines these relationships within a context of power. In a political ecology framework, people are viewed as actors who have agency, but while people at all levels of this system interact and influence each other, they do so from differing positions of power. Power influences the resources available to an individual—not just environmental resources but also social and economic ones. Therefore, to understand how these different agents, organizations, and processes interact, researchers need to not only understand peoples' needs and desires, but also their relative power (Robbins 2006; Forsyth 2003).

Trust relationships enable people to attempt to maximize their needs and desires and minimize their risks in situations of uncertainty. While the trust scholars do not examine the way in which these concepts are understood by the people in the relationship, interpretative medical anthropologists have a long tradition of examining how the construction of meanings shape the experiences of health and illness. This approach views narratives as active, constructive processes by which experiences are understood (Garro 2000). Meanings of key concepts, such as of risk, health, safety, purity, and nature, are collectively shared, culturally constructed, discursive, and frequently contested (Garro 2000; Good 1994; Risør 2010; Johannessen 2010). For trust relationships, knowledge plays a particularly important role because the way that knowledge is constructed and contested frequently shapes not only perceptions of risks and desired outcomes, but also of the intentions and competence of the other actors in potential trust relationships. Expanding the trust research to include an analysis of the construction of meaning

through discourse allows the trust scholar to situate the way trust is constructed and negotiated within this discursive context.

While trust theory has a variety of definitions of trust, for my purposes trust is an orientation to another entity, which includes not only individuals but human institutions such as corporations. It is not in and of itself an action, but it is a perspective, an understanding of the other, that informs people's actions. While people can put themselves at risk of being vulnerable to a person or institution they do not trust, especially in situations with limited alternatives, trust helps reduce uncertainty and therefore helps people to act in their best interest (Hardin 2001).

I base my model of trust on Hall et al.'s (2002) concept, which breaks trust down into five separate but related components that can be studied independently. I find their model useful as a starting point because their framework allows for different aspect of trust to be studied separately. This is useful because trust is complex and multifaceted, and while Hall et al. (2002) do not do this, subdividing it into components allows scholars to then analyze these measures in relationship to each other. Their measures of trust, however, focus exclusively on factors affecting patient trust in physicians, which limits their application in other areas. I have modified their model in order to make it applicable to measuring trust in a wider set of relationships, including water, the natural environment, and the various institutions that process, distribute, monitor, and regulate it. My revised measures of trust provide a more flexible yardstick for measuring a variety of trust relationships because the measures are not unique to any particular relationship. They widen the scope of the analysis of trust to include not just personal, cognitive assessments of trust but also cultural constructions and the influence of power on trust relationship, aspects that Hall et al.'s (2002) more limited measures do not take into consideration.

In my model, the concept of trust is broken down into five distinct measures, called fidelity, competence, honesty/transparency, accountability, and global trust. Fidelity is the perception that the individual trust partner, whether a person or institution, will act in the best interest of the trusting person, while competence refers to the ability of the trust partner to act as promised. Honesty and transparency are the degree to which the trust partner makes information accessible; they mean not only telling the truth but that the information be both understandable and complete. Accountability refers to the trust partner being held responsible for her or her actions, including sanctions for breaking trust. Global trust signifies trust in a group or system at large, such as in policemen or the government system. In addition, I have added negative measures, which I call the measures of distrust. These are those things which detract from trust in a relationship: infidelity, incompetence, dishonest and opacity, immunity, and global distrust. Many of the Walkerton residents are ambivalent in their trust relationships, and often trusting and distrusting in different aspects of the same institution; this provides a vocabulary to talk about the many factors of trust and distrust and how they combine in an individual's experience.

The political ecology framework includes the environment as an active participant, so I have also added the natural environment to the matrix of relationships within my political ecology of trust model. While the environment is outside the normal purview of the trust literature (for example, see Sztompka 1999), many people, including people in Western society who live and work the natural environment, see themselves in relationship to it. These interactions can form the basis for trust relationships. My political ecology of trust model views individuals as having a relationship with the environment, just as they do with political and economic institutions, and the orientation of this relationship can be one of trust or distrust. While the way these measures apply to the environment is somewhat different than they do for

human interactions, these concepts, global trust in particular, help scholars understand not only local people's relationship with their neighbors, government agencies, and private water providers, but also their natural environment.

The larger political economy influences people's decisions, but trust informs their decisions within this context. These choices are embedded in contextual meanings—the frameworks by which people understand the relative spheres of institutions such as government and private enterprise, the meaning of clean, safe, and healthy water, the meanings of risks, the causes and consequences of illness, how people perceive the natural environment, and even definitions of self. These layers of meanings are a combination of idiosyncratic, social, and cultural constructions which are constantly being defined, redefined, and often contested through discourse. As these meanings and conceptual frameworks shape the way humans think and interact, they shape trust relationships.

People interviewed often had multiple reasons for their water choices. The same person might chose to drink bottled water (which is economically more expensive than tap water) simultaneously because she views the bottled water as more natural, because she does not trust her tap water provider, because she does not trust the government to have sufficient water quality standards or to be able to adequately enforce them, and because she trusts market pressures over political ones. Even if her primary motivation is that she prefers the taste, the convenience, or the symbolism of the bottled water (perhaps as an indicator of wealth or health consciousness), she would not purchase the water if she did not at some level trust that the bottled water she buys is going to be safe, not when there are other (and cheaper) water options available. Trust is therefore embedded in layers of meanings, values, and priorities, such as a desire for natural water, that are culturally constructed, discursive, and often contested. Trust in this model is an

orientation that influences choices, rather than the choice itself; the act of buying bottled water is in and of itself not trust but rather trust informs the decision, along with other factors such as price, availability, convenience, and taste preferences, to buy bottled water over other sources. In the political ecology model, the environment, politics, economics, and local agents all interact with each other; trust helps scholars understand *how* and *why* they interact.

Every time individuals turn on the tap, they are participating in a network of relationships that includes the municipality, the provincial or state government that establishes water standards and regulates water quality, the institutions that maintain the infrastructure, and the institutions that test the water to ensure that it is safe to drink. People make their decisions about where they get their water based, in part, on whether or not they trust these institutions and the water source. Even when they do not consciously think about where their water is coming from and whether or not the water is safe, it speaks of their trust in the system—private or public—that provides the water in their tap.

While the experiences in Walkerton have been unusually catastrophic, they are not unique, even in wealthy and developed nations. Hrudey and Hrudey (2004) document 70 instances of water contamination in 15 affluent countries including the United States, Canada, England, and Australia. While many of these communities are small, rural communities like Walkerton, in part because smaller communities have fewer resources for things like infrastructure and specialists to run them, larger communities and cities have also had problems with their water quality. In Canada, First Nation reserves in particular have been facing problems with their drinking water for years (Doyle 2009; Patrick 2011).

The water contamination in Walkerton changed the way residents related to their drinking water, their local and provincial governments, and the institutions that provide their water.

Before the water contamination, it never occurred to them that anything might be wrong with their water; if anything they said that they had been proud of the town's drinking water. Many of them said they were dumbfounded when they learned that it was their water making them sick. Frequently, residents commented that they do not live in a Third World country and that water problems such as the *E. coli* contamination happen in other places, not in Canada. In the aftermath of the contamination, as the reasons for the contamination were uncovered, residents learned that even a First World nation's government was not infallible. More, they felt betrayed; they had trusted both the local and provincial government to ensure the quality of their tap water, and not only did these institutions fail to meet expectations, in the aftermath of the *E. coli* contamination, Ontario's Premier came across as self-serving, the local government as uninformed and ineffective, and the employees of the PUC as incompetent. Sarah, 46, criticized Premier Harris by saying that he had blown in and out of Walkerton and intended to use Walkerton to boost opinion polls. Many of the people interviewed felt that everyone involved, from the PUC employees to Ontario's Premier, were more interested in protecting themselves than in finding answers (interviews). Difficult as the betrayal was at the provincial level, it was devastating at local level because the politicians and public employees were part of the tight knit community. In the months that followed the *E. coli* contamination, divided loyalties and torn friendships split the community apart (Perkel 2002; interviews).

In the past, municipal water providers were usually part of the municipal government but increasingly they are private companies hired by the municipality to provide this service. Because these companies have different priorities than publicly owned institutions, this creates an important change in the relationship the public has with the water provider. One relationship is not necessarily superior or inferior to the other in general, as that is dependent upon the

specific conditions of any given relationship. They are, however, based on fundamentally different principles. The trust relationship with a public institution, at least in a republic, democracy, or parliamentary system, is based on the concept that political offices are filled by individuals selected through public, democratic elections, and that these elected officials then hire employees to manage public institutions such as the PUC. Politicians are motivated by gaining and maintaining votes—both for their own sake and for their political party. While the employees of municipal utilities are not politicians themselves and thus motivated mostly by securing their job security, their employers are politicians of the municipality and their goal is to provide a service rather than make a profit. If public employees fail to satisfy the electorate's expectations, they can take their votes elsewhere, motivating politicians to make sure that the people they hire do their jobs well. Private companies may work for the municipality as well, and like public employees know that their continued employment is based on making their employers happy, but they are also seeking to make a profit. This means that they are motivated, on the one hand, to keep their prices down enough to make them competitive compared to other, similar companies, while at the same time high enough that they make a profit. While in both cases the people working for the municipality have a relationship with the public officials of that municipality and only indirectly, through these public officials, with the public, they operate on very different ideologies (see for example Harris 2009), which changes the assumptions the relationship is founded on in important ways. This may denote streamlining the extraction, purification, and distribution processes to make them more efficient, but it also may mean cutting corners to save money.

Instead of basing the trust relationship on electoral accountability, commercial companies are held accountable by market competition. The idea is that, if a company does not provide an

adequate service—it is too expensive, or the water is of poor quality or unreliable, for example—the consumers can and will turn to another company to provide the same service. The nature of municipal water distribution, however, makes it difficult to bring market pressures to bear. It is not practical for multiple companies to provide the infrastructure to any given location. Mixing water from multiple sources creates potential risk of contamination if the water is not all of the same quality, so it does not really make sense for multiple companies to put water into the system and let consumers choose the company they will buy their water from, like people often can with electricity. Instead, companies compete to acquire contracts with local municipalities. Once the contract is secured, the only alternative to that tap water provider is bottled water until the next time the contract comes up for negotiation (Barlow 1999; Bakker 2007).

While both public and private institutions are capable of providing excellent service, their motives for doing so are different, and so the relationship is different. Therefore, the basis for whether or not people trust them changes as society shifts from a system based on public employees providing a community service to hiring a private company to manage the same. While trust is an important component in these relationships, as trust helps shape the individual's decisions and actions, not all the players are equal. A person's choices may be limited by restricted resources, access to information, and social capital, all of which can restrict the options available to them.

Methods

One of the ironies of doing research on trust in Walkerton, after what happened in May 2000, was that I had to earn the trust of the people who live there in order to be able to do my research. Even before I arrived in town, I knew that this would not be easy. I knew that they had suffered a great deal as a result of the water contamination. Not only were people still dealing

with the health consequences, but the accounts of the *E. coli* crisis described a town beleaguered by the media and by specialists. Locals told me stories of the media hounding people at the post office and at their homes, even going through the backyard and knocking on patio doors and demanding interviews. It reached the point that many people took to hiding in their own homes, away from the windows and doors, for fear that the media would see them. I needed to establish that I was not like that, and earn the trust of a community that had learned not to trust easily. While I would never be considered local, living in the town was important to forming connections with residents.

Many of the people I spoke to in Walkerton spoke favorably of Justice Dennis R. O'Connor, who officiated the Inquiry. Most people felt that he had been thorough and fair. Just about everyone I talked to about him, though, talked about how they respected him because he lived in Walkerton for the duration of the Inquiry. While many of the lawyers, reporters, and expert witnesses who came to Walkerton in the months following the contamination stayed at places outside of Walkerton proper, Justice O'Connor chose to reside inside the town and share the conditions there with the residents. He lived there, shopped there, and drank bottled water until the boiled water advisory was finally ended more than 6 months after the contamination. People saw him as he walked every day to the building where the Inquiry was being held. He even, I was frequently told, once helped push a car out of a snow bank. Clearly, people thought it was important that he lived in the town among them, was accessible to them, and dealt with the same living conditions they had, rather than find housing in a nearby community without the problems that Walkerton was facing.

I did not push any cars out of snow banks, and by the time I arrived, the water advisory was long over, but I did live in Walkerton for 13 months. Before I arrived to do my fieldwork, I

came to Canada in order to arrange housing. It was not easy to find a place to live in Walkerton itself, and people suggested that I looked in nearby communities as well, but I insisted upon finding a place in the town. By luck and word of mouth, I was able to find a room in a beautiful old house near the main street, within an easy walk of the main street, the post office, many of the town's churches, and the Tim Hortons, all important social centers of the town.

I arrived in Walkerton on Sept 2, 2005, five years after the *E. coli* contamination. While the class action lawsuit was still being fought in courts and a number of families continued to struggle with chronic health problems, by then things had started to return to normal for many of the residents. I lived there, other than a few brief visits back home the following summer, until October 10, 2006. Even living in town, it was hard to meet people and extremely difficult to obtain interviews. While the residents were friendly and welcomed me to their community, and many would discuss the *E. coli* contamination, the health study, and the new water policies with me informally, most were extremely reluctant to be interviewed. I was lucky in that I managed to forge connections with some locals who were invaluable to not only meeting the people I interviewed but in convincing them that I was worth speaking to. My research would not have been possible without these people, and I would not have been able to establish relationships with them if I had not lived in the town for an extended period of time.

Living in Walkerton, I was able to learn much about life in Walkerton through participant observation. Like the residents, I lived in town, shopped in town, ate out in town, and went to church there. When people asked me what I was doing in Walkerton, I would tell them I was researching water. Sometimes people would just laugh and say that I had come to the right place, while others would tell me about their concerns about water quality, their views on the changes proposed in the Clean Water Act being debated in the provincial parliament at the time,

and how recent changes in water policies had influenced their relationships with nearby communities. I drank water—bottled, tap and spring water—in the many homes I visited during my stay there, and I braved what they told me was a mild winter along with them. I found that people who are unwilling to be formally interviewed often had strong opinions about water issues in the town, and these conversations shaped the questions I asked in my formal interviews.

The second challenge, after establishing a relationship with members of the community, was how to study trust itself. In Chapter 2, I discuss the difficulty in defining trust from a social scientist's perspective; that same fluidity that makes it difficult to define makes it equally complicated to measure. The most common methods for studying trust lacked the flexibility and depth I needed to situate the residents' trust and distrust within the context of the meanings they gave to their experiences, how they perceived their roles of the environment and the institutions who are responsible for their drinking water, and how trust shapes their relationships with these institutions and the environment. In order to understand the complexity of the trust relationships that influenced water choices, I combined participant observation with semi-structured, open-ended interviews. While that means that my sample size was out of necessity small and is not generalizable to the population at large, it allowed me to conduct an in-depth exploration of the relationships individuals had with their drinking water, drinking water providers, the government, and private enterprise in general. This enabled me to gain an understanding of these relationships and how trust and distrust influenced these relationships and, consequentially, drinking water choices.

I chose to use the snowball method for sampling, where I would ask each person I interviewed for recommendations of people for me to interview next, because I knew it would be difficult to find individuals willing to be interviewed. A lot of people in Walkerton are

suspicious of outsiders and are uncomfortable or unwilling to talk about what happened, especially in a formal interview setting. Some do not want to talk about it because they do not want to remember what happened, especially for people who lost family members or close friends. After five years, many informed me that they want to forget that it happened so that life could resume normalcy. Some do not want to talk about it because they still have too much that they are struggling with, such as children with serious health problems, including kidney failure. Some could not talk to me for legal reasons, as not all the lawsuits coming out of the crisis had been settled (personal communications; interviews). I felt I would be more successful in setting up interviews if they either knew me personally or knew someone who suggested that they talk to me, and my experiences in the field confirmed this. It took months to get my first interview conducted, and I did the bulk of my interviews in the last two months I was there because by that point people had gotten to know me and were helping me set up interviews. One interview subject told me afterwards that he had had doubts about the interview but that he was impressed with the questions I asked and perhaps most importantly the strength of my determination to protect the identities of the people I interviewed, even from fellow Walkerton residents.

The risk with snowball samples is that they tend to get only one perspective, since people will often suggest friends and family with similar perspectives. I combated that by deliberately seeking people to begin with from different backgrounds, getting as broad a range of perspectives as I could. I spoke with farmers, homemakers, school teachers, blue-collar employees, and people who are self-employed.

I found that, in general, people with higher education levels were more willing to talk to me than people with less education. A disproportionate number of the people interviewed had at least some college education, with 40% having a bachelor's degree or higher (interviews). In

comparison, 40% of the people living in Brockton (a political amalgamation which includes Walkerton, Brant township, and Greenock) have some certificate or degree beyond high school, and only 9% have a bachelor's degree or higher. 33% of residents of Brockton did not graduate from high school (Statistics Canada 2006), while that was the case for only 7% of the people interviewed (interviews). This meant that my interview data was biased toward people with a college education. While I did deliberately seek out people with only a high school's education or less to help address this imbalance, the interview data remained skewed toward the more educated residents of Walkerton.

While many of the people I spoke to had fallen ill as a result of the water contamination, and all had known the people who had died and knew people who continued to wrestle with serious lifelong complications such as kidney failure, it is important to note that none of the people interviewed had lost anyone in their immediate family, nor suffered from the worst of the complications. Many of the people who had suffered the most during the *E. coli* contamination had subsequently moved away because living in Walkerton brought up too many painful memories, and those who remained and were coping with the more serious complications of the *E. coli* either were too busy to be interviewed or simply did not want to talk about it (personal communications; interviews). In addition, because the class action lawsuit was still being fought in court, I was unable to interview anyone directly involved with it for legal reasons. This does not mean that my interview subjects do not have strong feelings about the contamination and the events that followed, however. Many of the people I interviewed have strong opinions about both the events that had happened in 2000 and in the political policies since then. A number of the people interviewed had been involved personally with the Concerned Walkerton Citizens (CWC), a grassroots movement that had developed soon after the news of the contamination hit.

While some of the CWC members have returned to their normal lives, some are still actively involved in raising awareness of water issues throughout Canada.

Farmers were another group with whom I had difficulty in acquiring interviews. For many of them, water quality was a sensitive issue. Numerous locals told me that many farmers felt that they were blamed, as a group, for what happened in Walkerton, and not without reason. Shortly after the water contamination, the PUC blamed the Biesthenals, the farmers who owned the cattle where the *E. coli* had originated, for the contamination and sued them in a class action lawsuit. Despite the fact that the Inquiry exonerated the Biesthenals and they defeated the lawsuit, a number of people who lived outside of Walkerton told me that the farmer caused the *E. coli* contamination in Walkerton. People living in or near Walkerton, on the other hand, went out of their way to tell me that the Biesthenals were not at all to blame, and many felt that the media in particular had condemned the Biesthenals in particular and the farming community in general in the public's eye outside of the town (personal communications; interviews). I felt it was essential to interview farmers as well as townsfolk if I was going to study water and water quality concerns in Walkerton, a farming community. The farmers I spoke to in Walkerton, both in formal interviews and informally in casual conversation, tended to have strong opinions both about local water quality and water management and about the new Clean Water Act that was being discussed at the provincial level, and I felt it important for them to have their voices heard.

In the end, I conducted 17 semi-structured, open-ended interviews of people who lived in and near Walkerton. They worked in or near the town, their children went to Walkerton schools, and they ate at Walkerton restaurants and shopped at local businesses. Two of these interviews in the end were excluded from the analysis because of sampling issues. All of these interviews were conducted in confidentially, with the understanding that the individual's names would not

be used; the names used in this thesis are pseudonyms. (Note that while pseudonyms are used for the people interviewed, real names are used for the people involved in the *E. coli* contamination and the events that followed, such as Stan and Frank Koebel, Justice O'Connor, and people interviewed by the media, as these names and the information relating to them is public record.)

These interviews began with a discussion of the *E. coli* incident in 2000. I inquired about how the *E. coli* affected them and their family, and I invited them to talk about what went wrong in 2000, and what caused the contamination. I asked them whether or not they trusted their water quality before the contamination, and whether or not they trusted their water quality now. I inquired where they get the water that they drink, and why, and whether or not this changed since 2000. I invited them to talk about the role of the government and private businesses to provide drinking water, and to evaluate the changes made to political policy since 2000 to protect safe drinking water. I asked them what, if any, additional measures they employ to ensure the quality of their drinking water, why they chose their current primary drinking water supply, and what, if any, concerns they still have about their drinking water.

The goal of these questions was to get at their experiences in 2000 and whether or not they had trusted their drinking water before then, whether or not they trust it now, and why. I wanted to see what their drinking habits are now, how they have changed since 2000, and why. In particular, I was interested in whether or not people trusted some sources of drinking water, such as privately bottled water, over others, and why. I also wanted to know, if people did not trust their drinking water, what would need to be done to regain that trust.

I got permission to record the interviews using a digital recorder, in addition to taking handwritten notes. The recorded interviews were then transcribed and the transcripts loaded into

NVivo10. I used NVivo10, a qualitative analysis software, to code the transcripts. These codes were then used to analyze the data, looking for patterns and trends in the data.

Chapter Summaries

In the second chapter, I explore the theoretical contexts that I used to build the model that I employed to analyze the interviews in Walkerton. I draw predominantly upon three bodies of literature: political ecology/political ecology of health, interpretative medical anthropology, and the trust literature. From political ecology and the political ecology of health, I gain tools for analyzing the relationship between individuals, economics, the environment, and health within a context of unequal power relationships. It also gives me the concept of a personal, active agency and an examination of personal decision making with an explicit awareness of power.

Interpretative medical anthropology provides me the framework to analyze the discourses of water consumption, illness experiences, and environmental politics, to understand how they are constructed, discursive, and contested, and to examine the ways these narratives undermine or reinforce both trust relationships and power. The trust literature focuses on personal, individual relationships, and it helps me address the questions of what trust is, who individuals can trust, and how trust can be measured. I merge these concepts into my model of the political ecology of trust. This model allows me to explore trust in relationships in the context of health, the environment, politics, economics, and local individuals with their own priorities and interests. It gives me the tools to critically analyze how trust shapes the orientation of these relationships within a context of power. I examine residents' relationships with not only the municipal and provincial agencies that provide, monitor, and regulate tap water but also bottled water. I explore issues of responsibility, relative cost and water quality, the power of symbolism, and how a number of other factors influence an individual's choices.

In the third chapter, I turn to Walkerton itself. I give a background on the town, with a brief overview of its history, economy and population. Using news stories, books, official reports, and interviews, I recount the events leading up to the water contamination, personal experiences of the *E. coli* contamination, and its aftermath as the town dealt with the media and the Inquiry. It covers *E. coli* and its health consequences. I also address the long term ramifications of the contamination and the resulting Inquiry, both within the town and in Ontario in general, including a discussion on the Clean Water Act.

In the fourth chapter, I focus on the interviews and the changing relationships Walkerton residents have with their drinking water and the people and institutions that provide it. It explores the roles the government, private enterprise, and the environment have in providing drinking water, and how these roles are perceived through the experiences and culturally constructed meanings by the people in Walkerton. I then go on to explore how the drinking water consumption patterns have changed in Walkerton and the primary motivations for doing so.

Chapter 5 uses the model I outline in Chapter 2 to examine the interview subjects changing relationships with the institutions that extract, distribute, test, and regulate their drinking water—both municipal water and private, bottled water companies—with an emphasis on trust or lack thereof. I analyze the five measures of trust mentioned earlier as they relate to local and provincial politicians, water management companies, government agencies such as Public Health and the MOE, private companies that sell bottled water, the environment and natural water sources, and how these relationships have changed as a result of the *E. coli* contamination.

The last chapter draws everything together, looking at long term ramifications not only for Walkerton and Canada, but for water policy in general and establishing and maintaining trust relationships between agencies given the responsibility to protect public health. I focus on some of the core themes that came out of the interviews and how these have shaped drinking water choices in Walkerton, and then expand on what this suggests for future research and policy. In particular, I focus on the research and theoretical implications of my political ecology of trust model to political ecology, interpretative medical anthropology, and the trust literature. I also explore some of the ways this research can facilitate communication between local communities and the institutions who regulate, test, and manage their drinking water, and for how an awareness of trust relationships can improve on how future environmental health problems could be handled. While my dissertation focuses on examining how trust influences the relationship locals have with both their tap water and bottled water, the model can be applied to a much wider context.

Conclusion

The *E. coli* contamination in Walkerton changed not only the residents' drinking water habits, but it made lasting changes to their relationship with the institutions that provide, monitor, and regulate their drinking water. Trust and lack of trust are important lodestones that help individuals navigate complicated relationships. In the following chapters, I will expand on the concept of the political ecology of trust and explore how this helps scholars understand how relationships between the people living in or near Walkerton and the political and economic institutions that manage their drinking water and the environment that the water comes from.

While my research focuses on the role trust plays in relationships among individuals, politicians, private companies that provide and test drinking water, and the local environment, it

has implications beyond water and health issues. My model can be used to shed light on how trust shapes relationships relating to public health issues, including air pollution, food safety, occupational safety, pharmaceuticals, health care, public safety, and even safety while flying or while using pesticides. It provides a basis for understanding how trust shapes interactions with critical institutions and influences individual choices.

CHAPTER 2

THE POLITICAL ECOLOGY OF TRUST

“Do you drink tap water, or bottled water?”

Just about everyone I met in Walkerton asked me a variation of this question. What they were really asking me, however, was whether or not I *trusted* the tap water more than bottled water. Prior to May 2000, Walkerton residents had trusted that the water that had flowed through their taps was safe to drink, and most drank it straight from the tap. After seven people died and thousands more in the small, tight knit community became ill from the *E. coli* and other bacteria in their drinking water, Walkerton residents no longer take safe water for granted. Many of the residents continue to drink bottled water long after the bottled water advisory ended, and a number have doubts over whether even bottled water is safe.

To truly understand trust in Walkerton’s water relationships today, scholars need to situate that trust within the local context before, during, and after the *E. coli* outbreak. This context includes the experience of the water contamination in 2000 and how it affected the health of residents afterwards, the political climate, the mixed agricultural and industrial economy, the social climate of a predominantly English-speaking rural town, and the local environmental conditions. While the current theories of trust can inform on the nature of trust relationships, to do so without understanding the larger political, economic, and ecological contexts would limit scholars understanding of how trust and distrust in Walkerton help inform people’s decisions in choosing what water to drink.

At the same time, to examine Walkerton within a political ecology framework without examining the construction of meanings that underlie trust would limit an important part of

people's relationships that influence decision making. I have, therefore, combined aspects of trust theory, interpretative medical anthropology, and the political ecology of health to study how residents perceive their relationship with their government, their environment, and the local economy, and how these factors combine to shape perceptions of risk, their desires, their expectations, and both their trust and distrust in various institutions. While I focus on Walkerton, this model can be extended to other situations where trust in private and public institutions and the environment influence decisions regarding access to and use of essential resources and services.

The water contamination and the government's inquiry that followed put this trust relationship in the spotlight. People who had trusted the government to effectively regulate their drinking water sickened and died. As the Inquiry delved deeper and deeper into what had happened, every layer revealed another thing that went wrong, another person culpable, and another broken trust. Lawsuits, media spins, and multiple accusations at both the local and provincial levels contradicted each other constantly in the months following the contamination.

An Interpretative Approach to the Political Ecology of Health

Health issues do not occur in a vacuum, but rather are deeply imbedded in complex, multilayered relationships that shape and are shaped by the local environment, access to essential resources and services, and exposure to numerous health problems. Many factors affect the experiences of health and illness, from the meanings people attribute to it, their access to resources such as food, water, and health care, their social support networks, their relationships with neighbors and institutions, and their local environment. This context not only affects their exposure to health risks, but the decisions they make that affect their health such as measures for protecting their health, resource use, and treatment options. Bringing together interpretative

medical anthropology, the political ecology of health, and the trust literature creates a framework for understanding how meanings, the political, economic, and environmental context, and trust relationships help shape decisions that affect health and illness.

Political ecology is a powerful framework for analyzing environmental issues because it is a multiscalar analysis that situates environmental issues within the larger political and economic contexts. It explicitly examines how, people, as actors with agency, make decisions about resource use within this context, often by people who are removed from the location affected by their decisions, with a critical examination of power and how inequalities between the actors shapes their decisions and interactions (Robbins 2006; Forsyth 2003; Leatherman 2005; Rocheleau et al. 1996; McAllister 2002; B. King 2010). In a political ecology analysis, it is not enough to say that Walkerton residents became ill from *E. coli* and other contaminants in their drinking water, or even that the *E. coli* originated at a nearby farm and that the water from the affected well was distributed to the taps essentially untreated due to broken equipment and improper chlorination practices. As I will discuss in Chapter 3, the *E. coli* contamination happened due to a combination of local and provincial circumstances, deeply embedded in both local and provincial political, economic, social, and environmental contexts (O’Conner 2002a; Perkel 2002; Burke 2001; Hrudehy and Hrudehy 2004). Walkerton was not just some isolated disaster, or even the result of a mistake of a single person; it is what Prudham (2007:3) calls the kind of “normal accident” that neoliberalism produces.

Medical anthropologists extend this framework into the political ecology of health in order to examine health issues that stem from environmental, social, political, and economic contexts (Ferguson 1997; Harper 2004; B. King 2010). Many health issues are intimately associated with environmental issues. Exposure to toxins and pathogens in the environment,

unsafe housing and working conditions, violence, and even environmental changes from global warming are all ways in which local environmental conditions can affect human health. These conditions are shaped by political and economic conditions, relationships and inequalities in power (B. King 2010; Harper 2004; Baer 2010; Singer and Hodge 2010).

Increases in population, industry, and agriculture place a larger strain on water supplies not only by raising the demand for water but also because all three often result in water contamination (Shrubsole and Draper 2007). Where water supplies are limited, this creates conflicts of interest between the different water consumers (S. Whiteford and Cortez-Lara 2005; Zlolniski 2011; Walkem 2007; Aiyer 2007; Derman and Ferguson 2003). Negotiation and conflict frequently shape local resource use (see for example Klaver and Donahue 2005; Greaves 2005; Aiyer 2007; Westman 2013; Baldwin 2003). Water is an essential resource for not only human health and survival, but a valuable economic resource as well—it supports agriculture (S. Whiteford and Cortez-Lara 2005; Zlolniski 2011; Aiyer 2007; Derman and Ferguson 2003), industry (Barlow 1999; Barlow and Clark 2002; Johns et al. 2008), transportation, municipal waste removal, power generation (Johns et al. 2008), fisheries, recreation, and tourism (T. King 2005; Johns et al. 2008). With so many users and ways to use the water, it is little wonder that water use frequently translates into competition for the same resources. These conflicts can be between domestic users and agro-industrialists (Zlolniski 2011), bottled water companies and farmers (Aiyer 2007), indigenous populations and the government over water rights and access to fisheries (Greaves 2005; Walkem 2007), or governments who share water resources (S. Whiteford and Cortez-Lara 2005).

Even within the same group of stakeholders, individual members can have different priorities. The Concerned Walkerton Citizens (CWC) used that to their advantage when they

enlisted the aid of the minority party leader to pressure Premier Harris to hold the Inquiry. Even in Walkerton, made up of a relatively small population of people sharing the experience of the *E. coli* contamination, there were considerable disagreements over what they needed and what had to be done in order to get it (interviews; personal communications; Burke 2001; Perkel 2002).

For Bryant and Bailey, interactions and conflicts of this nature are, at their heart, politics:

It seems to us that there are two things that are at the heart of any meaningful understanding of politics: (1) an appreciation that politics is about the interaction of actors over environmental (or other) resources; (2) a recognition that even weak actors possess some power to act in the pursuit of their interests. [1997:25]

These interests, these linkages between players and the factors, shape their decision making. While it is true that political ecology emphasizes power imbalances and how those relationships shape resource use decisions (Robbins 2006), having little power is not the same as having no power at all. Even when people's options are limited, they still have the power to make decisions within these limitations. B. King points out that one of the strengths of political ecology is that it recognizes that local conditions can be created by decisions made from both local and remote locations: "from its beginnings, political ecology has shown how decisions to transform the natural environment are often produced by political and economic systems operating across multiple scales" (2010:39). Political ecology, therefore, examines decision making practices at multiple levels simultaneously. While the environment does not make decisions, it is also part of this network of relationships; its natural conditions and processes influence the decisions of human agents (Bryant and Bailey 1997; Robbins 2006). While my research focuses on the decisions made by residents regarding their drinking water choices, these decisions are affected by decisions made by other people, including businesses, municipal employees, municipal and provincial politicians, people working for government agencies, and people who belong to non-government organizations (NGOs), as well as by the geological

factors that affect water quality. At each level, individuals made and continue to make choices based on the knowledge and resources available to that person.

While political ecology is aware that local people are active participants in the relationships that shape their environmental health concerns, much of it (see for example B. King 2010; Robbins 2006; Forsyth 2003; Singer and Hodge 2010; Baer 2010) has tended to focus on the big picture of stakeholders, government agencies, and economic institutions. Yet, as B. King points out in his study on HIV/AIDS, political ecology is a powerful framework for not just understanding how groups of people can shape local environmental and environmental health conditions through decisions made in the context of political and economic relationships, but the ways that these health issues are discursively understood and represented both by institutions and by locals:

The HIV/AIDS epidemic in South Africa is clearly a discursive, as well as material, struggle. Local understandings of disease are often different from national representations and remain important to understand to initiate effective treatment scenarios. This is demonstrated by the fact that there exist competing understandings of HIV/AIDS within local communities, and that AIDS deaths are interpreted by some residents in cultural terms. [2010:50]

This means that struggles over environmental health issues are ideological as well as material, economic, and political. Understanding the role the construction of the *meanings* behind such concepts as health, safe environments, illness, risk, and nature/environment and how these concepts are negotiated and contested socially are important for understanding why people make the decisions that they do.

Interpretative medical anthropology is a useful framework for understanding the construction of ideologies that can influence political ecology relationships. It is a theoretical approach that analyzes the discursive nature of health and illness, typically through the analysis of narratives (Waldstein and Adams 2006; Good 1994, 2010; Garro 2000). This perspective

focuses on the metaphorical conceptions of health, body, and illness (Waldstein and Adams 2006). Anthropologists make the distinction between the concept of the physical disease and its symptoms and the concept of illness, which is the health problem as perceived by the person suffering from it (Garro and Mattingly 2000). This dichotomy, while it has its drawbacks (Good 2010), allows anthropologists to explore the way that shared cultural assumptions can shape the illness experience in very different ways. The combination of these shared assumptions, cultural values, group knowledge, social feedback, and personal experience creates the context in which the sufferer gives meaning to his or her illness experience, understands its causes, and seeks to prevent or treat illness (Good 1994; Garro 2000; Risør 2010; Johannessen 2010).

Understanding the intersection of the biological and symbolic illness experience has several important implications for the decisions people make that affect their health and the health of others. It provides the local context and shapes the local discourse on risks that affect health by defining what is safe and pure and what is unhealthy and unclean (Johannessen 2010). Perceptions of health risks are viewed through the lens of the knowledge available to the person, including knowledge shaped by economic, political, and social discourses. This perception, in turn, informs the individual consumer, political, and economic decisions as well as political, economic, and social policies (Bray 2003). These perceptions of risks are not fixed, however, but fluid and contextual.

The combination of the contextual limitations, such as economic poverty, gender roles, and lack of access to resources, can alter perceptions of risk as people struggle to cope with marginalized environments (Jarvela and Rinne-Koistinen 2005). In this way, understanding both the metaphorical construction of concepts such as risk and the political economy that limit people's options is necessary for understanding the health risks people take and the strategies

that they employ to protect their health. Similarly, this construction of the causes of an illness helps frame the context for its treatment (Good 1994; Johannessen 2010).

People frequently assign multiple causes to their illnesses, sometimes even conflicting ones, which allows them to access multiple treatment regimens and gives them more possibilities for a cure. This is particularly the case with threatening illnesses, such as cancer (Good 1994; Johannessen 2010; Balshem 1997). It also provides an alternative source of treatment when biomedical treatments are not available, such as when the biomedical infrastructure is stretched too thin or is too expensive for marginalized populations (Jarvela and Rinne-Koistinen 2005). In this way, while the way people construct health and illness shape their actions, the political ecology can not only put limits on their options, but actually influence the frameworks by which they understand them.

Medical anthropologists have increasingly examined non-local influences on the health discourses, particularly in the construction of meanings and knowledge. Peters (1997) argues that the weight and authority of the media perspective has resulted in local knowledge becoming fragmented and devalued with the strengthening of the mass media and the hegemony of science. He suggests that this is not a new process, because the media has played a role in local understanding for a long time. What is new is that the global perspective has grown to be more powerful because it is supported by the strength of empirical data and scientific analysis. The media's view point is not only often clearer than the local people's own perspectives, but it often contradicts and discredits their own experiences. Jarvela and Rinne-Koistinen (2005) call this process the hybridization of knowledge, which is a blending of Western medical beliefs with local, traditional ones, but these different belief systems do not interact as equals, nor are science and biomedicine always politically neutral. Westman (2013) argues that scientific environmental

assessments are a means of legitimizing energy development rather than protecting the rights and interests of the people who live there, and points to the unequal power between the local population and the government and environmental impact assessors. The supposedly objective, scientific, expert knowledge of the assessors carries more weight than the knowledge and desires of the local people, but a study of the impact assessment documents and processes raise doubts over the assessors' impartiality. The conflict over how the natural resources are used then is not just a matter of environmental science, or even conflicting economic interests, but an issue of power and authoritative knowledge.

Western medicine and the dichotomy between nature and society are particularly powerful epistemological paradigms for over-riding and devaluing local belief systems, shaping and reshaping the way people view their bodies, including their health and illnesses. Even the medical anthropology tradition of making the distinction between disease and illness stems from the nature/culture dichotomy and thus it has the risk of reinforcing the hegemony of biomedicine. Folk ailments that can be translated into a biomedical condition gain legitimacy over those that do not fit neatly into these categories (Good 2010). After the *E. coli* contamination, many Walkerton residents struggled to get their illness recognized as caused by *E. coli* because they had not been diagnosed as such by a doctor. Afterward, a number of residents continue to resist the way the biomedical community is labeling their subsequent health issues. Many Walkerton residents find themselves having to prove whether or not their long-term health problems, including kidney damage, actually resulted from the *E. coli* or if it came from other sources. Residents feel that they are being blamed for causing health problems, rather than the *E. coli* (interviews; Perkel 2005; CTV.ca 2005a).

“The whole thing is bogus,” he said. “The problem is, we’ve been drinking this water for 20 years, so I don’t think you can find anyone in the municipality who hasn’t been

affected by contaminated water at some point in their life.” [Ron Leavoy, qtd. in CTA.ca 2005a]

In Walkerton, people ascribe many of their health problems, not just the original diarrhea, to the *E. coli* and other contaminants in their drinking water. In addition to Irritable Bowel Syndrome (IBS), renal disease, diabetes, and reactive arthritis recognized by the Walkerton 5 Year Health Study (Clark et al. 2008), residents attribute a number of other ailments to the water contamination. Not only do they blame the contaminated water for the kidney damage that the study attributed to drinking too much water (Clark et al. 2008; Gazette 2008; CTV.ca 2005a; interviews), many also argue that the *E. coli* weakened their bodies, making them more vulnerable to other health problems (interviews). These conflicts in meaning do not just have health implications, but social, political, and economic ones. Walkerton residents find themselves fighting for validation of their illness experiences, public support, and the legitimacy of their claims for financial and other forms of assistance (interviews; personal communications; CTV.ca 2005a). While *E. coli* and its complications are not folk ailments, these residents are still disadvantaged in seeking compensation because they lack the authoritative power of the biomedical doctors. Political ecology not only enables scholars to deliberately and critically examine politics and economics in the environmental discourse, but it encourages them to think critically about how the social, political, and economic institutions—and the inequalities built into them—shape the way people think, discuss, and even scientifically study these issues (Forsyth 2003), including the hegemony of biomedicine in defining illness experiences.

While cultural beliefs and norms do influence health perceptions and decisions, culture is not a static entity that exists outside of individuals that puts its stamp on their every thought and action. Culture both influences and is influenced by actions and choices of individuals; culture may help shape people’s priorities, expectations, values, and assumptions, but people also have

agency and the ability to act in their own self-interest (Bourdieu 1977). Rather than being a set of defined rules that a group of people follow, culture is constantly constructed and reconstructed; it is discursive and contested by the people involved. Bourdieu's (1977) practice theory provides for a way to understand how cultural norms can shape actions while still empowering the individual with ability to make decisions. Leatherman (1996) combines a traditional political economy framework with a practice approach in order to create a framework for understanding how individuals make choices within the context of their political economy and cultural contexts. For him, people are not puppets controlled by the strings of the political economy and the environment any more than they are by their culture. They are proactive agents who form social relationships in order to influence the way the political economy and the environment impact them. At the same time, he recognizes that they must still act within the constraints placed on them by their larger social and physical environment. Finances, access to resources, education, and time can all limit the options available to an individual, but they still make decisions and act strategically within those limitations. Within these constraints, they make informed decisions based on the limited options available to them and their own understanding of the social and historical contexts, filtered through their own experiences, needs, and desires.

Cultural identities can also be an important factor in the construction of health and illness because illness is embedded in social and cultural relationships, including identity and identity politics. For example, among the Anishinaabeg, a First Nations people studied by Garro (2000:76), diabetes is labeled a "white man's sickness," resulting from changes imposed on them by white society. Thus their understanding of diabetes and the meaning it has in their lives is

intimately connected with their identity as Anishinbaabeg and their social, political, economic, cultural, and historical context.

Cultural relationships and social identities are not static, but rather are constantly evolving and contested. People do not operate within a single cultural identity but rather operate within a number of mutually overlapping, occasionally contradicting, social borders at the same time. Rather than living clearly in the center of any one of these, people live mostly in the ambiguous borderlands between them. These identities are recreated or altered constantly in the course of daily interactions, and they are constantly being renegotiated within a given community. Social identities, such as gender, are also moderated by other identities, like age, class, and ethnicity, and different identities can become more salient in different discourse (Rosaldo 1993). Depending on who she is talking to, a Walkerton resident may identify herself as a resident of Walkerton, a woman, a Catholic, a Canadian, a conservative, or as middle class. While the identity that is most prominent at any given time will change depending on context, the fact that she is a Catholic woman will affect her experiences as a Walkerton resident, Canadian, or conservative, and vice versa, even though that part of her identity is not directly part of the discourse.

Cultural identities are not fixed, impermeable concepts, but fluid ones that mingle and change as a result of contact with other groups, and individuals can even opt to reject one's inherited cultural identity (Prato 2009). In multi-ethnic nations, one of the problems for the state then is to balance individual and group identities, the latter of which have great potential for divisiveness and conflict (Prato 2009; Mackey 2002).

In such a society, citizens carry at least two identities; universal and particular, the latter takes most often the form of ethnic identity. However, particular, ethnic identity of the citizen can acquire a positive value only if it does not shadow the universal identity of the citizen who shares society's common norms and values. [Prato 2009:3]

Social identities are therefore political, discursive, and embedded in power relationships. Mackey (2002) illustrates, for example, how the political ideology of multiculturalism, intended to diffuse tension between different ethnic groups in Canada, has translated in practice to reinforcing unequal power relationships while at the same time rendering white culture invisible. “Whiteness is normative and ubiquitous, but it is unmarked as culturally specific in the ethnicity discourse” (Mackey 2002:94). Mackey (2002) argues that multiculturalism, rather than bringing ethnic minorities into political discourse as equal participants, has served rather to control them by determining when and how they are represented and managed, reinforcing white, English-speaking hegemony.

Narratives are active, constructive processes by which people draw on culturally shared knowledge and their own experiences to link the past with present concerns and future possibilities, and this process is within the larger social, political, economic, and historical context of the people involved (Garro 2000). Health narratives have consequences. They function to elicit support for the sufferer’s illness experience, affecting support, treatment, and sympathy from others (Risør 2010). This not only means that the sufferer seeks to have their illness recognized as legitimate, but has potential social, political, and economic implications. While much of the literature on the construction of health and illnesses focuses on local discourses (e.g. Good 1994; Jarvela and Rinne-Koistinen 2005; Garro 2000), these discourses can take place at national and even international scales. For example, James finds that the discourse surrounding rape, torture, and other forms of violence against Haitians following the coup, had concrete repercussions: “Haiti and Haitians were depicted as insane, highly sexed, and syphilitic, deficient in both intellectual and moral capacity, superstitious, hysterical, and easily influenced by the charisma of *Vodou* priests and priestesses” (2010:486). This delegitimized the

trauma and suffering of the Haitian victims at the hand of their military police, justifying the denial of both financial support and political asylum. This response was, however, successfully contested. Critics accusing the United States of failing to protect human rights pressured the government in the end to provide humanitarian aid to the victims (James 2010).

Illness discourses do more than legitimize the illness experience; they can also be used to assign responsibility for the illness (Good 1994; Garro 2000). It can even be a form of social, political, and economic protest. People can and do disagree over where to lay the blame for an illness (Good 1994), and as in the case of the Haitian trauma, this disagreement can become highly political (James 2010). Environmental justice advocates organize politically, seeking redress for inequities in the way the costs and benefits of economic development have been shared. They argue that environmental protection laws have not been applied equitably for white and minority neighborhoods and that this has resulted in minorities being unfairly exposed to unsafe living and working environments and related health issues (Johnson 2009; Schlosberg 2004). On the other hand, Harper argues that while smog, and the related risk of asthma, is disproportionately experienced by the poorer communities in Houston, many view attempts to blame the government or corporations for health problems a moral failure to accept responsibility for one's own choices:

In the United States there is a widely shared view that individual freedom and responsibility are fundamental cultural values. As such, health status and care are generally conceptualized at the individual level, and, thus, attention to the social factors underlying health problems may be viewed as indicators of moral weakness and a failure to take responsibility for one's health. [2004:316]

Harper (2004) finds this resistance to be especially true when the local community is dependent on the industry in question to make a living. Harper's (2004) study situates both the illness itself and the construction of its meanings in the larger political ecological context. Baer calls

biomedicine “bourgeois medicine” (1997:1547) because of this emphasis on the individual and the pathogen, and the related emphasis on individual responsibility. He argues that it promotes the hegemony of the capitalistic society in general and the interests of the corporate class. Baer et al. (2012) say that biomedicine’s individualistic focus is a perspective that is compatible with the interests of capitalist ideology. The hegemony of biomedicine therefore not only reinforces the hegemony of Western science and the dichotomy of science and nature, but also its unequal class structure. Struggles over the definition of health and illness are frequently political and embedded in these unequal power relationships. Assigning cause for one’s illness has the effect of assigning blame for this illness, but different voices carry more weight than others (Good 1994, 2010; Garro 2000).

Though political ecology has a great deal of potential for situating environmental health issues within the larger social, political, and economic networks that increase the vulnerability and exposure of certain populations (B. King 2010), at present it has been underutilized for this purpose (B. King 2010; Harper 2004). While political ecology has become the dominant model for studying environmental issues, the biomedical model has continued to dominate the study of health issues, including environmental health. Where cultural practices leave certain segments of the population more vulnerable to unhealthy environments and disease, the common response has been one of education—either to educate the patients to overcome cultural beliefs and assumptions, or to educate health care providers to be sensitive of culture issues (Harper 2004).

What remains largely unaddressed in these public health approaches to culture—at least in so far as they have been adopted by political ecologists—is the way in which structural inequalities contribute to increased risk of disease, little or no access to effective treatment, unsafe or unhealthy homes and environments, and poor health trajectories for certain social groups. Public health studies of the health and environmental nexus cannot be effective if they fail to confront the underlying structural violence that contributes to the uneven ways in which health and disease are experienced in this world [Harper 2004].

For Harper (2004), political ecology is a tool to bridge this gap and to better understand the social, political, economic, and environmental mechanisms that leave certain populations vulnerable. While there are scholars out there who examine the role of power in the construction of health and illness (see for example Good 2010; Baer 1997; Singer 2012), Harper (2004) is unusual in that she grounds both the exposure to environmental hazards and the construction of meanings, particularly relating to the cause of the asthma, to the larger political ecology context.

It is unfortunate medical anthropologists are neglecting to draw upon political ecology for health issues because it is a powerful framework for understanding how these contexts, and in particular the inequalities of power, shape health issues. This is especially true when the analysis includes how knowledge and meanings of health, health risks, and illnesses are constructed and contested through discourse, shaping practices and policies that affect both human health and the environment. Combining political ecology with an interpretative medical anthropology approach broadens the political ecology analysis to examining the unequal power behind knowledge systems such as science and biomedicine, and not only how they dominate the discourse but can be used as tools of the state or industry to control the environmental health discourse. It provides insight into the ways people can resist not just politically and economically, within the limits of their power, but ideologically as well. It can also be used to better understand the choices people make that affect their health, their strategies for negotiating health and illness and for seeking treatment, and open up potential venues for addressing health problems, facilitating access to essential resources and treatment, and for the role of political activism.

The Role of Trust in Relationships

While political ecology is not a new framework for medical anthropology (e.g. Harper 2004; Leatherman 2005), the trust literature has been entirely outside the context of both political

ecology and medical anthropology. This body of literature, however, is useful for understanding the political ecology of health and the construction of health and illness because the trust literature provides a useful way of looking at relationships and, in particular, analyzing decision making within the context of uncertainty and vulnerability in social relationships (Heimer 2001; Cook 2001; Hardin 2001, 2006). This is certainly a condition applicable to the political ecology of health and the social construction of health and illness.

At first glance, the term “trust” is a simple one. It is a term that people use regularly in every day conversation, and at its most basic, it allows people to make decisions in situations that put them potentially at risk caused by the actions of others in the future (Heimer 2001; Cook 2001; Hardin 2001). Yet the very familiarity of the concept is a challenge for social scientists, because the word is a flexible one—it means different things to different people and in different contexts. People talk about trusting their neighbor to look after their cat, the government to crack down on criminals, and their car to survive a long trip. Trust is sometimes talked about in terms of an action (“I choose to trust him”) and sometimes as a disposition (“I am not a very trusting person”).

The trust literature is equally varied in how it approaches trust (see for example Tilly 2005; Sztompka 1999). Each of these approaches has a valuable contribution to the understanding of this complex, yet fundamental, aspect of human relationships, but the one I found the most useful for understanding trust in a political ecological and interpretative context was the dispositional approach. From this perspective, trust is an orientation to another person or institution, and it informs the decisions that a person makes relative to their potential partner (Tilly 2005; Hardin 2001, 2006, 2002). Trust is meaningless outside of a relationship; in order to trust, a person must have some kind of a relationship with another person or institution. It is also

irrelevant outside situations where the actions of at least one party can put the other at risk. If there is no risk, trust is not an issue. Similarly, trust has no role in a determinist setting, because if people know for certain how another person will act, it removes the uncertainty of risk (Sztompka 1999).

Political ecology is a framework embedded in relationships—relationships between different people who belong to different stakeholder groups, such as farmers, industrialists, and environmentalists. Each one interacts in his or her own best interest, as best as they can with the options available to them, in relationship to the other person or institution, and often these interactions put one or more participant potentially at risk. Political ecology analyzes how parties, often separated by space and other infrastructural barriers, interact, rely on, and influence each other in ways that affect the environment and thus human health. I chose to focus on trust literature that addresses how trust can be established through impersonal interactions such as via intermediaries (Miller 2001; Heimer 2001), consumer behavior, and voting patterns (Sztompka 1999; Heimer 2001), in addition to personal relationships (Hardin 2006; Weber and Carter 2003). People can develop an indirect relationship with people and institutions they have never met but are nonetheless dependent on. They can even have trust in a group or type of individuals but not have trust in an individual within that category (Sztompka 1999; Hall et al. 2002):

Independent of the concrete incumbents, some roles evoke prima facie trust. Mother, friend, doctor of medicine, university professor, priest, judge, notary public—are just some examples of the trusted personal roles, or offices of “public trust.” [Sztompka 1999:43]

Some roles, like that of a used car salesman, may evoke the opposite response, one of distrust (Sztompka 1999). This trust is not built out of personal experiences with the individual members of the group or agency in question, but out of a combination of personal experiences with others in the same category and shared cultural expectations. While Sztompka (1999) and Hall et al.

(2002) do not address how people can develop trust categories of people, I argue that it is through the same processes by which other collectively shared cultural assumptions and meanings are created (e.g. Garro and Mattingly 2000; Good 1994; Cronon 1996; Ruiz-Ballesteros et al. 2009; T. King 2005). These perceptions upon which groups of people are trustworthy or not are collective, discursive, constructed, and often contested. Similarly, trust in some sources of information over others, whether a news source, a neighbor, or an expert in the field, can influence both this discourse of constructed meanings and trust or distrust of individuals or institutions involved.

While Hardin (2006) believes that trust relationships need to be personal ones, he argues that this does not prevent people from interacting in situations of uncertainty and vulnerability, unlike some scholars (see for example Sztompka 1999). Hardin (2006) contends that people do not need to trust individual politicians in the United States, for example, because the U.S. constitution was written under the assumption that politicians are untrustworthy. This suggests that it is possible to trust in systems, such as political systems or even capitalism, even when there is not trust in individuals within that system. Trusting in systems is similar to trusting in certain types or groups of people, like doctors, because it is trust that is based on a concept rather than an individual person. Trust in these systems and how people perceive them are culturally constructed, discursive, and contested, just as trust in categories of people is constructed and disputed. This adds another layer for understanding how perceptions of political, economic, and ecological relationships can shape decision making on the ground.

When people need to act but cannot trust their potential partner, people have developed strategies, even institutions, to facilitate or even replace trust in relationships. Heimer (2001) calls the reliance on mechanisms such as contracts and insurance policies, which are used to

reduce vulnerability, as strategies of distrust. While these strategies can enable people to act in situations where they are dependent on people and institutions that they do not trust, these strategies can come at a cost. Heimer (2001) warns scholars that relying heavily on insurance companies to protect people's interests, and even limiting their trust in insurance companies, can remove social pressures to be trustworthy and therefore, over time lead to a society that is socially poorer in relationships, even if the shift does not hurt them much financially. Still, strategies of both trust and distrust are important tools for people to navigate risky and uncertain relationships. Understanding how people employ strategies to reduce uncertainty and risk are valuable in understanding not only interactions in a political ecology framework, but in understanding how inequalities in power can limit these strategies and reinforce unequal relationships.

Trust for many trust scholars (e.g. Hardin 2001, 2006; Sztompka 1999) is primarily considered cognitive; that is to say, trustworthiness is known by intellectually assessing the trust partner's motives, abilities, and past activities. In order to trust another person or institution, an individual needs to think their trust partner is both motivated and capable of following through as promised (Weber and Carter 2003; Hardin 2006). Hardin explains that "to say we trust you means we believe you have the right intentions toward us and that you are competent to do what we trust you to do" (2006:17). According to him, there are three primary reasons to think this. The first reason would be because the individual believes that the one being trusted has his or her best interests at heart because the trust partner has an invested interest in an ongoing relationship with him or her. He calls this "the encapsulated interest account" (Hardin 2006:17). The second reason people might trust someone is because people believe that the trust partners have a moral character that makes them trustworthy, and the third reason is because people believe that their

trust partner has a psychological disposition that makes them trustworthy. All three reasons, he argues, are cognitive because they are based on the person's knowledge of the other person's motives (Hardin 2006).

For Weber and Carter (2003), however, trust is not only cognitive but behavioral and emotional. While the cognitive component is clearly important, they find that a lot of weight is given to the emotional aspect of trusting another. Trust is an emotional experience. When trust is validated, the emotions are positive ones, such as feeling contented or secure, but when it is violated, the experience is often a profoundly negative one—people are not just disappointed, they are angry and devastated. In addition, in some relationships, there is such a powerful emotional need to trust the partner that the person continues to trust him or her despite evidence that suggests that the partner is not trustworthy. The opposite can also be true—people can be so afraid to trust that they withhold trust even when everything they know about the other person says that this person is safe to trust. The behavior component is how trust influences people's behaviors in a relationship (Weber and Carter 2003), including relationships embedded both in meanings and the political ecology.

Unlike political ecologists, relatively few trust theorists critically examine the role power played in trust relations, and when they do consider it, they do not tend to give it much weight in their analysis. This significantly limits the use of trust in understanding complex human interactions. Weber and Carter (2003:21) defined power as “the ability of a person to do what one wants regardless of what others want and, inversely, the ability of a person to get others to do what he/she wants, regardless if they want to do it or not.” Lack of power makes individuals more vulnerable in trust relationships. Unequal power in the relationship limits the weaker partner's ability to negotiate, particularly with institutions such as businesses or the government,

over the relative degree of uncertainty and vulnerability in the relationship (Heimer 2001; Weber and Carter 2003; Knight 2001). When trust relationships are not equal, they may ground their trust in an emotional need to trust or on an assumed moral code at the expense of warning signs because the relationship is based not on mutual risk but on the trust in the benevolence of the more powerful partner (Weber and Carter 2003). Heimer (2001) argues that the widening discrepancy in power relations has resulted in individuals increasingly relying on strategies to reduce their own vulnerability—what she calls strategies of distrust—because this is the only means available to them to reduce their risk.

Heimer (2001) addresses the issue of inequalities in trust relationships between individuals and large corporations. Because individuals usually do not have the power to negotiate reductions in uncertainty and vulnerability, she argues that they either have to accept their vulnerability and uncertainty, or they have to rely on outside protections, such as insurance policies or the legal system. She argues that corporations and individuals are not protected equally under law, putting the individual in a disadvantaged position:

Strong corporations tend to use power differences to their advantage in bargaining. Corporate interests often are better represented in the law than the interests of people. Because natural persons and corporate actors often are formally equal under law, the power and resources of corporate actors give them a marked advantage over most people. De jure equality creates de facto inequality. [Heimer 2001:73]

Corporations can violate some trust agreements with specific individuals with relative impunity because they do business with a large number of people. While corporations are legally bound by the contracts that they sign, Bakker (2007) points out that when corporations have a lot more experience and legal resources available for writing contracts, they are more likely to have contracts constructed in their favor. This puts their partners in the relationship at a disadvantage. Heimer (2001) argues corporations are the ones who shape the markets and determine the

conditions in exchange for the contracts. They can demand that the customer give them information while promising little information in exchange; for example, many of the big box store chains now collect zip code information for marketing from every customer. Businesses can collect considerably more information about their customers than the customers can easily collect about them, and corporations have the facilities—the employees and the technology—to process and study this information. When there is a problem with a good or service, the corporation can also shift the blame from itself to an individual employee. This allows them to escape accountability for problems that occur within the company while still benefiting from the relationship with the customer.

Many of the points Heimer (2001) makes about corporations can be equally applied to government institutions. Like corporations, governments have a lot of power in their relationships with citizens, and even more so with non-citizens, because they have the weight of the political machinery behind them. They have access to resources, including information services, that local citizens cannot hope to match, and they have the power as well as being the legal authority (Sztompka 1999). Moreover, individuals are particularly vulnerable when their choices are limited for goods and services that they need. Hardin (2006) argues that even when citizens can vote in elections, they have limited options when it comes to the government available to them, even though the government provides a range of essential services. Moreover, individuals are particularly vulnerable when their choices are limited for goods and services that they need. As Hardin puts it:

If we need or want to cooperate with someone or with a commercial entity, typically we have choices or options available. If my experience with you is not good or if your reputation is not good, I can most likely find someone else to deal with. We commonly do not have such choices with respect to government and its agents. To get choice, we might even have to emigrate. [2006:152]

Even in a democracy, the power of choice is limited. Citizens have some say in who represents them at municipal, provincial, and federal levels every few years when elections are called, but even then their choices are limited to a relatively small handful of candidates who are available, backed by political parties. This limits their power over their government, while at the same time citizens are dependent on government agencies for providing and enforcing everything from criminal law to health codes to highways to education. Hardin writes, “The mere impossibility of switching to alternative partners gives those we deal with greater power over us than is suggested merely by their roles” (2006:152). He goes on to say that because the citizen’s relationship with the government is unequal, citizens either cannot trust these powerful institutions or at the very least their trust is undercut by the imbalance of power. The government component of the partnership has relatively little to lose if it breaks its promises, whereas the citizen can lose everything (Hardin 2006).

Heimer (2001) argues that while over time participants in a relationship may switch to a relationship based on trust rather than distrust, they may chose not to do so as well, particularly in instances of unequal power. The participant with more power, who can shift the cost of the strategy of distrust onto the weaker member of the relationship, may find it easier and more cost efficient to use a strategy of distrust for all relationships. Heimer (2001) argues that people now have social institutions that make it easier than in the past to reduce vulnerability—that is, to employ a strategy of distrust. Signing legally enforced contracts, buying insurance, and not relying on only one individual or company to provide the necessary resource or service are all ways an individual can minimize his or her vulnerability in a relationship. Unequal power in the relationship gives the individual relatively little ability to negotiate, particularly with institutions such as businesses or the government, over the relative degree of uncertainty and vulnerability in

the relationship, so individuals are increasingly relying on strategies to reduce their own vulnerability because it is the only means open to them to reduce their risk.

While the trust literature comes from a wide variety of academic disciplines, including psychology, political science, sociology, business, and economics, I have drawn heavily on the trust literature coming out of sociology (e.g. Carter and Weber 2003; Heimer 2001; Sztompka 1999), political science (e.g. Hardin 2001, 2006; Miller 2001), and public health (Hall et al. 2002). Some of the key issues addressed are trust and social change (Sztompka 1999), trust and its role in democracy (Hardin 2006; Sztompka 1999), trust in business (Miller 2001), trust in intimate relationships (Weber and Carter 2003), and trust in health care professionals (Hall et al. 2002). This scholarship provides valuable insight into how trust relationships work, but it is also a literature that is deeply embedded in Western assumptions and their disciplinary roots. The majority of trust scholars do not engage in trust research in cultural contexts outside the United States, nor do they critically engage the culture in which these relationships are established. While Walkerton is a predominantly white, English-speaking Canadian community, it is still important to be aware of how trust functions culturally, particularly through discourse, political and economic relationships, and the construction of key concepts in relationships of trust, such as notions of risk, health, purity, and nature. Trust relationships are likely to change when established in different cultural contexts. This is one of the reasons why I have merged the trust theory with political ecology and interpretative medical anthropology, as they provide a theoretical framework to critically engage these concepts as they apply to trust relationships.

One important example of this is the trust literature's approach to the environment. In the trust literature, the environment is mostly absent, and when it is mentioned, it is to explicitly exclude the natural environment from trust relationships. For Sztompka, it does not make sense

to talk about trusting the natural world because the discourse of trust is something that belongs in the human, social world:

It seems strange to say “I trust there will be sunshine in Berlin at the weekend,” or “I distrust that volcano.” ... Even if we seemingly confer trust on objects, such as saying “I trust Japanese cars,” or “I trust Swiss watches,” or “I distrust French rapid trains,” we in fact refer to humanly created systems and indirectly we trust the designers, producers, and operators whose ingenuity and labor are somehow encrypted in the objects.
[1999:19-20]

When people do speak of trusting the environment, he argues that this anthropomorphizes the environment, giving it human characteristics. People can talk about trusting humans who shape or regulate the environment, or in supernatural entities that control the environment, but the environment itself lacks the human agency necessary for a trust relationship.

This is a very Western view of the environment, which marks the environment as outside the human social sphere (T. King 2005; Cronon 1996). Anthropologists have been long aware, though, that diverse peoples throughout the world do not necessarily share this distinction between human and nature, often incorporating the human, natural, and spiritual worlds into one conceptual framework (Descola 1996). Far from nature being an untouched wilderness, remote and isolated from the contamination of human civilization, nature is a human creation—the creation of a particular human culture at a particular point in human history (Cronon 1996).

The reason trust scholars give for excluding the environment from trust relationships is that the environment is not generally considered to have agency, and most definitions of trust requires that the recipient have free will (Hardin 2001; Sztompka 1999). Yet while the environment is generally not thought of as having agency, it does not act in a strictly predictable manner, either, or weather forecasts would be more accurate. While this is clearly outside of Hardin’s (2006) narrow conception of trust defined by the encapsulation of trust, because people usually do not view the environment as invested in its relationship with humans or caring about

their best interests, it is similar to Sztompka's (1999) concept of trust as laying a bet against a future outcome.

Trust in the environment is not identical to trust in humans. While humans interact with the environment, they may not think of the environment as encapsulating their interests in the way that Hardin (2006) talks about. Perhaps more importantly, the environment cannot be held accountable in the way that human agents can. It cannot be fined or imprisoned; social sanctions mean nothing to the environment. Precautionary measures can be taken, such as building earthquake resistant housing, but the environment cannot be negotiated with, as Heimer (2001) says people do in trust relationships with other people. Nonetheless, nature can be viewed as either inherently benign or malevolent. Both of these viewpoints are present in the discourses on nature, particularly in regards to water. On the one hand, Canadians often view their natural environment as a harsh, rugged land that they need to overcome to survive (Lipset 1990; Adams 1998, 2003). On the other hand, one of the reasons people buy bottled water is that it is viewed as pristine, untouched by humans, and therefore both better tasting and safer (Gleick 2010; interviews). Similarly, when managing natural resources, considering how effective and safe people view natural processes makes sense. Some people may not trust nature, and believe that more, not less, human intervention and technology are necessary to provide humans with safe environments, goods, and resources. Others, however, may perceive natural processes as being better equipped to handle a range of responsibilities, from creating better medicines, providing healthier food, providing pure, better tasting water, or filtering out toxins. Increasingly, multiple sources are telling people that nature does it better (Cronon 1996). People's trust in their natural environment is also dependent on how well they understand these processes, the better to predict the future.

Trust is brand new to both the discourse of political ecology and interpretative medical anthropology, and it adds to this discussion a better understanding of why people make the decisions that they do. According to the trust literature, when people are faced with a situation where there is potential for both benefit and harm, they can abstain from participating in the relationship, seek to reduce uncertainty and their vulnerability, or choose to interact based on trust. When it comes to environmental health concerns, clearly risk is a factor, and people make decisions navigating among relationships of dramatically unequal power. Understanding and analyzing strategies of distrust can add further understanding for the strategies people use to try to act in their best interests in situations where they have limited options. Political ecology gives scholars the framework for understanding both the power and the relationships with political and economic entities, often quite removed from the environment affected, and interpretative medical anthropology helps researchers understand the meanings given to the experience; trust gives scholars an understanding of *how* people relate with these entities, in ways that affect their decisions. Trust can facilitate interaction, but can be hurtful if the person or institution they are trusting proves unreliable. Similarly, distrust can hinder actions that might benefit them. In exchange, political ecological context can influence trust by shaping the types of relationships people enter, particularly through power, with people and institutions both local and far away. At the same time, constructions of meanings shape the knowledge, values, and priorities that form the basis of their trust relationships.

The Measures of Trust

Both a person's perception and understanding of risk and his or her trust in people and institutions are complex, culturally-constructed concepts that are deeply embedded in the local social, political, and economic context. Both trust and views of risk play an important role in

people's interactions with individuals, institutions, and the environment. While many trust theorists (e.g. Weber and Carter 2003; Knight 2001; Heimer 2001) tend to view trust as something that can be measured on a continuum from total trust to total distrust, and even Hardin (2006) only examines two facets of trust—motive and capability—trust is much more complicated than that. Not only do various external influences, such as education, age, gender, culture, and religious beliefs, affect trust relationships, but trust itself is a fragmented, multilayered concept. Trust can be messy; people are often uncertain about their potential trust partners. Some aspects of their relationship can encourage trust while others simultaneously make them cautious, even wary. Decisions about drinking water in Walkerton are further complicated because this decision is embedded in multiple, overlapping trust relationships that play a part in distributing, testing, and regulating drinking water.

In order to analyze the trust relationships and how they influence drinking water choices, therefore, I have broken the concept of trust into five separate components of trust, and then I have used them to analyze the degree of trust people have in the government, private enterprise, and the natural environment. I have analyzed the narratives of Walkerton residents for common themes in how they relate to political institutions, politicians, private companies, and their natural environment, both for elements of trust and for the meanings by which they make sense of their world. This is then situated within both their personal experiences and the larger political, economic, and ecological context of the *E. coli* contamination and the changes in policies and institutions that followed.

For my research, I have modified the measures of trust created by Hall et al. (2002) to examine physician trust as the basis for conceptualizing trust within a political ecology of health framework. Hall et al.'s (2002) concept of trust is one of the most useful I have found because

they break trust down into subcomponents that can be measured independently. By doing so, it is possible to see how each of the various factors can contribute to—or detract from—trust relationships, as trust relationships are often multifaceted, contradictory, and ambiguous:

We conceptualize general physician trust as having potentially five overlapping domains: (1) fidelity, which is caring and advocating for the patient’s interests or welfare and avoiding conflicts of interest; (2) competence, which is having good practice and interpersonal skills, making correct decisions, and avoiding mistakes; (3) honesty, which is telling the truth and avoiding falsehoods; (4) confidentiality, which is the proper use of sensitive information; and (5) global trust, which is the irreducible ‘soul’ of trust, or aspects that combine elements from some or all of the separate dimensions. [Hall et al. 2002:1422]

I have expanded and adapted these concepts to examine elements of trust relationships with the public and private institutions and sources that provide, manage, regulate, and test drinking water. In addition, I explore how these concepts overlap and intersect, something that Hall et al. (2002) do not do in their analysis. While this model is designed for studying how trust and distrust between the individual, the private and public institutions, and the environment informed decisions in water consumption, it can be easily applied to many other situations, particularly those regarding resource use and health decisions.

My measures of trust are: fidelity, competence, honesty and transparency, accountability, and global trust. In addition, I have created categories for the negative aspects of these measures, which I call the measures of distrust, to discuss factors that detract from trust relationships: infidelity, incompetence, dishonesty and opacity, immunity, and global distrust. These are two ends of a continuum, with the measures of trust on one end and measures of distrust on the other, and most trust relationships fall somewhere in the middle. Any given trust relationship can score favorably in some of these measures (for example, fidelity) but poorly in others (such as incompetence). While each of these measures contribute or detract from trust in their own right, they also interact with each other—honesty is linked to fidelity, for example, and

immunity to global distrust—and thus trust and the decisions stemming from that trust are based on the whole rather than the sum of the parts. These measures are as perceived by the individual entering into the trust relationship, filtered through culturally constructed assumptions, expectations, and knowledge. The term belief is a problematic one in anthropology because it often implies uncertainty or even false knowledge (Good 2010). I use the term in my model, along with perception, not to validate one form of knowledge over another, but as terms for understanding the personal viewpoints of individuals and the personal nature of knowledge in trust relationships, a personal knowledge that is constructed and grounded in often contested discourses.

While in many ways similar to Hall et al.'s (2002) measures of trust, I have departed from them in important ways. Fidelity is similar to Hall et al.'s (2002) concept, as well as Hardin's (2006) encapsulation of trust. It is the notion that a person can trust another person or institution because they have his or her best interests at heart. It is the belief that the potential trust partner is invested in acting favorably toward the trusting person; this could be because the trust partner wants to sustain a beneficial relationship, preserve a good reputation, or cares about the trusting person's wellbeing.

Similarly, competence is also close to Hall et al.'s (2002) definition and is similar to the concept of other trust theorists (e.g. Hardin 2006; Sztompka 1999) as well. If a person being trusted is competent, then that person has the capability of doing what was promised. Good intentions are worth nothing if the person is unable, whether because of a lack of knowledge, resources, or physical ability, to fulfill the promise.

Honesty is also similar to the way Hall et al. (2002) use it; honesty is telling the truth and avoiding falsehoods. I added the concept of transparency to honesty, however, because in a trust

relationship honesty is really about having the information necessary to accurately predict the other person's future actions. In order to trust, people need to feel that they have all the information necessary to understand the motives, priorities, and abilities of the potential trust partner. It is possible to be literally honest without the information being understandable by the recipient, whether by accident or design. For example, a person can be technically truthful while deliberately leaving out information or misleading or obscuring facts through language such as technical jargon. This can not only be confusing, but it can be used to deliberately mislead or to intimidate (Good 2010; Westman 2013). When information is withheld or too difficult to understand, even if this is unintentional, it undermines the perception of honesty. It can also suggest a degree of infidelity as well, as it implies that the person manipulating the truth has something to hide. Therefore, honesty alone is insufficient for understanding the role it plays in a trust relationship.

I have discarded the category of “confidentiality” as that is not a meaningful part of the relationship between citizen/consumer/customer and water provider, and in many ways it falls under the concept of fidelity. Instead, I have added accountability, as that is important in order for the consumer to feel that the provider will be held responsible for their actions. While the most obvious form of accountability is a situation with an explicit consequence, such as a fine or jail sentence, accountability can come in many other forms: loss of reputation, loss of sales, loss of votes, and denial of access to important markets or resources. Accountability influences motives by making the costs for violating trust agreements high. For this system to work, however, violators of trust cannot be able to conceal what they have done. This is one of the reasons that honesty and transparency are so important. People cannot hold institutions accountable for actions they do not know about. Accountability is perhaps the most complicated

measure of trust because many agents, from the local to the international, can influence whether or not a person or institution is held accountable, including neighbors, family members, NGOs, the media, voters, consumers, government oversight agencies, law officers, stockholders, and professional trade associations. Figure 1 shows some of the linkages between the local, state, national, and international actors and institutions involved in water distribution and regulation. Accountability strengthens trust relationships by not only punishing those who break their word, but by providing a means for people to have their concerns addressed. In order for accountability to contribute to trust, people not only need to believe that these mechanisms exist, but that they are also effective.

While I have kept the term “global trust,” instead of using it as a catchall for elements of trust that do not fit neatly into another category, as Hall et al. (2002) do, I use it for expressions of trust in categories or systems in general. It refers to trust a cultural construct, whether it is in a category of people, such as politicians or doctors, or in conceptual systems such as capitalism or democracy. While fidelity is about the individual or individual institution, global trust is about the collective and the system. It is possible to distrust individuals or specific institutions, such as specific politicians or government institutions, and still trust in the system as a whole, and vice versa (Sztompka 1999). It is also possible for the voters to distrust politicians but to trust that the political system was designed to protect the public from untrustworthy politicians (Sztompka 1999; Hardin 2006).

All of these measures of trust and distrust apply in Walkerton, but some more prominently than others. While these concepts will be discussed in more detail in Chapter 5, here is a brief explanation of them and how they relate to Walkerton.

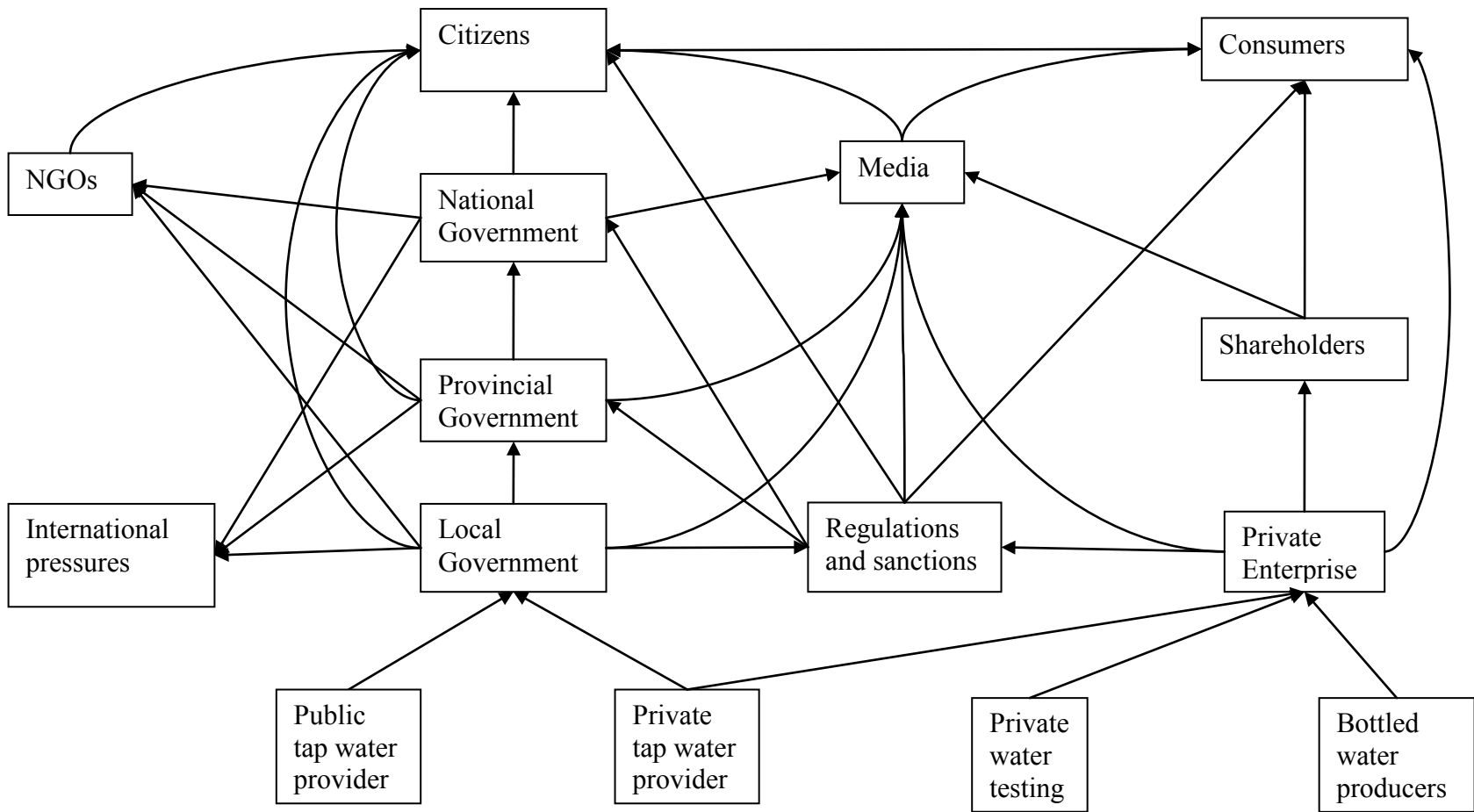


Figure 1: Accountability relationships. These are just some of the many examples of potential accountability relationships, especially since consumer and citizen are not mutually distinct categories. The arrows point to the entity that the box is held accountable by.

- FIDELITY: Belief that individuals in the institutions (public or private) have the public interest and welfare at heart; that their top priority is the public good and protecting the public's health, and that the entity serves the citizen/consumer first and not their own self-interest, nor the interests of lobbyists, businesses, stockholders, and other special interest groups
- COMPETENCE: Belief that the individuals in the institution have the knowledge, training, equipment, and funding necessary to do their job well
- HONESTY and TRANSPARENCY: Belief that the individuals in the institutions keep the public accurately informed, that the processes and issues are available to the public, and that they avoid hiding information or telling false or misleading information
- ACCOUNTABILITY: Belief in the answerability of institutions and individuals within them to the public, that the public has ways of having its concerns addressed, and that these mechanisms are effective
- GLOBAL TRUST: Belief that a cultural construct—such as a group of people, the political system, or the capitalist market—is trustworthy and will protect individuals' interests and welfare

Combining these elements, I have been able to explore how Walkerton residents' experiences of the *E. coli* contamination has changed the way they conceptualized their bodies, their environment, their illness experiences, and their relationships with the natural resources, private companies, political actors who provide, manage, and regulate their drinking water, and ultimately how these combine to influence their choice in drinking water. These choices not only have the potential to affect their health by protecting or exposing them to pathogens and toxins, but also have political, economic, and environmental consequences.

Risk and Choice: Dealing with Uncertainty and Vulnerability

From a social science perspective, trust is important because it influences the strategies that people use to make decisions in an uncertain environment. Trust affects the degree a person is willing to take a perceived risk based on the expectation that a person or institution will act in a certain way. While I am using the orientation definition of trust rather than, as Sztompka (1999) did, define it as the action itself—the bet placed on the anticipated future behavior of the one being trusted—the pivotal point is when the decision, informed by trust, is translated into action. The action is the point when risk and trust come together to influence decisions and social behavior and trust becomes socially, rather than psychologically, relevant.

In order to understand people's decision making process in conditions of uncertainty and vulnerability, scholars need to understand their perceptions of the trustworthiness of their potential relationship partners, their perceptions of the severity of risk involved, their priorities and how valuable the benefit from the potential relationship is, and what alternative choices are available (see Figure 2). While the trust literature does not situate concepts of risks, priorities, and values within the larger social and cultural discourses, anthropologists know that these frameworks are contextualized. Perceptions of the severity of the risks (Bray 2003), responsibility for health problems (Good 1994, 2010; Harper 2004; Balshem 1997), and priorities and values (Bourdieu 1977; Leatherman 1996) are all culturally constructed, idiosyncratic, discursive, and contested concepts that are embedded in complex social relationships. Social characteristics, such as gender, religion, ethnicity, and education, can influence these conceptual frameworks, as can personal preferences, experiences, and the larger social discourses, such as advice from family members or information gained from the mass

media. Other considerations, such as personal finances, can also influence these decisions by limiting some options and facilitating others.

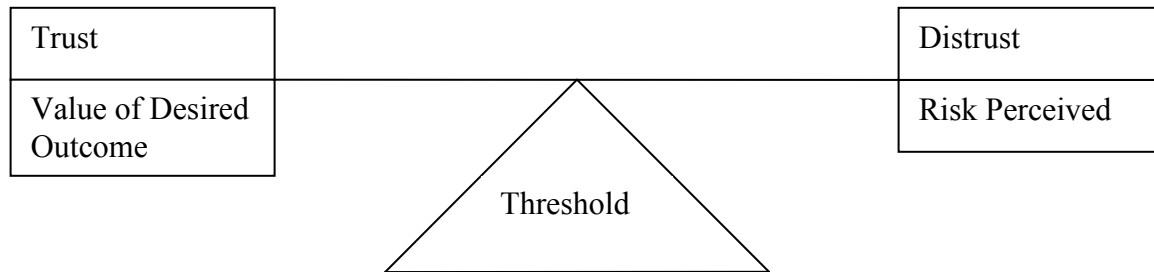


Figure 2: The relationship of risk and trust. Diagram shows how different aspects of a trust relationship potentially balance out. The threshold, the point where a person is willing to act, can shift to the right or left depending on their personal tendency to trust or distrust, their perception of the trustworthiness of their trust partner, and the perceptions of the value of the desired outcome and severity of the risk perceived.

In order to make decisions, people weigh the level of perceived risk against the perceived benefit of the interaction, the potential that the person or institution they may be trusting will act in a predictable fashion, and how that compares to the alternative choices available. For Sztompka (1999), risk is a concept similar to trust in that it is oriented toward future possibilities. He argues, “risk implies some uncertainty about the occurrence of a future unwanted state of the world, as well as the least partial impossibility of preventing such an occurrence” (Sztompka 1999:30). If there are alternative options available, they will be weighed against each other in an attempt to minimize risk while maximizing the benefit.

When making decisions, trust and distrust balance against the possible risks and desired outcomes. People are more likely to take risks if they strongly believe that the people and

institutions that they are trusting are both able and inclined to act as anticipated. The higher the perceived risk, the greater the level of trust a person must have in order to balance that risk (Sztompka 1999; Harthorn 2003). People are more likely to accept a high degree of risk if the potential outcome is highly desirable. Elements of distrust counteract elements of trust. The threshold is the point where the person goes from being unwilling to take the risk to being willing to do so, yet where that threshold is located varies from person to person and is dependent on the relative influence of the different factors. Acting, or not acting, on trust means deciding whether or not the perceived value and the trust one has in another person, group, or institution is enough to put oneself at risk of their future actions. “Placing trust, that is, making bets about the future uncertain and uncontrollable actions of others, is always accompanied by risk” (Sztompka 1999:31).

While most of the trust literature focuses on the rational element to trust, including in the balancing of risk and trust (e.g. Sztompka 1999), Weber and Carter (2003) point out that decisions involving trust also contain an emotional component. Sometimes people will make a decision that objectively puts them at greater risk because they have an emotional need to maintain their trust in the other person or people. To question trust can be unthinkable, even painful, particularly when questioning someone a person has a particularly close, intimate relationship with, such as a spouse or family member. When assessing trust, risk, and value, researchers need to keep in mind the emotional weight of each aspect. It is important to remember while talking about human decision making that people are not cognitive robots any more than they are cultural robots.

Not all risks are created equal. Certainly people rate a risk of fatality as worse than risk of intestinal discomfort, but perception of risk is complicated by both personal and cultural

perceptions. Society puts moral and emotional weights to risk. Diseases that are highly stigmatizing are more likely to be viewed as horrific, like AIDS, than one that is debilitating but less socially threatening, like cancer, even if the latter is more common and takes more lives nationally (Good 1994; Harthorn 2003; Chua 2003). Education, class, gender, religion, ethnicity, and age can all help contribute to the meanings of risk. They help form the perspectives from which people base their understanding of how likely that risk is and how serious the results would be (Figure 3). Similarly, social characteristics such as these can influence the expectations and the relative value of the desired outcome, as these are understood through the filter of cultural meanings, personal expectations, and desires. These characteristics help inform both the construction of risks, values, and priorities and the level of trust involved in a trust relationship, thus affecting decisions on both sides of the equation.

For Walkerton, safe, soft, good tasting, and convenient water is the commonly expressed desired outcome—people want to drink water that tastes good, is soft and not heavily chlorinated, and yet will not put their health at risk. After what they had been through, it is not surprising that protecting their health is central to their priorities. Humans need to drink water to survive, and yet as the Walkerton residents discovered, contaminated water puts their health and even their lives at risk. The question, then, is whether or not natural or bottled water is safer than tap water, and if it is, is it worth spending the extra money, time, and effort to get it. For many Walkerton residents, the answer to both questions is yes.

A risk must be perceived before it can be taken into consideration in decision making. Advice from neighbors, coworkers, fellow church members, friends, and family can all influence whether or not a person perceives a risk in the first place (see Figure 4). For the people of Walkerton, it never occurred to them before 2000 that their tap water might place them at risk.

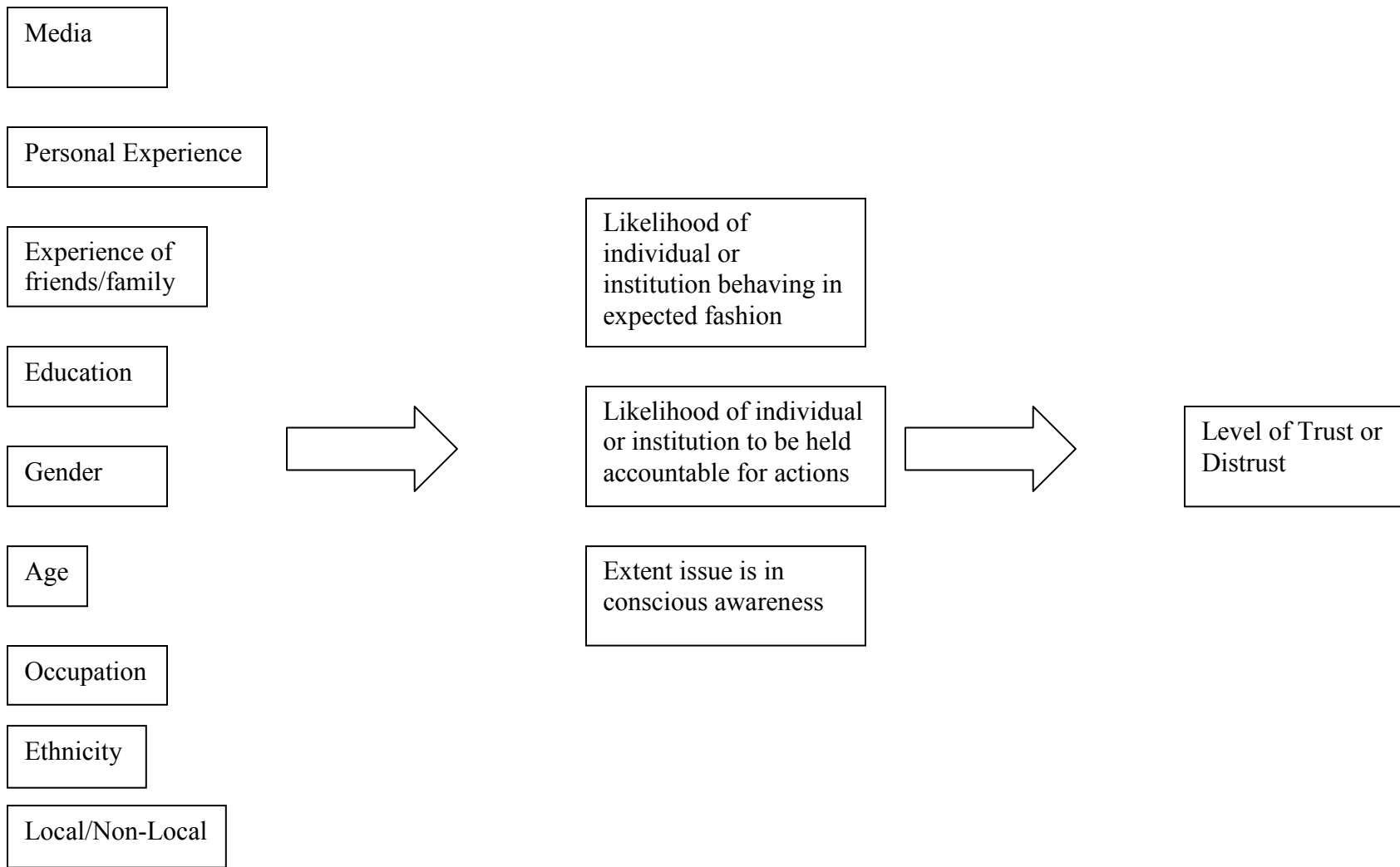


Figure 3: Trust and distrust. Diagram demonstrates how some examples of factors can influence levels of trust and distrust. Factors on the left influence perceptions (in the middle) which in turn affect levels of trust and distrust

While First Nations had been struggling with tap water contamination issues for years before Walkerton's *E. coli* contamination happened (Doyle 1999; Patrick 2011), until Walkerton these problems were not visible to many Canadians (Patrick 2011; Johns and Sproule-Jones 2009). To white, English-speaking Walkerton residents, tap water contamination was a problem that happened in other countries. Many were aware of water-borne illnesses in places like Mexico or India, but they had not known how serious the consequences of such illnesses could be, nor did they think it was possible for it to happen to them in Canada. Even after people started becoming ill, residents were so confident that their drinking water was safe that they persisted in looking elsewhere for the source of the *E. coli*. When they finally learned that the water was to blame, they were shocked. They thought that things like that just did not happen in Canada. As a result, water quality did not factor into their choices of drinking water before 2000, and most people drank tap water.

Even if a risk is perceived, for it to affect decision making, the individual has to think that his or her actions can affect their risk level. If a Walkerton resident views all sources of water equally bad, he or she may not see any point in making the effort to acquire safe water to drink. After the water contamination, the people of Walkerton are all too personally aware of the potential risk for contaminated water and what the possible consequences are. Once the risk is recognized and the individual sees ways for his or her behavior to affect the outcome, the individual must decide how he or she wants or needs to handle those risks. While there are many potential ways Walkerton residents could reduce their risks, such as having their water tested independently, many of them turn to sources of water they think are safer.

Some of the literature on trust focuses on innate elements of trust, based on the assumption that some people are born more inclined to trust, perhaps because they are better able

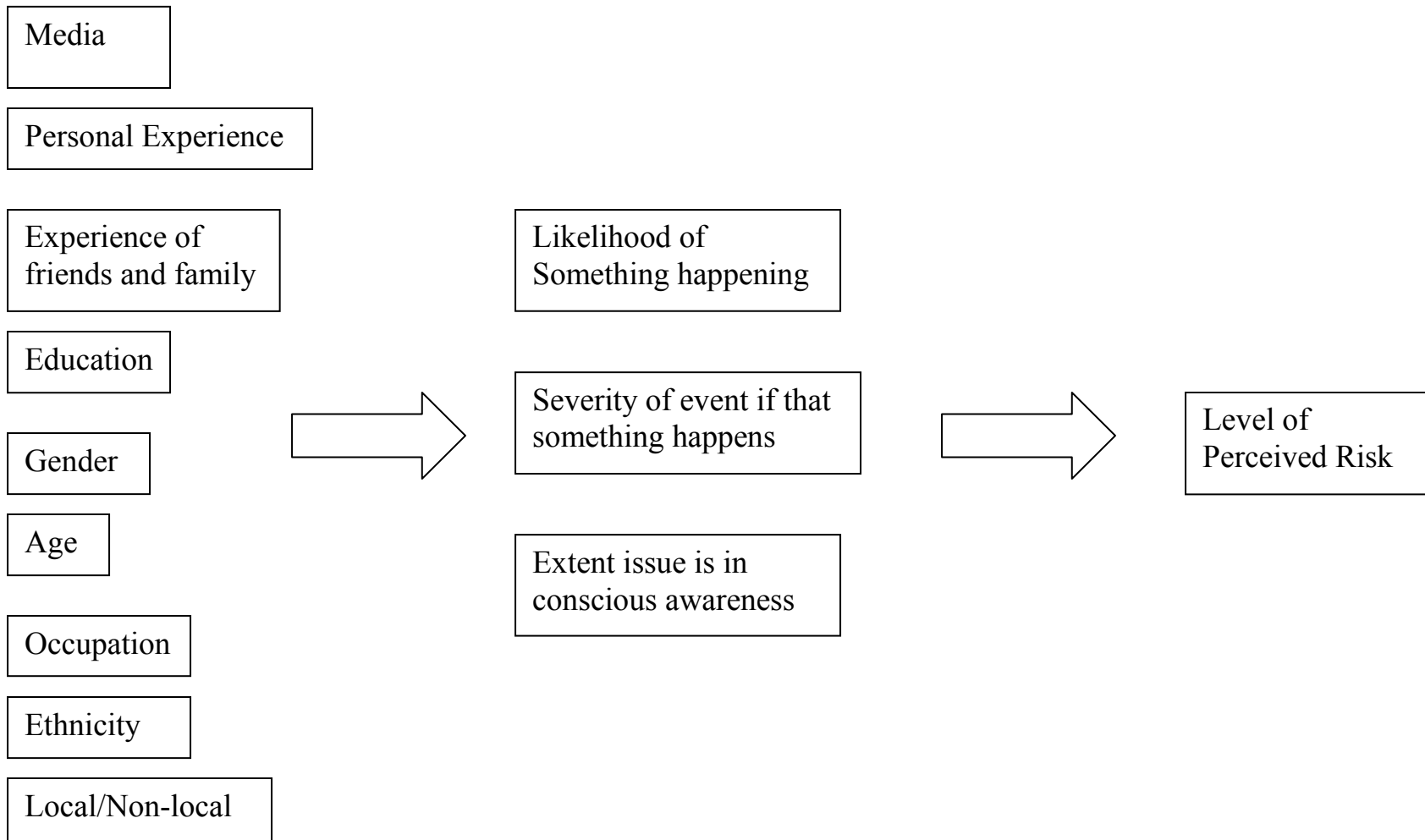


Figure 4: Risk perceived. Diagram demonstrates some examples of factors that can influence levels of perceived risk. Factors on the left influence perceptions (in the middle) which in turn affect levels of perceived risk

to pick up cues of whether or not another person is trustworthy (Yamagishi 2001). Certainly, each individual, whether by experience or innate inclination is different, but social context also plays a considerable role in providing the guidelines for establishing trust, establishing expectations for behavior and means of enforcing conformity to those expectations, and for evaluating who is trustworthy (Hardin 2006). People are more likely to trust others who are similar to themselves because they are more likely to share experiences and expectations. People feel that they are more likely to act in a predictable way because they are operating under the same general guidelines for behavior, whether that be a shared moral framework or cultural assumptions (Hardin 2006). The more things people have in common in the relationship, generally the easier it is to trust the other person.

In Walkerton, a person being local to Walkerton is an important factor that affects trust. Even after the role of the local PUC in the tragedy became public, being local is a strong contributor to trust relationships. Being local is more than just living in Walkerton; to be truly local, a person has to not only have grown up in Walkerton, but his or her parents had to as well. This establishes deep, generational ties to the community that people in urban areas rarely experience. Locals, who are known by, and often friends with, their neighbors, are trusted over outsiders to the community.

At its most basic, individuals act strategically by balancing the amount of perceived risk and potential benefit against the likelihood that the individual or organization they are considering entering into a relationship will act in the way they want or hope them to. Some risks are too high to be considered, especially if the potential benefit is only marginal, regardless of how well a person trusts the other party. Other times, if the risk is minimal and the potential benefit great, it might be worthwhile to take that risk even if it is uncertain, even doubtful, that

the other party will hold their end of the agreement. The decision is much harder when the risk and benefits are both high. In such a situation, if the potential partner is trustworthy but a person decides not to take the risk, he or she is losing out on a potentially great benefit, but alternatively if the person does take the risk and the other is not trustworthy, he or she could be badly harmed (Sztompka 1999). According to Heimer (2001), in situations where trust is critical or unobtainable, people have the choice of strategies of trust, strategies of distrust, or a combination of both.

Strategies of trust are methods by which people can reinforce trust in relationships, reducing uncertainty in the relationship. They may invest in a long term relationship with an individual or company. They can get information about the people or institution that they are entering into a relationship with to help them get a better understanding of their partner's motives, morals, and reliability. People can get to know their trust partners personally, research their past behavior, or ask friends and family for recommendations. These strategies help people make decisions that directly affect their health and wellbeing in a complex social system where they are dependent on others, often people they do not know personally (Heimer 2001; Hardin 2006). The better people know their potential trust partners, the more they know about how their partners have acted in the past, the better they understand their ethics, and the better they can evaluate their priorities. This kind of information about people's prospective partner reduces uncertainty because it makes it easier to accurately predict their future actions.

Sometimes, people have limited options and are unable to reduce the uncertainty in a necessary relationship, so they turn instead toward strategies that minimize risk (Heimer 2001). In situations like these, strategies of distrust can be employed to reduce vulnerability. People may seek legal protection by insisting on entering a legally signed contract that can be enforced

by the state. They can invest in some sort of insurance policy so that if the other participant breaks trust they are protected. They can diversify their trust relationships, so that they are not relying too strongly on any one person and therefore limiting the potential damage if a partner fails to deliver.

Heimer (2001) argues that trust scholars should not confuse trust and distrust. Strategies of distrust are solutions to trust problems where the individual tries to control or limit loss. That is not to say that they do not still wish, and hope, for their partner in the relationship to hold their end of the bargain, but they do not expect it and take action to minimize the harm if they do not. These strategies not only allow people to still interact in relationships with relatively high levels of risk, but also allow for a starting point to build a relationship that may, over time, develop into one based on trust rather than distrust.

Transforming Relationships of Trust

Changes in people's concept of nature and the way water is processed, distributed, and even marketed alter their relationship with the natural environment and the institutions that manage, regulate, and distribute their drinking water. What happened in Walkerton is part of this larger changing relationship, including the privatization of essential services, neoliberal reforms, and the commodification of natural resources, including water. These modifications are not only economic and political in nature, but also mean some fundamental alterations in the trust people have in the institutions that provide these services.

Nature has evolved in Western society as a concept from being something threatening that needs to be controlled to something threatened that needs to be protected. Moreover, nature has come to mean something that has been untouched by humans, something that is still somehow uncorrupted by human contact (Cronon 1996; Loo 2006). "To do so is merely to take

to a logical extreme the paradox that was built into wilderness from the beginning: if nature dies because we enter it, then the only way to save nature is to kill ourselves” (Cronon 1996:83).

These changes have important implications in the trust relationships people might have with the environment because these perceptions of what the environment *is* in relationship to humans plays a fundamental part in how people relate to it.

Canadians have historically been closely connected to their natural environment, and its natural resources have contributed to the construction of a uniquely Canadian identity (Loo 2006; Biro 2007; Mackey 2002). Despite this long relationship, nature has been viewed as an entity apart from human civilization, and when they did interact, it was not as equals. This separation of human from nature is not only an artificial, cultural creation, but is pragmatically impossible. Defining nature as something untouched by humans makes it incompatible with human existence (Loo 2006; Cronon 1996).

This duality between nature and culture characterizes North American environmental thought and action and, in his view, is harmful to both. By embracing the wilderness as ‘other,’ we locate ourselves outside the natural. In so doing, we cultivate a way of seeing and being that precludes forging a truly sustainable relationship with the environment, one that has a place for people, and more importantly, one that does not equate using nature with abusing it. [Loo 2006:2]

Nature is the product of human’s own meanings and perceptions, situated in the larger context of historical, social, political, and economic relationships; it is simultaneously real, collective, and discursive (Escobar 1999). These discourses are not merely academic or philosophical; they have real political and economic consequences. Competing frameworks are frequently incorporated into the discourse on environmental issues and conflicts over resource use (Horowitz 2001; T. King 2005). The notion of what nature is directly influences how it can and should be used, so that nature ideologies are fundamentally political and economic.

The irony is that at the same time people are defining nature as being outside themselves, and especially outside commercialism and urbanism, they are enclosing it in the capitalist value system, particularly through tourism (Ruiz-Ballestreros et al. 2009; T. King 2005) and the images of nature used to market commercial goods (Price 1996), especially bottled water (Gleick 2010; Olson 1999). Nature, as untouched, is for sale in the capitalist economy. Price (1996) argues that nature stores at the mall, for example, do not sell nature itself so much as the meaning of nature. Images of nature have been transformed into a medium that can be marked with a price tag and sold in a shopping mall—the very epitome of capitalism. She explains, “Hence we approach the natural world, just like everything else, instinctively as consumers” (Price 1996:198).

Humans’ relationships with the institutions that test, regulate, and provide their drinking water have also changed in the last few decades, altering trust relationships in fundamental ways. Canada has been part of the trend toward privatizing the management, testing, and distribution of water in communities. A growing number of Canadian communities, including Walkerton today, now pay private companies to manage, and sometimes to provide, the water distribution infrastructure (Bakker 2007). Ontario also privatized the labs that test municipal water quality in 1996 (Hrudey and Hrudey 2004), shifting the responsibility for monitoring local water quality from public institutions to private ones. Privately bottled and marketed bottled water sales have also increased rapidly, in both Canada (Rahman 2007) and other countries, displacing not only tap water consumption but also the sale of other commercially provided drinks, particularly soft drinks (Bakker 2007; Gleick 2010). These changes in people’s trust relationships are more than infrastructural. After all, a private company hired by a municipality is still answerable to that municipal government, just as a public institution would be. These changes are important

because they are a part of a fundamental change in the ideologies that guide the way people think about their drinking water, as well as the natural environment and human institutions that provide it.

Privatization is part of a larger political and ideological trend of neoliberalism, which significantly changes the public's relationship with both natural resources and government services. Neoliberalism has created what Bakker (2010:715) calls "neoliberal natures." Neoliberalism is an ideology that prioritizes market values, reductions in government regulations in favor of voluntary compliance, and the privatization of goods and services, including those relating to the natural environment. This transforms people's relationship with the natural environment and the government and other institutions that manage and regulate it, redefining both the natural environment and many government services as commodities for the market (Bakker 2010). Neoliberalism refers to both the ideologies and institutions that promote the capitalist values of commodification and the market and the networks, policies, and practices which support and justify these processes (Harris 2009).

Privatization is a fundamental change in the way people think about water resources that transforms water from a public good that is managed for the benefit of the society at large, including both health and economic concerns, to a marketable good to be sold and used by individuals for profit. This results in not only water being funneled locally to those who can afford it, but in transnational corporations bottling and exporting water to wealthier countries (Barlow and Clark 2002). Jurik (2004) argues that the ideology of privatization runs so deep that it results in both direct privatization, where previously publically owned and managed institutions are turned over to private control, and a new institutional ideology of privatization where the organizational culture of nonprofit institutions are restructured to reflect the market.

The latter remakes non-profit institutions over in the image of private businesses, focusing on performance outcome assessment, cost-effectiveness, and redistributing of responsibilities increasingly to the lower chain of command.

Harris (2009) argues that often neoliberal policies are implemented as a “one size fits all” approach to water management without consideration for the different priorities of the various user groups. Neoliberal reforms, along with market values, often direct water toward productive, cash generating uses, dismantle community institutions that had traditionally managed water resources. She is particularly concerned with how neoliberal reforms internationally have cut women’s access to land and water resources they had used previously, and contends that gender needs to be incorporated more into the discussion of neoliberalism, especially the discourse on neoliberalized natures. While there is a significant amount of literature studying neoliberalism and water issues, and on water issues and gender, she argues that there needs to be a greater integration of the two. Widespread though the influence of neoliberalism is, Mustafa and Reeder (2009) point out that its hegemony is tempered by the fact that it is interpreted locally within that specific historical, social, economic, and political context.

What happened in Walkerton is intimately connected with the neoliberal discourses in Canada. Snider (2004) examines how the news about the Walkerton contamination generated resistance to neoliberal reforms, focusing on science and law as forms of power and knowledge in order to better understand the connections between resistance, transformative politics, and positive change. She argues that the timing of the Walkerton contamination so soon after the signing of the North American Trade Agreement (NAFTA) and Premier Mike Harris’s neoliberal Common Sense Revolution helped contribute to the impact it had both socially and politically, particularly for the left-leaning liberal, academic and urban professionals who had already

resisted these reforms. Prudham (2007) describes neoliberalism as systematic institutional irresponsibility in environmental governance, a result of political hostility toward any limitations being placed on the free market. The end result is regulatory gaps as seen in Walkerton that leave environments and communities vulnerable.

Private enterprises are not motivated by public interest in the same way that the state would be, but by profit. The privatization of publicly provided domestic drinking water services results in the commodification of something that had been considered part of the public good—a human right that everyone had access to now has become a commodity to be purchased (S. Whiteford and Cortez-Lara 2005; Bakker 2007). Barlow (1999) argues that this international trend has incredible social implications, as these companies, motivated by profits and not the public interest, have no motivation to extend water services to the poor, and yet water is essential for human life and wellbeing. The transformation of water from a public good into a commodity to be bought by those who can afford it further contributes to the social, political, and economic creation of scarcity as it widens the gap between users who can afford to pay and those who cannot. It results in the sale and transport of water to communities, even other countries, who have the money to pay for it (Barlow 1999; S. Whiteford and Cortez-Lara 2005; L. Whiteford 2005; Aiyer 2007). In comparison, the privatization of water supplies often results in higher costs and reduced quality of service (Barlow and Clark 2002; Mustafa and Reeder 2009). With privatization, poor residents sometimes end up paying more for their water than their wealthier neighbors because privately run municipal water suppliers have little motivation to extend tap water services to the poor (Barlow and Clark 2002). In addition, privatization of water often is accompanied by a loss in the right to access to information about water quality and standards (Bakker 2007; Barlow 1999).

The commodification of water is a fundamental change in humanity's relationship with natural water resources that goes beyond the privatization of municipal water services. Canada has historically viewed water as a public good rather than a commodity to be sold for profit. El Ayoubi and McNiven claim that one of the reasons behind the strong resistance to bulk water exports is that "many reject the idea on the basis that water is one of Canada's most precious resources and is an integral part of Canadian heritage and national identity" (2006:2). Canadians are more accepting of bottled water sales because this is still a relatively small amount of water compared to the proposed bulk water transfers and because the trade is viewed as a reciprocal one rather than a one-way relationship that sends Canadian water abroad. Still, many Canadians continue to view water as a national good rather than as something to be sold (Grant 2008). Canada is a nation built on the extraction and marketing of its natural resources, and theoretically selling water should be no different from selling other nonrenewable resources like oil or ore, but to many Canadians it is priceless and should not be subjected to market values or the private sector (El Ayoubi and McNiven 2006; Grant 2008). This transformation in Canada from a publically owned and operated resource for the public good to a commodity to be managed and sold for profit, whether as bottled water or from a privately managed municipal system is a huge change in the way Canadians relate to their drinking water. It is a shift in the way they think of water and who has access to it. Instead of it being a communal or publicly owned and managed resource, it is something that is purchased. The commodification of water means that water, or rights to withdraw water from rivers, lakes and aquifers, is sold to whoever can pay for it (Bakker 2007).

At the same time that neoliberal reforms are changing Canada's tap water, Canada's bottled water industry is growing and currently imports more water than it exports (Rahman

2007). Bottled water is, in many ways, the ultimate form of commodifying and privatizing water. Opel (1999) points out that the shift in the public's tendency to trust and invest in a private corporation's bottled water over the publically owned and operated tap water systems coincided with the popularity of neoliberal ideologies in the 1990s. Bottled water radically changes humans' relationships with water in ways that privatizing municipal water supplies does not do. Bottled water has, for example, come to be symbolic of the alienation of the consumer, as it turns the consumer away from public drinking fountains to private, individual serving bottles (Kaplan 2011; Royte 2008). Kaplan (2011) argues, however, that this is an oversimplification, for while the single serving containers do tend to isolate water consumers, office water coolers create social nexus points. Bottled water consumption, therefore, is multifaceted; it can be alienating or socially affirming, private or public, and individualistic or communal.

Bottled water also has enormous potential for capitalistic profit. Municipal water systems present a number of limits to the capital accumulation from water sales, whereas bottled water sells for many times the price of tap water (Jaffee and Newman 2013). Even after production and transportation costs are taken into consideration, bottled water has one of the highest levels of markup of goods on the market—markup that is pure profit (Royte 2008). Jaffee and Newman (2013) state that bottled water becomes disconnected from where it is extracted, with one quarter of bottled water being traded internationally. In addition, the inability of many countries to provide tap water services for their poorest communities has resulted in the growth of the bottled water market in those countries, causing the poor to pay more for their water than wealthier residents who have piped tap water. Jaffee and Newman (2013) point out that this not only reinforces existing social and economic inequalities, but

because demand helps determine prices, bottled water can be very expensive when people are the most desperate. Bottled water sales can undermine existing public tap water systems because as those systems deteriorate, people who can afford to do so turn increasingly to bottled water, leaving them less motivated to invest in the public systems, creating a self-perpetuating cycle. By piggy-backing on municipal water systems by further treating and then bottling tap water, Jaffee and Newman (2013) argue that bottled water companies simultaneously benefit from inexpensive tap water supplies while devaluing them in the eyes of the consumer.

From a human rights perspective, the privatization of previously publicly managed municipal tap water is the most critical, but the explosive growth of the bottled water industry over the last thirty years is the epitome of the shift toward commodification of water. Water is not only something to be purchased, but it is divorced of its source; it is completely stripped of its original context. Instead, it is bottled, marketed, and for sale on the shelves of the local grocery store.

Bottled water for market means that the water is extracted from a natural source, often a spring or aquifer which may or may not be renewable, packaged in disposable containers, and shipped, often out of its original watershed (Gleick 2010; Royte 2008; Chapelle 2005; Olson 1999). Depending on the source, the scale of the extraction, the distribution of the finished product, the materials used to make the bottles and whether or not the bottles are refillable or recycled, this can affect the local environment in a number of ways, from the extraction, the transportation, and disposal of the bottles (Gleick 2010).

When it comes to environmental health, bottled water becomes important depending on how the quality of the water compares to tap water, especially if people are drinking bottled water because they think it is better for their health. Bottled water is more expensive per unit

than tap water. According to the Natural Resource Defense Council's study on bottled water (Olson 1999), the bottled water costs 240 to over 10 thousand times more per gallon than tap water. As much as a third of the cost of bottled water is pure profit; the rest goes into the cost of processing, bottling, transporting, and marketing the water.

If people are willing to pay the extra money for bottled water because it tastes better, because it is a visible symbol of both health consciousness and wealth, or because it is more convenient, it is interesting from an environmental, economic, and social perspective but not an important issue when it comes to health so long as the water meets health standards. All of these are reasons people drink bottled water, though the relative importance of these factors varies from study to study (see Krieger 1999; Carlton 1999; Denny 1996; Yankelovich Partners 2000; Olson 1999; among others). Many people, however, are turning to bottled water as a safer alternative to tap water (Gleick 2010; Olson 1999; Yankelovich Partners 2000; Denny 1996; Krieger 1999; Ingham County Health Department 2000; among others).

These trends have resulted in redefining areas of responsibility for providing, regulating, and monitoring water quality, with responsibility being shifted predominantly from public institutions to, increasingly, private ones. At the same time, there is a corresponding shift in the way humans interact with the natural environment, from something communally shared for the common good to a commodity that is sold on the market. These changes not only affect the relationships that shape the political ecology of health, but also the trust underlying these relationships on which people base their decisions.

The trend of privatizing municipal water supplies and selling privately marketed bottled water means that people's trust relationships are increasingly shifting from a relationship with a public institution to a private one, one that is based on the market and profit rather than service to

the public good. This alters the trust relationship not only because people are now interacting, either directly or indirectly, with a whole new set of players but because the basis of the relationship with a private institution is fundamentally different from one with a public one. It is based on different principles and different assumptions. While the commodification of water does not change who or what people are interacting with in the way that privatization does, it transforms the underlying assumptions on which people base trust.

The Political Ecology of Trust

The political ecology of health is a theoretical perspective that contextualizes health problems within a larger political, economic, and environmental context (Ferguson 1997; Baer 1996; Harper 2004; B. King 2010). This framework allows scholars to analyze how personal experience and environmental, social, political, and economic factors influence drinking water decisions. It combines the analysis of how unequal power relationships affect the individual's vulnerability with an analysis of how the political economy and human health shape, and are shaped by, the environment. Water quality, consumption, and related health issues are therefore linked, at different levels, to a myriad of other social, cultural, political, economic, and environmental factors. The political ecology of health approach ties these influences together, showing how they shape the meaning of health and illness, power, access to essential resources, and public health.

This framework is one embedded in relationships that shape decisions that affect the local environment, impacting local health, and trust and distrust are important components of those relationships. Trust informs people's decisions relative to the other actors they interact with, helping reinforce or weaken bonds. Trust is the orientation to the other. It is not the decisions people make but it informs the decisions. It is the belief that the other person is reliable, or not,

which enables people to act in situations of vulnerability and uncertainty in ways that protect their best interests to the best of their ability. In Figure 5, the boxes represent the various components that shape an individual's health. Trust is not in the boxes, but rather is in the relationship arrows that connect them. The citizen trusts market forces to ensure quality goods and so votes in favor of free trade. The politician trusts voluntary compliance to enforce environmental standards, and so cuts funding. The individual trusts that natural water sources are safer than human processed ones and so turns to bottled spring water, or better yet water directly from the natural spring. Trust in each case is not the act itself (voting, cutting funds, drinking spring water) but rather is the orientation that helps the person decide what course of action to take. Trust, risk assessment, and desired outcomes are all factors in people's decision making process (as seen in Figure 2). Thus, not only do political policies, the economy, the environment, and the individual all interact at the level of the political economy, but this relationship influences trust relationships between the different arms of the pyramid. If individuals trusted all the people, institutions, and environment in the pyramid, the pyramid itself would not be particularly useful. More likely, people trust some of those but not others, and they trust them in different ways in different situations. However, because these various elements in a political ecology framework interact, people's trust in a person or agency on one of those limbs of the pyramids can affect their trust relationships with people or agencies on the others.

Fidelity, competence, honesty and transparency, accountability, and global trust all contribute to whether or not an individual trusts a specific organization, individual, or resource. As the diagram suggests, the institutions, individuals, and natural resources do not exist in isolation; they each influence the other. Trust in one, therefore, can spill over to indirectly influence trust in another. For example, a person may not trust a private company to care more

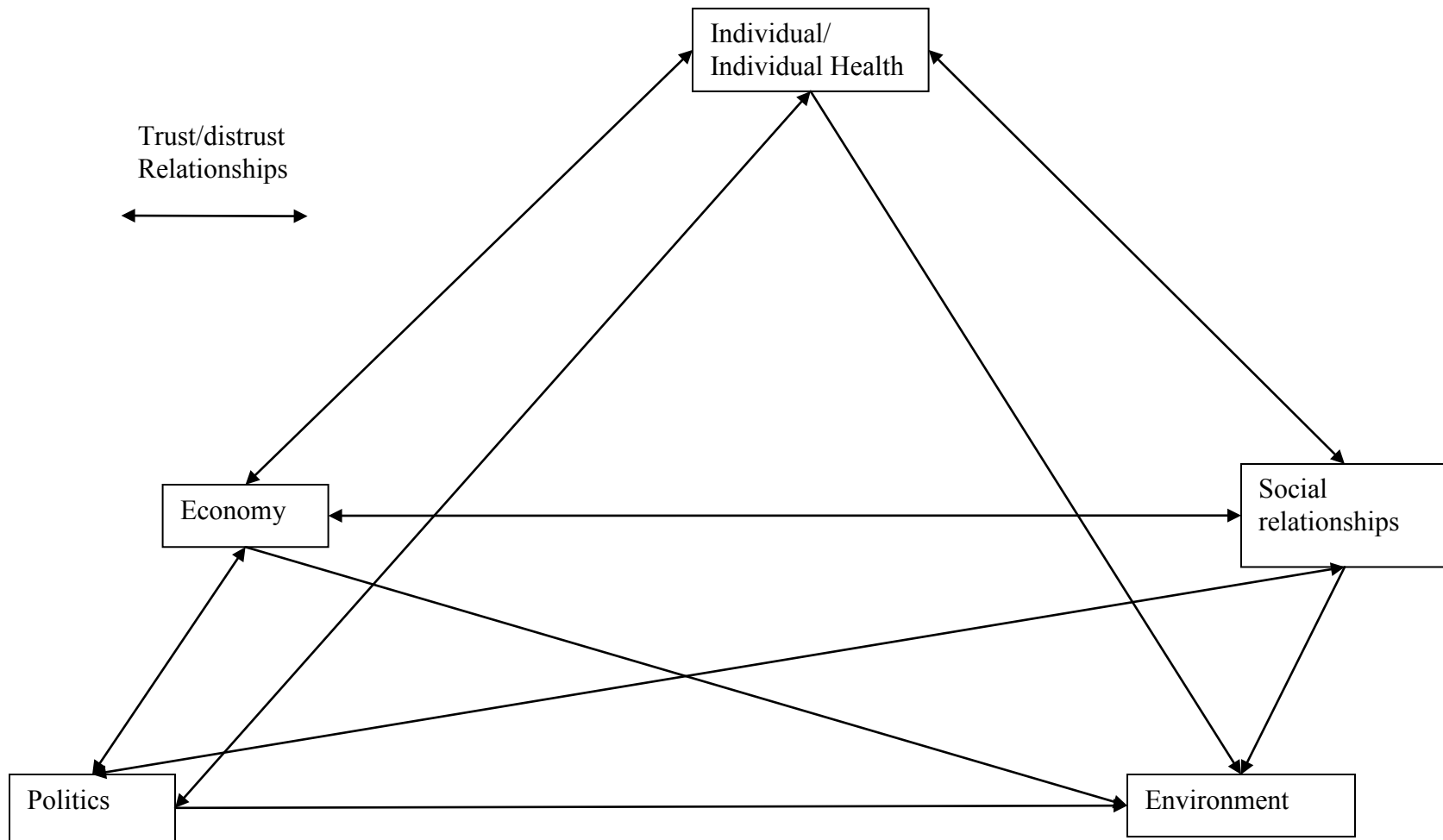


Figure 5: Political ecology of trust. The five boxes represent the major factors that shape an individual and the individuals' health; trust lies not in the boxes themselves but rather the arrows connecting them

about the quality of their product than they do about profit, but the same person may trust that the government regulations are effective in ensuring that the product is safe and is as advertised. Thus while they do not trust the private company, they may still take the risk and buy its products anyway. If the individual trusts, on the other hand, untreated water over water that had been processed by human institutions, they are more likely to choose to bottle their own water from natural sources.

People's choices are embedded in the context of relationships that include the environment and human institutions. Natural processes, such as underground water movement, filtration of water from surface sources, and minerals and pathogens in the water can affect the water quality. Natural geologic formations may limit the resources available, protect water sources or make them more vulnerable to contamination, or affect the sustainability of water use by how easily the water resource is recharged. All of these factors affect well placement and whether or not water use is restricted by local, provincial, or federal governments. This affects municipal decisions of where to get their water supply from and how it needs to be treated, and finances and natural resources may make it difficult for them to meet the communities need for safe water, even with the best intentions and qualifications. Thus these relationships are complex and best understood from the extended social, political, economic, and ecological contexts.

Not surprisingly, many of the residents I talked to expressed considerable distrust, anger, and even hostility toward the local and provincial governments, both for failing to prevent the contamination in the first place and for how they handled the aftermath. Many acknowledged that Walkerton probably now has the safest water in Canada, but are still uncomfortable drinking the water because they do not feel safe, though few test their water independently. Some are ambivalent, even wary, toward private water providers as well, including bottled water, while

others trust their bottled water without question. More surprisingly, given that the contamination originally entered the system at a vulnerable well and was distributed to homes and businesses untreated, many of the people interviewed trust natural, unprocessed water over both their tap water and commercially bottled water. Spring water is still associated with pure, safe water. I will explore these relationships in more depth in Chapters 4 and 5.

A great many changes were made in the regulations and sanctions for public drinking water, to which I have received ambivalent responses. Many of these changes have created real economic hardships for towns to implement—a particular concern that has residents in nearby towns angry, as they have to implement the changes without the resources to do so. At the same time, the Inquiry demonstrated that many of the existing regulations regarding standards for water quality and testing were adequate, but the contamination happened because they had consistently, over many years, not been met, and that the government had failed to enforce them (Perkel 2002; Hrudey and Hrudey 2004; O'Connor 2002a). While Walkerton's water contamination made it clear that changes were required in how the regulations were enforced and in the training and licensing of municipal water operators, the new, stiffer guidelines were as much for making the people feel safe as they were necessary. The government of Ontario, faced with charges of inadequately protecting the health of its citizens, had to demonstrate that they took the water crisis seriously. Therefore the changes seemed to be made as much for political capital as they were based on environmental science.

The water contamination in 2000 has had a rippling effect as relationships have altered, sometimes dramatically, between political parties, government institutions, industry and agriculture, and the local environments. Underlying those changes has been changes in trust,

sometimes radical, sometimes subtle, that influence the orientation local residents have toward their government, to business, to each other, and to the environment in which they live.

For many of the people I talked to, though, trust boils down to something quite simple— if the changes in regulation and monitoring had really addressed the problem, they would not continue to hear reports of boiled water advisories and stories of contaminated public water supplies in the news. Just a few months before I left Walkerton, there was an announcement on the news that Paisley, a small town not that far from Walkerton, had issued a boiled water advisory, nor was it the first time this town has had a problem, I was told, since Walkerton's *E. coli* contamination in 2000. If the water were truly safe, according to the residents, boiled water advisories would not be necessary.

CHAPTER 3

WATER AND WALKERTON

In May 2000, the town of Walkerton, Ontario made the international news when a particularly toxic strain of *E. coli*, O157:H7, in their tap water killed seven people and left thousands more sick, many with long term health problems. When asked how the *E. coli* contamination affected her family, Molly, 39, responded:

How didn't it? We were all sick... all four of us. My husband the least. My children and I to this day are still back and forth to doctors. On and off medications. So basically they finished school they couldn't go back once they were sick in May. That was the end of school for them, that year. So they missed two months of school at the end of the year. It affected every aspect that year. Physically, emotionally, socially... We were asked not to attend gatherings because we were sick. And people at the time didn't know how it was transferred. It was just a whole, uh... It was bizarre. People were panicking because again they couldn't understand through lack of knowledge of how it was transferred. So, yeah, it affected every aspect of our life. And I ended up having to live with my parents because I was sick and couldn't take care of the children on my own. [Molly, 39]

In the months that followed the contamination, it disrupted nearly every aspect of life in the town: schools were shut down, businesses closed, social functions were canceled, and at home they either had to use bottled or boiled water for bathing, cleaning, and consumption (for a timeline of critical events in the Walkerton *E. coli* contamination, see Appendix A). The issue quickly became highly political as various players at both the local and provincial level blamed everyone: the Biesthenals who owned the farm where the *E. coli* originated, the local water management for not following proper operational procedures, the New Democratic Party (NDP), the Conservative Party, and Premier Mike Harris for changes in the provincial water and environmental policies, and the privatization of drinking water testing in Canada.

The events that happened in 2000 had a lasting effect on the town of Walkerton, but they also opened a window for a widespread re-evaluation of how people can better protect their

health and municipal water supplies. Because of the publicity, the event increased public awareness of drinking water issues beyond Canada. As a result of what happened in Walkerton, Ontario re-evaluated their policies. It also resulted in other governments, NGOs, and scholars re-examining water safety, water regulations, and water policies in order to prevent anything like this happening again anywhere (Johns 2008; Davies and Mazumder 2003; Johns and Sproule-Jones 2009; and Shrubsole and Draper 2007), including an extensive analysis looking for commonalities in instances of water contamination of municipal water supplies in the First World (Hrudey and Hrudey 2004; interviews).

In addition, it changed the local residents' view of their own drinking water and the organizations that manage, regulate, and distribute their drinking water. All of the residents I spoke with said that they had trusted their water implicitly before 2000. The only concern they had about their water prior to 2000 was that the water was hard, and that had been fixed when the new well, Well 5, had been drilled for a softer water source. They had been confident that the institutions that processed, distributed, and regulated their drinking water knew what they were doing and had everything under control. That all changed in 2000, when the residents realized the institutions were not infallible and that their water was more vulnerable than they had ever imagined. For many Walkerton residents, the events of 2000 led them not only to continue to question their tap water supply, but *all* human-processed water, leaving uncertainty and doubt where once they had confidence. This increased their perceptions of the relative severity of the risk, their vulnerability, and uncertainty, weakening trust in their relationships with the institutions that manage, test, and regulate their drinking water. The process of rebuilding trust not only in their water supply but in the institutions responsible has been a very slow, uncertain

process. Understanding this shift in their relationship with both their water and the institutions responsible for it can help other organizations create more effective policies.

Escherichia coli

E. coli is one of the bacteria that lives naturally in human intestines, and most varieties of *E. coli* are harmless. A few can cause illnesses such as urinary tract infections, diarrhea, and even respiratory illnesses such as pneumonia. Some of the more toxic strains, however, produce a powerful and deadly toxin, the shiga toxin, of which the O157:H7 strain is the most common in the United States (CDC 2012).

First discovered in 1982 when 47 people came down with a new, acute stomach disorder (CDC 2012), *E. coli*, O157:H7 is a particularly dangerous pathogen that resulted when a virus, a type of bacteriophage, merged its DNA with the DNA of a more benign strain of *E. coli*. Because this strain of *E. coli* is commonly found in beef, it is often referred to as “the hamburger disease” but it can be transmitted in a wide range of media. Since it was first discovered, *E. coli* O157:H7 has been spread not only via contaminated beef but also unpasteurized cider, spinach, water, unpasteurized milk, and a number of other foods that were not cooked thoroughly before consumption. Heat and chlorine kill it, but otherwise it can survive for a long time outside the body in a large number of conditions, and it takes relatively small quantities to infect a person (Hrudey and Hrudey 2004; Ontario 2006). While it can take as many as 100 million of other infectious bacteria to make a person ill, it takes as little as ten *E. coli* bacteria to make someone seriously ill (Burke 2001).

Once it enters a human body, the bacterium cements itself to the intestine and releases its toxin into the bloodstream. *E. coli* typically results in acute, bloody diarrhea, vomiting, and intense abdominal cramps (O’Connor 2002a; Burke 2001; Perkel 2002).

We all really got sick, like first we got very bad cramps, almost like Avian flu or something, but the diarrhea we couldn't stop, and the cramp pains were so bad that I ended up going to Emerg, and at Emerg there were so many, at least 300 there and they sent us all home and told us to drink more water. [Claire, 47]

One person described the cramps as being so bad that they were worse than being in labor (personal communication). The diarrhea and cramps are debilitating and humiliating, but the real danger from *E. coli* O157:H7 is a relatively rare complication known as hemolytic uremic syndrome (HUS), found particularly among children under the age of five and in the elderly. According to the US Centers for Disease Control and Prevention (CDC 2012), about 8% of the people who have bloody diarrhea badly enough to be hospitalized for it develop HUS. In HUS, the toxin released by the *E. coli* causes red blood cells to break down and leads to kidney failure. HUS is life threatening; with intensive care in a hospital, it has a fatality rate of 3%-5%. Patients often require blood transfusions and kidney dialysis (Hrudey and Hrudey 2004; O'Connor 2002a; Ontario 2006; Perkel 2002).

While the majority of the people who get infected with *E. coli* survive, they can still suffer from long term complications. A small number of people who suffer HUS have immediate, life-long consequences, such as blindness, paralysis, persistent kidney failure, and may require removal of part of their bowel. Many HUS victims have milder kidney abnormalities years later (CDC 2012; O'Connor 2002a). Many of the victims I spoke to in Walkerton also suffer from Irritable Bowel Syndrome (IBS) resulting from the scarring caused by the bacteria. Other complications include renal disease, diabetes, and reactive arthritis (interviews; Clark et al. 2008).

Canada, Walkerton, and Water

Many people—scholars, politicians, the media and Canadian citizens—view Canada as a nation gifted with vast quantities of fresh water (Sprague 2007; Biro 2007; Grant 2008).

“Canada is said to be one of the largest single holders of freshwater resources in the world, possessing at least 7 percent of the total renewable supply” (Grant 2008:156). Some statistics cite Canada as controlling one fifth of the world’s fresh water supply, but these statistics are misleading. Canada has abundant water resources, but the majority of these are locked up in lakes, aquifers, and ice, which is not the same thing as a renewable supply. Renewable water supplies fall in the form of yearly precipitation, recharge lakes and aquifers, flow down rivers and eventually run into the sea. This is the water that gets replaced every year; if people use more than that, they will eventually drain the lakes and aquifers (Sprague 2007). Canada’s renewable water supply is comparable to the United States, but with the added complication that 85% of the Canadian population lives in the Southern portion of the country, while 60% of the water flows through the north (Sprague 2007; De Loe and Kreutzwiser 2007). Yet because Canadians believe in the abundance of their water supplies, they are among the highest per capital water users in the world—second after only the United States (Sprague 2007; Johns et al. 2008; Shrubsole and Draper 2007) and pay among the lowest prices for water in the world. 50% of the water users in Canada—including residents in Walkerton before the *E. coli* contamination—do not have metered water, so they pay the same amount regardless of how much water they use (Johns et al. 2008; interviews).

This misleading perception of an abundance of water in Canada, Sprague warns, has “probably encouraged a cavalier attitude toward the use and manipulation of water within Canada and reduced the concern for environmental side effects” (2007:29-30). However, ecological consequences have already been felt. Watersheds across Canada have experienced drops in water tables, lower water levels in lakes and rivers, and degraded water quality, particularly in the Great Lakes, Okanagan Valley, South Saskatchewan River Basin, and the

Assiniboine-Red River Basin regions. Natural ecologies are not alone in feeling the strain of Canada's water use; one in four of Canadian municipalities experienced water shortages due to increases in consumption, drought, or infrastructure constraints between 1994 and 1999 (Shrubsole and Draper 2007).

As mentioned earlier, the sale of water, especially bulk water, is particularly controversial in Canada. On the one side of this battle are those Canadians who view Canada's water supply as a fundamental part of their national heritage. For them, it is an essential resource necessary for life itself and as such should be preserved intact. Other Canadians who oppose the sale of water do so on the grounds of its negative environmental impact. These Canadians are not only concerned about the effect water sales and export would have on animals and plants but also important economic resources such as fisheries. Other Canadians who oppose selling water base their arguments on the belief that Canada should not trade in raw natural goods but rather in finished products. Those who favor commodifying and marketing water are entrepreneurs and politicians who see the potential for wealth from this abundant resource (El Ayoubi and McNiven 2006; Grant 2008). These debates are grounded in ideologies of what the environment is and how humans should relate to it, but have real economic and political consequences.

Much of this came to a head during the free trade talks for the Canada-US Free Trade Agreement and, ultimately, the North American Free Trade Agreement (NAFTA). Up until then, the only limitation on the federal government's policies in regards to water exports was the division of power between the federal government and the provinces in the constitution. Even after NAFTA was signed, the controversy continued because while water was slated under the goods scheduled for trade liberalization, many questioned NAFTA's jurisdiction over the trade of water because there was disagreement over whether water could be accurately described as a

“good.” As a result, the governments of Mexico, the United States, and Canada clarified in 1993 that water is not covered under the provisions of NAFTA—and so each government is free to govern it as it sees fit—unless that water enters the market as a commodity. In other words, water in its natural state of rivers, lakes, and ground water is not governed under NAFTA, but once it is bottled in containers, it becomes subject to NAFTA (Johns and Rasmussen 2008).

In Canada, water policies are a complex blend of federal and provincial policies; while water resources themselves are not listed in the constitution, water uses are. The federal government is responsible for international boundaries, trade, fisheries, and shipping (Valiante 2002; El Ayoubi and McNiven 2006). All Canadian bottled water is governed by the Canadian Food and Drug Act, regardless of where it goes—including export to other countries. Canada currently allows, through permits and licenses, over 30 billion liters of water to be extracted for bottling every year (Johns et al. 2008). First Nations reserves, in addition, are also under federal mandate, including their water treatment and distribution infrastructure (McCullough and Farahbakhsh 2012; Smith et al. 2006). In general, everything else falls under the jurisdiction of the provincial governments, including bodies of water and regulating pollution and water use (Valiante 2002; El Ayoubi and McNiven 2006). The federal government, however, has the power to pass laws for the “Peace, Order and Good Government of Canada” (Canadian Constitution sec. 91), which the courts have translated to being the authority to act in situations of national concern and in the case of national emergencies (Valiante 2002), including instances when water issues are regarded as national issues.

While in Canada the province is largely responsible for regulating water use, water pollution, and establishing drinking water standards (Valiante 2002), the municipalities have been largely responsible for managing the local extraction, treatment, and distribution of water to

homes (Smith et al. 2006; Johns et al. 2008). Some Canadians get their water from private wells. Small municipal systems such as Walkerton's face additional challenges because they need to meet the same safety standards and regulations as larger municipalities without the advantages in economies of scale and the access to resources available to larger urban areas. They have limited tax bases and a small number of consumers, which limits the financial resources available for infrastructure and personnel. Many small towns only have one or two people responsible for the entire system, and often these employees are also responsible for other municipal utilities such as hydro (term for electricity in Canada, short for hydro-electricity since most of Canada's power comes from dams) and waste-water treatment (Hrudey and Hrudey 2004; Davies and Mazumber 2003).

Frequently, the trend toward shifting management of municipal water supplies from the municipality to a private company is grounded in the argument that private businesses are more likely than smaller municipalities to have the experience and resources needed to do the job well and are motivated because of profit to do so effectively. However, when smaller communities cooperate with each other, thereby taking advantage of the economies of scale, it can result in lower transaction costs for the public than if they privatized (Bel and Fageda 2006). Opponents argue that privatization also decreases accountability, increases threats to public health, and results in a decline in service levels and water quality. Private water management companies operate under private sector norms, resulting in the commercialization of what had been a public good. It frequently results in price increases, with consumers paying the full value of the good rather than a subsidized rate, and the implementation of meters so that users are charged based on quantity of water used rather than their ability to pay (Bakker 2007). While private management of public water supplies can be beneficial, Bakker (2007) argues that it depends on

the municipalities having strong oversight mechanisms, well-structured incentives, and clear performance targets for the management companies. Without these mechanisms, performance is often poor and the mechanisms for addressing concerns are weak. Unfortunately, Canadian municipalities are on their own when it comes to negotiating contracts with private water management companies, and the companies have a lot more experience in tailoring contracts to serve their interests (Bakker 2007).

First Nation reserves face additional hurdles to providing safe drinking water to their communities than other small systems have. They must also overcome difficulties in distribution and the location of their communities. First Nation communities tend to be small, spread out, and in the far north of Canada, making it difficult and expensive to get water to their residences (Smith et al. 2006; Patrick 2011). In the far north, where water pipes would generate too much heat and melt the permafrost and potentially result in the ground caving in, water is trucked to residences or, in some cases, piped above ground in heated, insulated pipes (Johns et al. 2008). It is hard for First Nations to protect their drinking water when they have little control over the land and water use around their small reserves, and high value resource extraction industries tend to win out over First Nations' drinking water concerns for the government institutions that regulate water and land use (Patrick 2011). First Nations also struggle with policies and institutional priorities that are not compatible with their location or way of life (McCullough and Farahbakhsh 2012).

Today it is impossible to discuss water issues, let alone drinking water issues, in Canada without talking about Walkerton, Ontario; nearly every source discussing Canadian water issues mentions this small town in Ontario (e.g.: Hrudehy and Hrudehy 2004; Johns et al. 2008; Davies and Mazumder 2003; Johns and Sproule-Jones 2009; Johns 2009; and Shrubsole and Draper

2007). For a small rural community, it has had a huge impact on water policy not only in Ontario but throughout Canada. The water contamination less than a year later in North Battleford, Saskatchewan, solidified these changes (Johns 2008). North Battleford was particularly shocking to Canadians, especially so soon after the media coverage of Walkerton, because it revealed similar problems with monitoring, operational practices, and oversight of drinking water. North Battleford proved that what happened in Walkerton had not resulted in safer practices and safeguards (Hrudey and Hrudey 2004).

Walkerton

Walkerton is an English-speaking, rural community of approximately five thousand people in Bruce County, about 175 km west of Toronto (Hrudey and Hrudey 2004). In the mid-1800s, the region had rich lumber resources, and the government encouraged pioneers to settle in the area. Joseph Walker arrived in 1850 and opened his sawmill on the Saugeen River in 1852, around which the town of Walkerton developed. In 1865, Walkerton was declared the Bruce County seat, even though it was not yet officially a town. In 1871, parliament finally declared it officially a town with a special act of parliament (Perkel 2002).

Even though Walkerton continues to serve as the county seat, it no longer exists politically as a separate municipality. On January 1, 1999, Walkerton merged with Brant and Greenock townships to create a new, three-ward municipality named Brockton as part of a provincial policy for amalgamation designed to streamline rural governments. The idea behind the policy was to make the rural governments more efficient by requiring fewer elected officials, but the change was not a popular one in Walkerton. Part of the tension stems from the fact that Walkerton had a history of territorial conflicts with Brant Township in particular, as Brant Township surrounded Walkerton and any expansion of the town infringed on the township. Part

of the tension, though, stemmed from the fact that under the new system Walkerton only received one third representation on the new council despite the fact that it contains half of the new municipality's population, and for the first time Walkerton had a mayor who did not live in the town itself (Perkel 2002).

While politically absorbed into the larger Brockton, locals still think of the community as Walkerton, and residents identify themselves as being from Walkerton. Coming from the south by Highway 9, a small sign welcomes visitors to Brockton. Immediately after that sign, a second small sign welcomes them to Walkerton. Shortly beyond those signs, visitors are greeted by another, larger sign welcoming the visitor to Walkerton, which is surrounded by flowers in the summer (see Figure 17 in Appendix B).

A working class community, a combination of industry and agriculture provide the basis for Walkerton's economy. The region produces mostly beef cattle, but also pigs, sheep, dairy cattle, and chickens. Local industries include manufacturing, such as Energizer batteries, transformers, furniture and cabinetry, printing, lumber, construction, agriculture, and many others. See Figures 6, 7, and 8, for information regarding local industry and occupation (Perkel 2002; Statistics Canada 2006; Municipality of Brockton 2004).

According to the 2006 census, Brockton has a population of 9,641 and is a predominantly Caucasian, English-speaking community. Only 1.9% of the population is an ethnic minority, and 1.1% of the population is a "visible minority." 98.7% of the population speaks English primarily at home as their first language (Statistics Canada 2006; see Figures 9 and 10 for a more detailed breakdown). Walkerton has a fairly even distribution of people by age (see Figure 11). The majority of adults are married, with relatively twice as many adults married as those who had

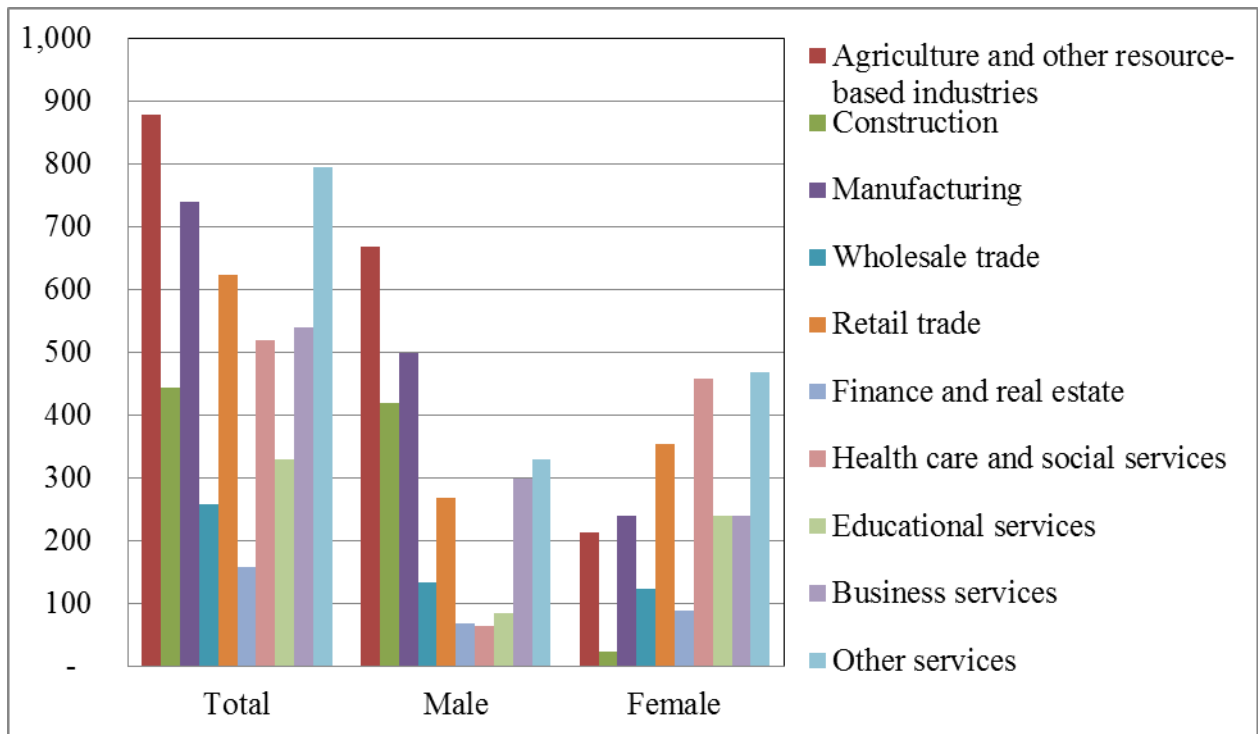


Figure 6: Brockton industry. This graph shows the breakdown of employment in the various industries in Brockton, with a total population of 5300, males 2840, and females 2460 (Statistics Canada 2006).

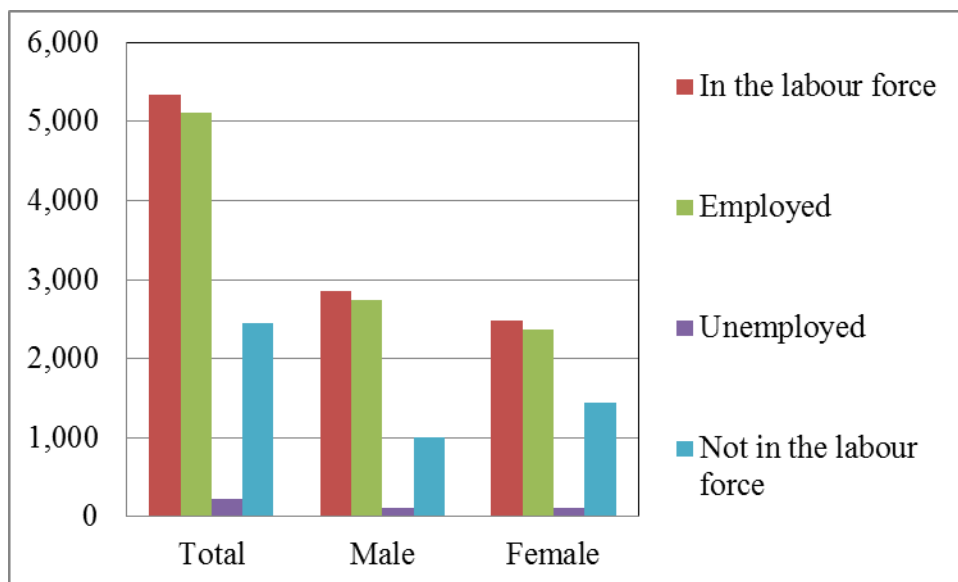


Figure 7: Brockton employment. This graph shows the breakdown of levels of employment in Brockton for the population 15 years and older, with a total population of 7740, males 3860, and females 3925 (Statistics Canada 2006).

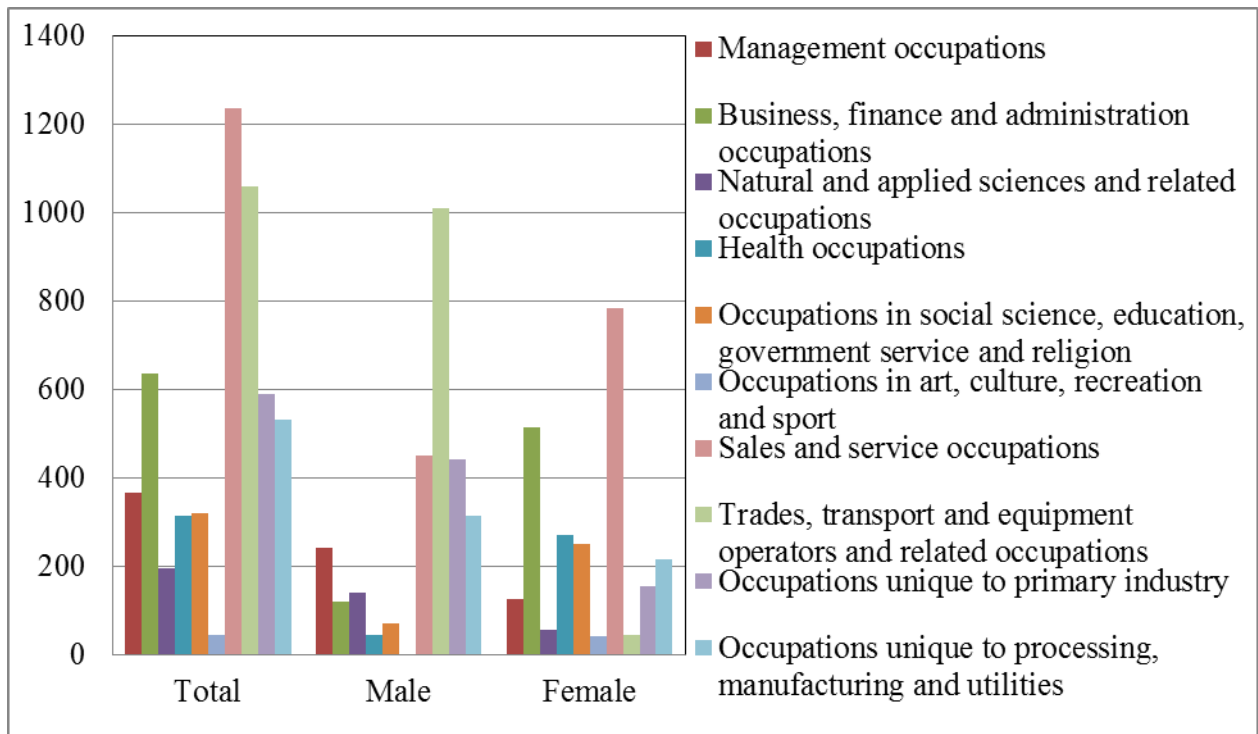


Figure 8: Brockton occupation. *This graph shows the breakdown by occupations of people living in Brockton, ages 15 and older, with a total population of 5300, males 2840, and females 2460 (Statistics Canada 2006).*

never married. Divorces and separations are relatively uncommon (see Figure 12; Statistics Canada 2006).

More residents in Walkerton have not completed high school than the Canadian national average. Those who have completed high school are more likely to get some form of trade certification than to go to get a university degree. In Canada, colleges tend to be career oriented and focus on applied educations and trade certifications, while universities are more academically focused and can grant degrees. This education trend in Walkerton is particularly true for those aged 35-44, though the trend continues in the 20-34 age group. Interestingly, for those older than 45, they are more likely to complete high school and to pursue some form of post-secondary training, whether a trade school or university, than the national average. Except for those over 45, women are more likely than men to finish high school and to receive a

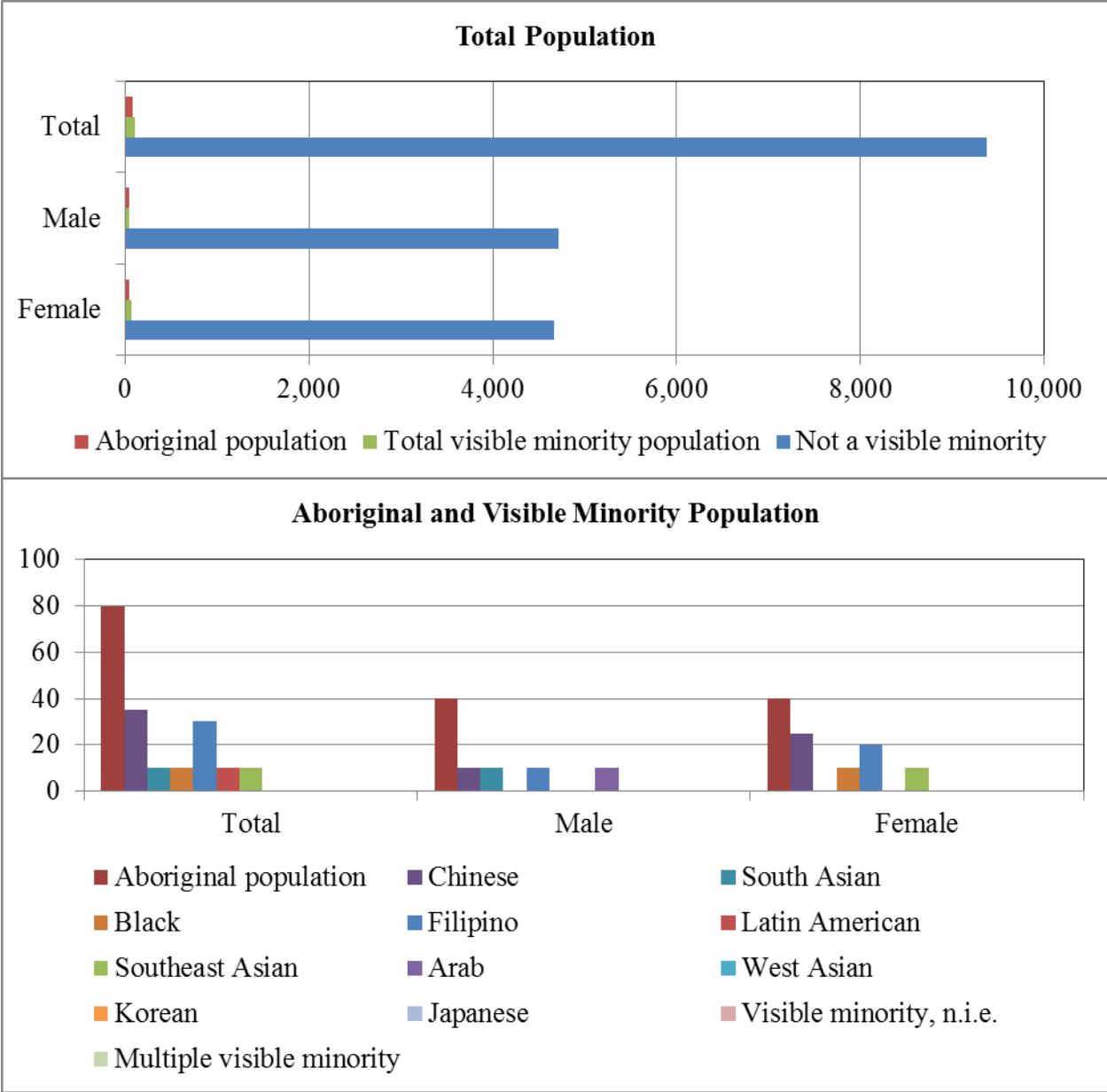


Figure 9: Brockton ethnicity. This graph shows the breakdown of the population of Brockton by ethnicity, with a total population of 9840, males 4745, and females 4735. Brockton is predominantly white; because the population consists only of a small group of minorities, they have been separated out into a separate graph in order to be easier to read (Statistics Canada 2006).

university diploma, while men are more likely to receive a college diploma or a trade certificate.

Over 45, women are still more likely to finish high school, but are more likely to pursue a

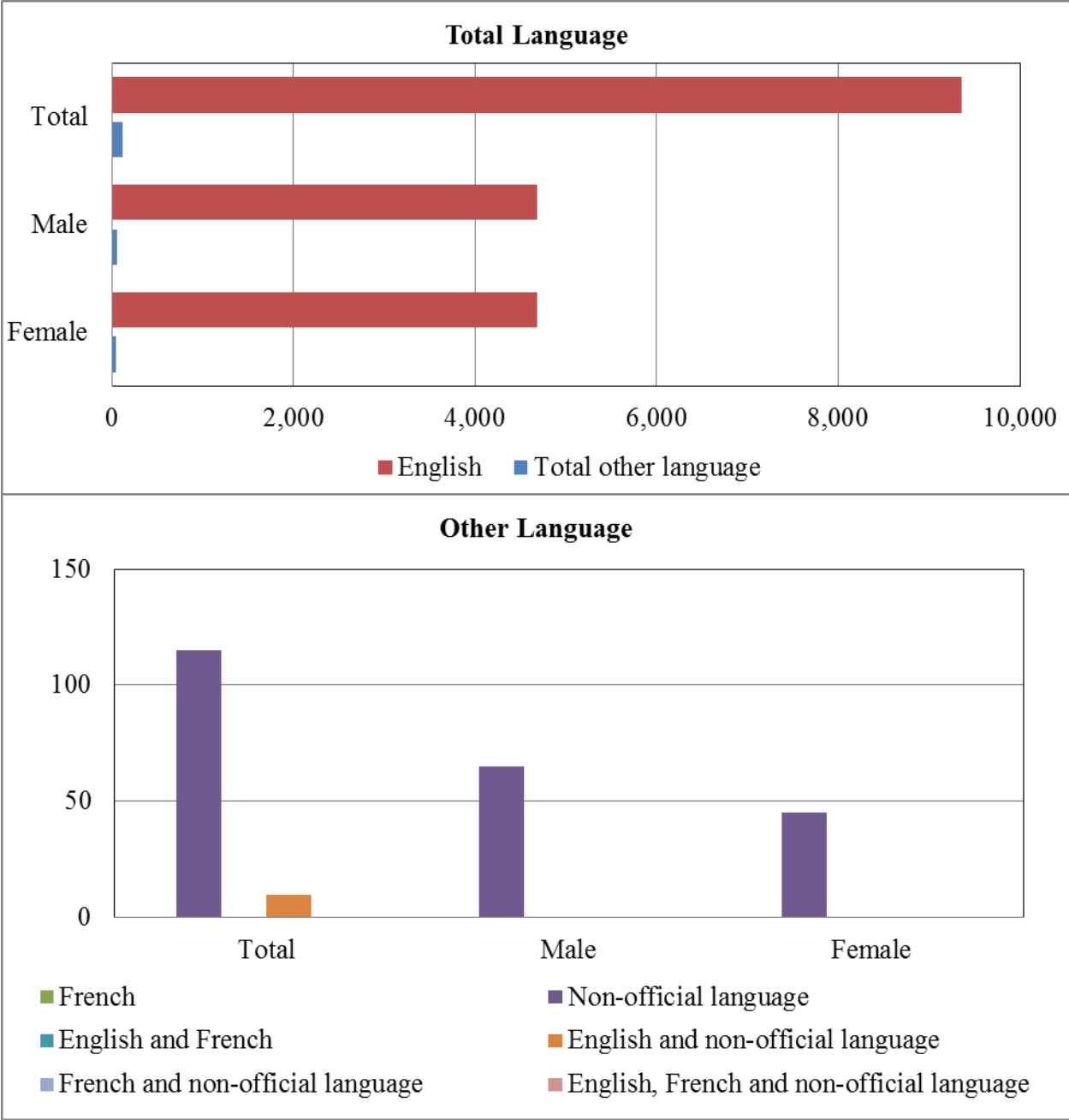


Figure 10: Primary languages spoken at home in Brockton. This graph shows the breakdown of Brockton population by primary languages spoken at home, with total population 9480, males 4745, and females 4730. Brockton is predominantly an English-speaking community; because only a small number speak anything other than English, those have been separated out in the separate graph in order to be easier to read (Statistics Canada 2006).

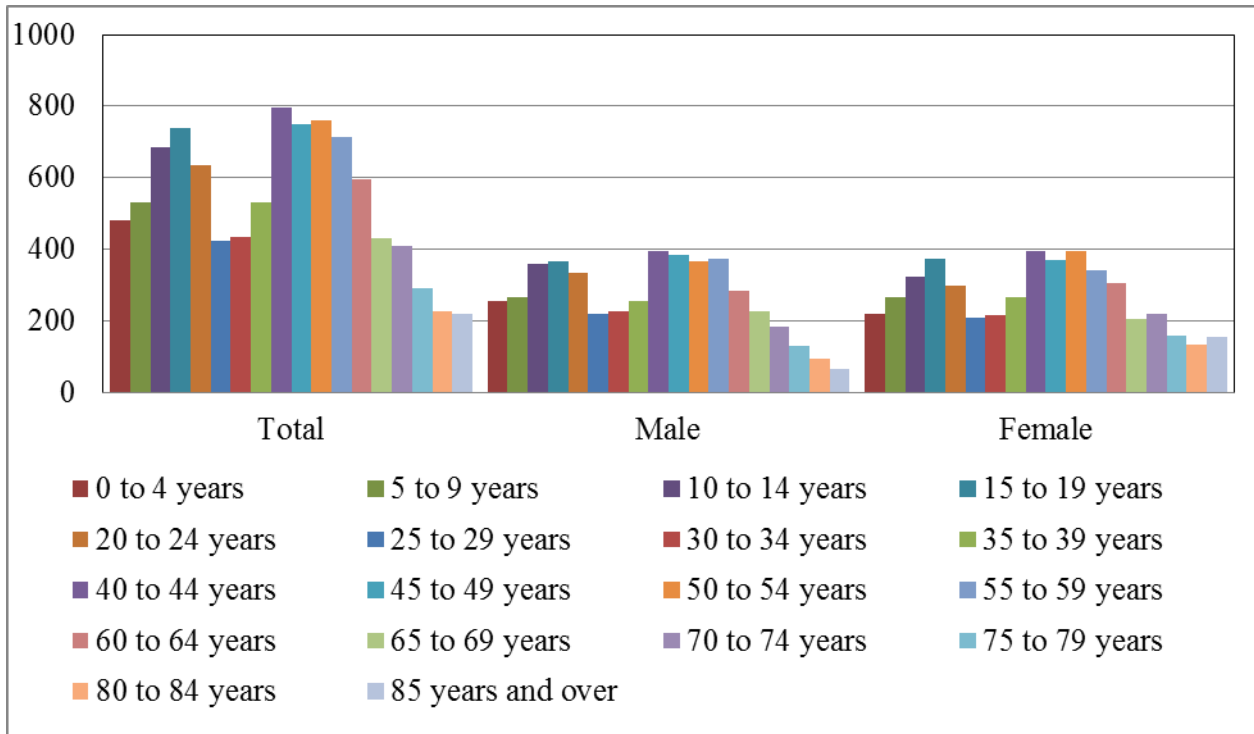


Figure 11: Brockton age groups. This graph shows the breakdown of the Brockton population by age, with a total population of 9640, males 4795, and females 4850 (Statistics Canada 2006).

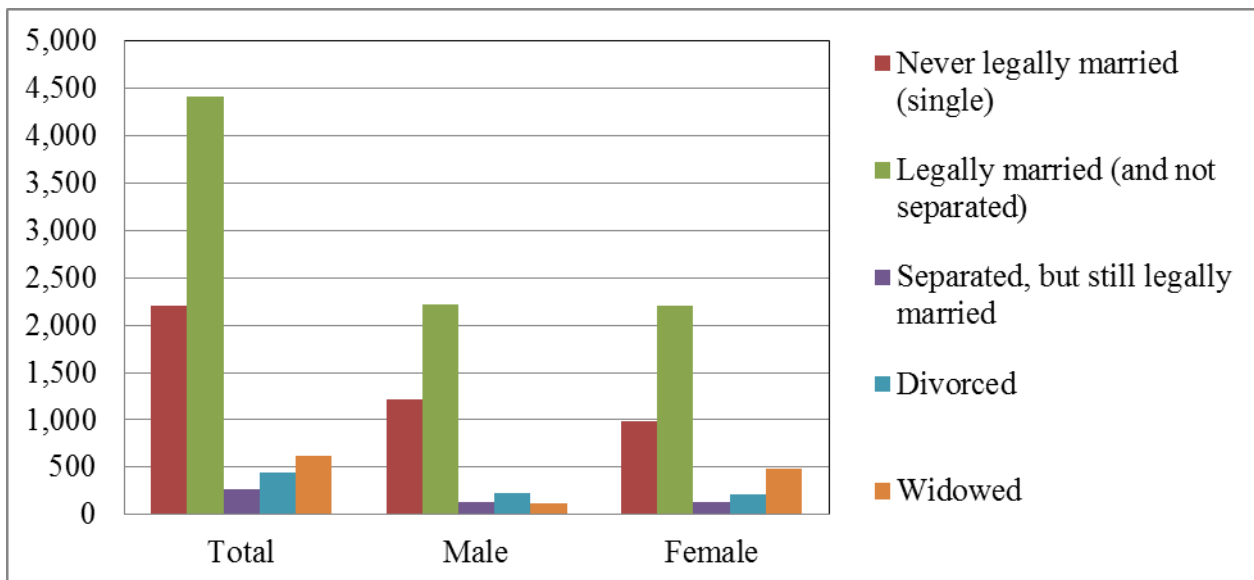


Figure 12: Brockton marital status. This graph shows the breakdown of the population of Brockton over the age of 15 by marital status, with total population 7945, males 3910, and females 4035 (Statistics Canada 2006).

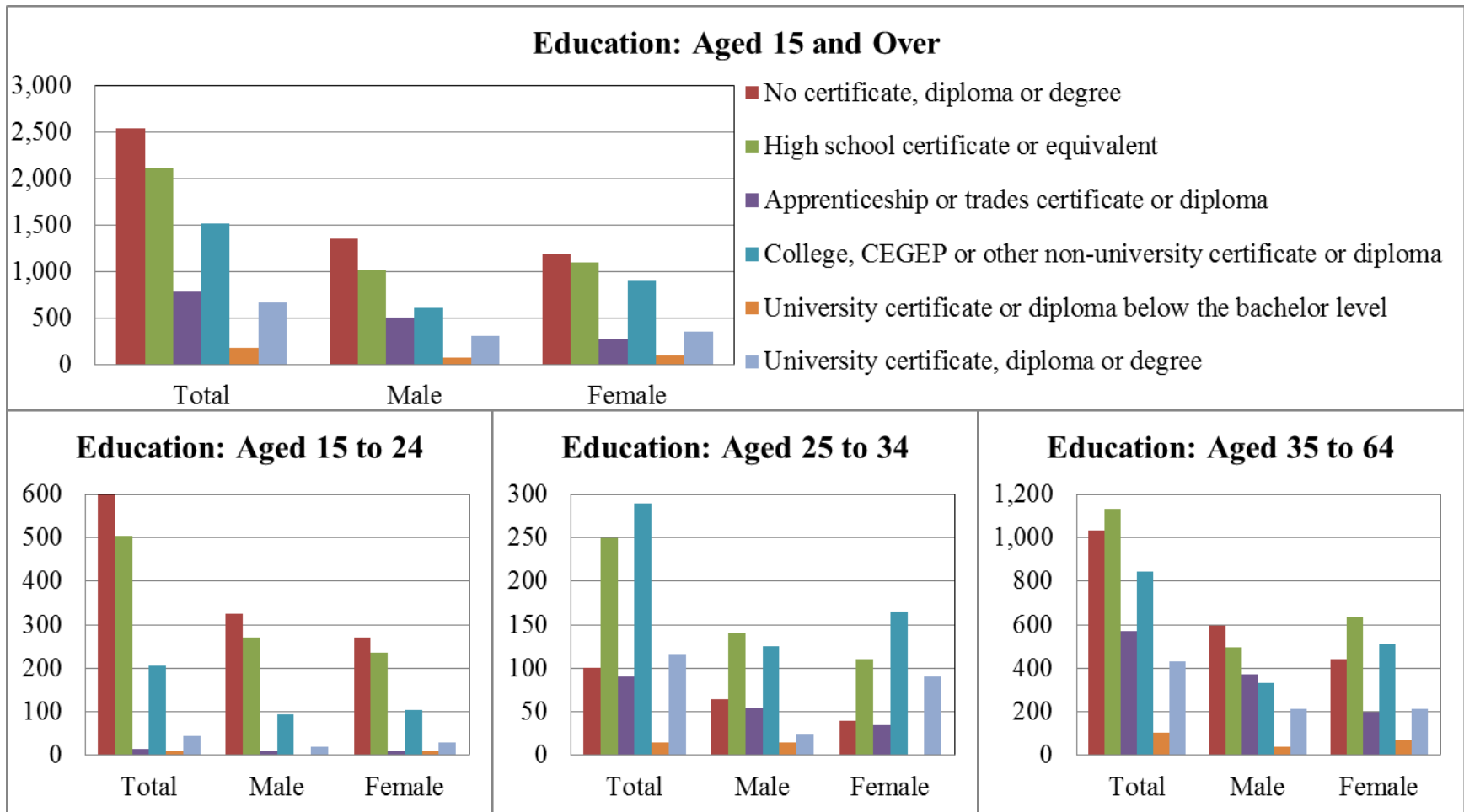


Figure 13: Brockton education levels. These graphs show the breakdown of Brockton's education levels by age group with total population of 7785, males 3860, and females 3920. For ages 15-24, the total population is 1370, males 725 and females 645. For ages 25-34, the total population is 860, males 425, and females 435. For ages 35-64, the total population is 4120, males 2050, and females 2070 (Statistics Canada 2006).

college degree. See Figure 13 for a breakdown of education by age and gender (Statistics Canada 2006).

Walkerton is a community with deep roots. Many of the families go back generations, though after the water contamination many people moved away (interviews; personal communications). The articles and books about Walkerton describe the community as friendly; what they are not as likely to mention is that it is a very tight knit community. One of my friends there told me that she is not really considered being “from” Walkerton because her parents, let alone her grandparents, were not from Walkerton; this also came up in multiple interviews. On the one hand, this meant that many residents had a strong local support network already in place when hit with the *E. coli* contamination in May 2000 and the problems that followed. On the other hand, it made the events in 2000 all the more painful for residents, as the mayor, water managers, and victims were all well known locally.

Deadly Water: The *E. coli* Contamination of May 2000

For many of the people I spoke with, the Walkerton *E. coli* story began with exceptionally heavy rains on May 12, 2000, the Friday before Mother’s day. It had rained for days, a heavy downpour that caused the Saugeem River to flood the downtown and triggered a series of events that are still being felt in the town today. The rains washed contaminants, including the pathogens *Escherichia coli*, *Campylobacter jejuni*, and *Campylobacter coli* into Well 5, one of the key sources of the municipality’s drinking water, on or shortly after May 12 (CBC 2002b; Perkel 2002; Clifford et al. 2003). The chlorinator for Well 7 was not working properly and had been taken completely off line, and while chlorinators on the other wells were working, the chlorine levels were not properly monitored, allowing the untreated water to enter the system (CBC 2002b; Perkel 2002; O’Connor 2002a; Hruday and Hruday 2004).

When on May 17th the water samples failed to pass the water quality tests, Frank, the water foreman since 1988, and his brother, Stan Koebel, the general manager of the Public Utility Commission (PUC) since 1988, concealed this from the Bruce-Grey-Owen Sound health unit and others. While they were accused of lying to protect themselves from taking responsibility (MOE 2000; CBC 2002a, 2002b; Perkel 2002; O'Connor 2002a), Stan Koebel claimed during the Inquiry that originally he had thought that the failed water test had been for a section of new water pipes that had not yet been hooked up to the main system, and that the water for most of the town was fine. He also said that in the past, when they had used a different laboratory, if the water failed the test the Ministry of the Environment (MOE) officials were notified and they contacted him; he assumed that since they had not this time, there was nothing wrong. Whether he was lying or just misunderstood the test results, he and his family continued to drink the water for days after the initial notice of the water contamination, suggesting that he really did not believe that the water was dangerous. After people started getting sick, he did feel the need to add extra chlorine to the water and repeatedly flushing the fire hydrants, which suggests that he became worried about something being wrong even as he continued to deny any problems with the water (Perkel 2002; O'Connor 2002a).

In the meantime, people were falling dangerously ill and even dying from *E. coli* O157:H7. Within days of the holiday weekend, Walkerton's small, local hospital was swamped with hundreds of people suffering from acute diarrhea. Not realizing yet that it was *E. coli*, the hospital sent many home with antidiarrheal medications, which aggravates *E. coli* and causes it to release more toxins into the bloodstream. Also, since dehydration is the main threat in most cases of severe diarrhea, and not knowing that it was the water that was contaminated, many

were told to go home and drink lots of water (Hrudey and Hrudey 2004; Perkel 2002; interviews; personal communications).

In the last two weeks of May, over seven hundred people had gone to the Walkerton hospital emergency room, double the normal traffic, with the worst day being May 24 when 113 people had arrived. In the end, an estimated 23 hundred became ill, 1,286 of whom lived in the town itself while most of the rest lived in the area, many working or attending school in Walkerton. These estimates were probably low, however, as people were advised to stay home unless critically ill, and only those who were officially diagnosed with *E. coli* were counted in the statistics (Perkel 2002; personal communications; interviews).

The Ministry of Health quickly realized that Walkerton was dealing with an *E. coli* epidemic. The Ministry gave residents information about how to handle the illness (Perkel 2002), but many felt that information about what was happening was not made widely enough available. Residents described mass confusion in the days following the water contamination, with word spreading mostly by word of mouth (interviews). Ill residents were encouraged to stay home unless their condition was critical, as the number of critically ill patients overwhelmed the hospital. The hospital could not cope with the numbers of people needing treatment, especially when many of the local nurses, doctors, and staff were getting sick themselves. Nurses and doctors came in from outside of Walkerton to help. The most critically ill were flown by helicopter to larger, urban hospitals in London and Owen Sound (Perkel 2002).

Mary Rose Raymond was the first person to die. Mary Rose was a two and half year old girl from Hanover, a nearby town in Grey County, who had come to Walkerton with her family for Mother's Day on May 14 and had a glass of water at a local restaurant. By May 18, she was running a fever and suffering from diarrhea, and by May 20, she had been admitted into the

hospital at Owen Sound. She passed away on May 23 (Perkel 2002; Burke 2001). Other deaths soon followed until, in the end, 65 people were hospitalized, 27 developed the dangerous HUS, and seven people died from the disease (Hrudey and Hrudey 2004). Just as the statistics on the numbers of the ill might be low, however, some residents argued that the number of estimated deaths was also low, as only people who died directly of *E. coli* were included. The statistics did not include people who died of complications of the illness, including secondary illnesses that took advantage of the body's weakened condition (interviews). People in Walkerton came to dread the sound of the helicopters taking off from the local hospital, knowing each time they heard the sound that another person they likely knew personally was being rushed to an intensive care unit and might not survive (interviews).

[The water contamination] raised the a great deal of anxiety and concern for the people within our community... The major thing that I would say is that we saw our fellow citizens going through terrible times. We knew some of the people, obviously, that died. We knew many of the people that were suffering because they were infected. We were well aware that a lot of our kids, our children, were infected, hospitalized. There was a great deal of concern, real worry, as to what was going to happen. Probably the most horrific thing, maybe not the most horrific thing... But one of the most frightening things was the nighttime and late evening, the helicopters coming in and out of the community to the hospital taking people over to London, and other major metropolitan areas for advanced medical treatment. Didn't like the sound of helicopters. [Alexander, 66]

Meanwhile, the Ministry of Health was searching for the source of the *E. coli*.

They investigated restaurants, foods, and other potential sources of the contamination but could not find a pattern among the people who were sick. When asked if the water might be the source, Stan Koebel denied it publicly, insisting that there was nothing wrong with the water, and so the Public Health Unit lost days trying to trace the illness down to another cause (Perkel 2002; Burke 2001; O'Connor 2002a).

Not knowing what else could be the common source for the disease, Dave Patterson and Dr. Murray McGuigge of the Bruce-Grey Owen Sound Health Unit issued the boiled water

advisory on May 21. This was over the Victoria Day holiday (MOE 2000; Perkel 2002; O'Connor 2002a), roughly nine days after the contamination entered the system. The water advisory warned residents to boil the water for at least five minutes before consuming it, bathing in it, or using it to clean (Canada Online 2000). If the PUC had informed the proper authorities of the water contamination when it was first discovered, the water advisory would have gone out no later than May 19, and as many as four hundred illnesses could have been prevented (CBC 2002a, 2002b). Dave Patterson also had the water tested independently. On May 23, he received the results, confirming the presence of *E. coli* bacteria in Walkerton's tap water (Perkel 2002; Hrudey and Hrudey 2004).

Because of the holiday, word did not get out quickly. Unfortunately, the water advisory was only announced on the local AM and FM stations and further announcements door to door or on the television were not pursued. Many residents learned about the water advisory by word of mouth, sometimes days after the initial advisory. A survey afterwards found that only 34% of the residents heard the radio announcement and only 44%—less than half—knew the boiled water advisory had been issued (Hrudey and Hrudey 2004; Perkel 2002). Many residents feel that the warning was both too late and insufficient, and that the government should have made a more concerted effort to make sure that everyone knew about the water problem immediately and followed it up with information about how to deal with the *E. coli*.

I did not feel that the municipal authorities e.g. the mayor and/or the council at that point in time gave immediate and complete knowledge to the citizenry. They kept us away from the information. They should not have done that, they should have immediately disclosed what was happening, and utilizing, or saying it was very difficult to get the information out because it was—the immediate dealings with that was a very long holiday weekend in May... I think that was a cop-out. You could have run the bells in Victoria Jubilee hall; you could have had people with loud speakers going up and down, you could have had people knocking on doors and telling people that we have a water situation. [Alexander, 66]

And one of the failures of the municipality is that they never used a public address systems or in any way of notifying people that there was a water problem. So one of the first things that should have been done was that there should have been a leaflet pinned to everybody's door that basically said boil water, don't drink the water. Boil the water, and instructions on how to do that. Because one of the big problems with this is that this was occurring on that weekend, certainly the Saturday, or Sunday that most people were becoming aware of it. But there were still people by the Wednesday and Thursday of the following that weekend, that hadn't even heard about it yet. [Andrea 46]

A number of residents thought that further measures, such as knocking on doors or driving through town repeating the announcement on a speaker would have helped (personal communications; interviews; Perkel 2002). The Inquiry concluded later that the Health Unit should not be blamed for not issuing the boiled water advisory earlier, but unfortunately the warnings were not distributed widely enough as some of the affected residents did not learn of the advisory (CBC 2002a; MOE 2000; O'Connor 2002a).

Residents remember that, in those first few weeks, no one seemed to know what was really going on. Even after they learned that it was *E. coli*, many people did not know how it was transmitted or what they needed to do to prevent it (interviews; personal communications). Eventually, the Owen Sound Health Unit distributed pamphlets and held a town meeting discussing safety precautions, but the information was slow in coming and, in the meantime, people were terrified. Because they did not understand how *E. coli* was transmitted, people were afraid to help sick neighbors. They were worried that they would become ill as a result of casual contact with neighbors, friends, and coworkers. Social events such as children's sporting events were canceled because people from neighboring communities did not want their children to get *E. coli*. Walkerton residents who visited restaurants and other businesses in nearby towns were told to go home (CBC 2000; Perkel 2002; Burke 2001; interviews; personal communications).

The epidemic radically changed everyday life in the rural community. Businesses and schools closed for months. For the six months of the boiled water advisory, residents either had

to use bottled water for things like bathing, drinking, and brushing their teeth, or the water had to be boiled, cooled, and stored. People from all over the world donated supplies to help the residents in Walkerton, including bottled water, bleach, and probiotics, which helped considerably, especially in the early days of the contamination (Burke 2001; interviews). The Culligan Company reimbursed community residents who purchased a water cooler for their home. Even with bottled water, however, everyday tasks such as cleaning, washing dishes, cooking, bathing, and doing laundry were difficult and time consuming. The government flushed the tap water system with so much bleach that it ruined people's clothing in the laundry. One person interviewed mentioned a friend who got terrible chemical burns because of some of the chemicals used to sanitize the system. Limited water supplies for bathing and laundry made it even harder for those who were tending sick family members with violent bouts of bloody diarrhea (Perkel 2002; interviews; personal communications).

Initially, the only bottled water provided to the community came from private donations. As the bottled water advisory continued the government started distributing water to the town's residents at the community sports arena, where residents could pick up the heavy coolers of water for their family's use. Area volunteer groups helped distribute water at the water center. While the free water helped the community considerably, residents still had to come and get their water. For some, finding the time was a problem, especially those who had sick family members to take care of, and the 19L (about five gallons) bottles of water were heavy and awkward to carry. Residents helped elderly neighbors, who could not carry the water themselves (personal communications; interviews).

At the same time, the media descended on the town. Representatives from all of the major media companies, including the Cable News Network (CNN) and the Canadian

Broadcasting Corporation (CBC), mobbed residents when they went to the post office to collect their mail and sought others in their homes. They photographed children being rushed away to the helicopters and the funerals of those that died. Some Walkerton residents used the media to make their concerns public and put pressure on politicians, learning how to make their point in a good sound bite (interviews). Many I spoke to hated it and felt harassed by the press. Some even took to hiding from the media in their homes, refusing to answer the doors and staying away from windows in order to be left alone (interviews).

The Government Response: The Walkerton Inquiry

While the provincial government officially expressed sorrow and sympathy for what had happened in Walkerton, at first Premier Mike Harris resisted opening a formal government inquiry into the contamination. Instead, he proposed an informal investigation by his government and blamed the *E. coli* on policy changes implemented by the previous New Democratic Party (NDP) government (Perkel 2002; Burke 2001). With pressure from the Concerned Walkerton Citizens (CWC), the Opposition insisted that a full judicial inquiry was necessary because the informal legislative investigation would have been dominated by the Conservative government and led by a conservative party member who had been forced to resign his cabinet position because of a scandal involving tax evasion (Perkel 2002). Many Walkerton citizens became increasingly disillusioned and dissatisfied with the way government was handling the crisis, feeling that the Harris government was more interested in deflecting blame than in finding out what had actually happened (Perkel 2002; interviews).

A group, made up mostly by local school teachers, came together and organized a local grassroots organization, the CWC, after Premier Harris visited Walkerton but did not answer their questions.

Concerned Walkerton Citizens was what they were called. It was just a group, a grassroots group; we started two days after this. We had a meeting, anybody was invited, the whole town. And I went to the meeting. There was a lot of people at the meeting, ton of people at the first meeting, and then a lot of people opted out because they thought it was controversial. I don't see anything controversial about it. And then the label started and they said it was left-wing and was nothing to do with left-wing, and uh, oh this is a left-wing group trying to get money from the government. And this is crap-- just trying to help people. [Jack, 52]

Over time this group grew to approximately 10% of the town's population and helped pressure the government for answers, demanding that a formal inquiry be conducted. The CWC played a critical role in pressuring the government to hold the formal inquiry, hiring expert witnesses to represent the town people's interests, and as a result influenced some of the changes that came about after the Inquiry (Perkel 2002; Burke 2001; interviews).

Eventually Premiere Mike Harris gave in and a formal inquiry, headed by Justice Dennis O'Connor, took place in Walkerton. Justice O'Connor put together a team of three lawyers, who first met in June 2000. Together, they chose to use investigators from the federal Royal Canadian Mounted Police to assist them in the investigation (Perkel 2002; Burke 2001). For the duration of the Inquiry, Justice O'Connor lived in the town, even when the boiled water advisory was still in effect. He invited local people to tell their stories, both in private and before the public Inquiry, as well as hearing the expert witnesses on such topics as geology, water management, and *E. coli* (personal communications; interviews).

He was probably the one individual who came into the community and really, really listened to the people... He collected the stories, he found what was really hurting and bothering people and he listened most importantly to their concerns and so many people felt previous to that that the different levels of government. [Andrea, 46]

Still, many felt that the government was not acting in the community's best interest, despite Justice O'Connor and the Inquiry. The CWC felt that the expert witnesses paid for by the province were there to defend the interests of the politicians rather than the public, and so the

CWC elicited the assistance of the environmental organization, the Canadian Environmental Law Association (CELA), to help them organize, find funding to hire independent experts, and to use the media to convey their own message (Burke 2001; interviews).

The Inquiry was not the only legal action that arose as a result of the *E. coli* contamination. Dr. Murray McQuigge, the medical officer of health for the Bruce-Grey county region, reported that genetic mapping of the *E. coli* showed that the strain of bacteria that infected people in and around Walkerton had originated at the Biesenthal cattle farm. Dr. Biesenthal, who also worked as a local veterinary doctor, had spread manure as fertilizer on a field of corn near the well in April, and *E. coli* from this manure somehow made its way into the well water. Stan Koebel and the PUC sued the farmers, Dr. Dave Biesenthal and his wife, Carolyn Biesenthal, for \$350 million in a class action suit (interviews; Perkel 2002).

While Well 5 was in a low lying region with farms uphill, there is a slight rise between the well and the farm immediately uphill of it. Dr. Biesenthal had previously implemented excellent environmental protection strategies to prevent manure run off from contaminating local water sources. He had not only done everything that he was legally required to, he had done more than that. After a long and highly political court battle, the courts ruled in his favor, and the Biesenthals were absolved of all responsibility (Perkel 2002; interviews). The Inquiry also found Dr. Biesenthal innocent of the contamination, as he had done everything that he should have to prevent the water from becoming contaminated (O'Connor 2002a). A number of residents feel that the media continued to condemn him, even after the court and Inquiry absolved him. They said as a result that many people outside of Walkerton hold him responsible for the contamination (interviews). Most likely, the *E. coli* had filtered through the limestone into the well, which had lost its integrity (O'Connor 2002a).

Retired lawyer Terry Halpin instigated a class action suit against the municipality, the PUC, Stan Koebel, the health unit, and the provincial government for \$350 million that would ultimately involve many members of the community, six law firms, and dozens of lawyers (Perkel 2002; Burke 2001). The class action suit took ten years to settle and was finally resolved in 2010 (Rueter Scargall Bennett LLP 2011). Ultimately, many Walkerton citizens decided to settle with the province rather than participate in the class action suit. Many of the people I interviewed described the process of applying for reimbursement as stressful and even humiliating, however. Others I spoke to had opted out of reimbursement entirely, sometimes because they were unclear about whether they qualified, some because they felt that others deserved the money more, and others because they were too embarrassed (personal communications; interviews).

Setting the Stage for the Water Contamination

A judicial inquiry is a public trial, but it is different from a civil or criminal trial in that its job is to find facts rather than to administer punishment or determine blame. The Walkerton Inquiry had two goals. First, it aimed to understand why exactly the tragedy had happened. People all over the country, but especially in Walkerton, wanted to know how such an event could ever happen, and the Inquiry investigation looked for answers. In the end, over two dozen search warrants were issued, and as many as one million government documents were acquired from eight government ministries, the cabinet, and the Premier's offices (Perkel 2002; O'Connor 2002a). The government and the CWC both hired expert witnesses including a wide range of scientists and medical professionals. Community members, politicians, and government employees were interviewed, many giving public testimony (Perkel 2002; Burke 2001; interviews).

The second goal was to lay out recommendations for policy changes to prevent another town from suffering a similar contamination. Both the government and the community hoped that by understanding what exactly had gone wrong and had allowed the *E. coli* and *C. jejuni* to enter the Walkerton drinking water, the Inquiry could recommend policy changes that would prevent a similar occurrence. The Inquiry therefore closely examined not only the existing water regulation policies, but also how changes in not only written policies and budget but also political culture influenced the effectiveness of enforcement of these policies (O'Connor 2002b). In the end, Hrudehy and Hrudehy (2004) argued that the problem was not the lack of legislation, but rather that the existing regulations were not adequately enforced. Nonetheless, the Inquiry resulted in a number of policy recommendations for policy makers, including a discussion on the issues facing First Nations despite the fact that the First Nation reserves fall under the jurisdiction of the federal, not provincial, government (O'Connor 2002b).

Walkerton has a history of hard water. Water that is hard has a high level of minerals, particularly calcium, iron, and manganese. Hard water prevents soap from lathering well, tastes bad, and clogs up pipes and equipment (Rahman 2007). Local industrial leaders, especially, had pressured the town to provide softer water, causing the town to put in more shallow wells back in the 1970s, but these wells were not well planned (Perkel 2002; O'Connor 2002a). The PUC drilled Well 5 in 1978 without prior approval from the MOE in a low lying area near the springs that had once supplied the town with drinking water. Surrounded by farmlands, in the spring the wellhead is actually underwater, as the area turns into a small pond where ducks swim (personal communication; see Figure 18 in Appendix B for a picture of the capped wellhead). It is a shallow well—the limestone aquifer is protected by only 2.5 meters of bedrock, with the water coming mostly from two veins, one 5.5 meters down and the other 6.5 meters (Perkel 2002;

O'Connor 2002a). Much of the land around Walkerton consists of karst topography, which means that the bedrock is a limestone platform and highly porous, acting more like a sponge than a barrier, so water in limestone aquifers is highly vulnerable to contamination (O'Connor 2002a; Perkel 2002).

MOE officials informed the town that in order for the well to be approved, it would need to enact a watershed protection program to protect the well and to adequately chlorinate and test the water on regular basis. No measures were implemented to protect the watershed, however, and because of town boundaries at the time, the farmers up slope of the well did not even know that the well was there until after the *E. coli* contamination (interviews; Perkel 2002).

In 1978, shortly after Well 5 was built, a hydrological report, referred to as “the Wilson report” (O'Connor 2002a:279), raised concerns about the vulnerability of the well. As a result of the Wilson report, representatives from the MOE, the PUC, and the town of Walkerton held a meeting where it was agreed that the PUC would install a chlorinator and maintain a minimum total chlorine residual of 0.5 mg/L after 15 minutes of contact before the water reached the first consumer. Unfortunately, the PUC installed the chlorinator but failed to monitor and maintain proper chlorine levels. While the PUC records show daily reports of the chlorine at least the 0.5 mg/L minimum, the operators routinely filled out the records without actually measuring the chlorine levels. Despite this, the MOE approved the well but told Walkerton it should only be used as a temporary measure until a more protected source was secured. The MOE, however, never set a time limit on how long the well could be in use (Perkel 2002; O'Connor 2002a). Over time, the lure of the soft drinking water proved too strong and Well 5 became a permanent contributor to the town's drinking water (Perkel 2002). In addition, the well was not properly inspected to verify its integrity. The PUC “inspected” the well by periodically glancing down it,

but this did not reveal that the well shaft had lost its integrity, allowing plumes of sediment and other potential contaminants into the well deeper down (O'Connor 2002a; interviews).

Proper chlorination would have prevented the outbreak in Walkerton, but the PUC failed to monitor the daily levels of chlorine as they should have (CBC 2002b; Perkel 2002; O'Connor 2002a). Stan Koebel, the manager, and his brother, Frank Koebel, the foreman, were inadequately trained for their positions. While water treatment plant operators were, by 2000, required to have passed a certification program, the Koebel brothers had been grandfathered into their positions without this training (Perkel 2002; O'Connor 2002a). In addition, the MOE had failed to verify if Stan Koebel, who only had a grade 11 education, had the minimum grade 12 education required.

The problems in water management at the PUC were legion. Stan Koebel was pressured by townfolk who did not like the taste of the chlorine to reduce chlorine levels. Frank Koebel in particular did not understand why it was so important to chlorinate the water and monitor it carefully; he felt that if his father, who had held the job before him, had not needed chlorine, he did not really need it either (Perkel 2002; O'Connor 2002a). In addition, the water supply was only a small part of their job, which included providing electricity for the town, and time and manpower had to be shared between all their responsibilities (Perkel 2002; O'Connor 2002a).

Both of the Koebel brothers received their certifications through the Voluntary Grandparenting provision Regulation 435/93 that was introduced in 1987, without their qualifications, skills, or knowledge ever being evaluated. Not only had Stan Koebel never read section 4.1.2 of the Ontario Drinking Water Objectives (ODWO) which outlined Ontario's policies for safe drinking water, he did not even know what *E. coli* was, let alone how it could affect people if it got into their drinking water. In addition, he had never read the section of the

Bulletin 65-W-4 on the Chlorination of Potable Water Supplies, commonly referred to as the Chlorine Bulletin, which provides important information on minimal chlorine residuals, chlorine monitoring, and chlorination equipment. He did not know why it was important to maintain a residual of 0.5 mg/L, nor did he know the difference between total chlorine and free chlorine. The result was that Stan Koebel did not have the knowledge needed for monitoring safe chlorine levels and understanding reports from the testing labs and the MOE. Frank Koebel was no better informed. Having minimal training and only a Grade 12 education, he had never read the ODWO sections covering microbiological and chemical testing nor the measures that were to be implemented in case of adverse test results. He was not familiar with the Chlorine Bulletin either, nor did he know that the presence of *E. coli* was an indication that the water was not safe. He sincerely believed that Walkerton's water did not actually need chlorine because the water was safe, even though the water had actually had a history of bacterial contamination (Hrudey and Hrudey 2004; O'Connor 2002a).

Neither of the brothers had ever received the kind of training required to maintain their licenses. Under the Ontario Water Resources Act of 1993, operators employed at water works facilities were required to receive at least 40 hours of training every year. Stan Koebel "interpreted the meaning of 'training' in this regulation unreasonably broadly" (O'Connor 2002a:186), logging as training things like marketing courses and following an MOE investigator around on an inspection. Not only were these inadequate for training him in safety procedures, but even then he got nowhere near the 40 hours required. Frank Koebel was unaware of the Ontario Regulation 435/93, which addresses water operator licenses, the classification of waterworks facilities, and the mandatory training requirements. He testified that he knew that he had had opportunities to attend training courses on the operation of a waterworks

but that he had never taken advantage of this because he was too busy with the hydro and water systems and he could not be away for any length of time (O'Connor 2002a).

In the Inquiry, investigators found that the PUC had:

engaged in a host of improper operating practices, including misstating the locations at which samples for microbiological testing were taken, operating wells without chlorination, making false entries in daily operating sheets, failing to measure chlorine residuals daily, failing to adequately chlorinate the water, and submitting false annual reports to the MOE. [O'Connor 2002a:16]

Instead of properly monitoring chlorine levels, the brothers simply wrote down the same number as the day before. Stan Koebel knew that these practices were improper and violated MOE guidelines and, according to Justice O'Connor, "there is no excuse for any of these practices" (2002a:16). Stan Koebel had believed that the water was safe and so had not realized that he was putting people at risk by not following the proper procedures. Both he and his brother routinely drank the water untreated and continued to drink the water after it had been contaminated with *E. coli* in 2000 (O'Connor 2002a).

After water testing was privatized in 1996 (O'Connor 2002a), the PUC had continued to work with the same facility for a while, and it continued to operate under the same basic assumptions it had used when it was publicly managed. On May 1, 2000, the PUC switched agencies for testing their water samples, but they had problems with the samples not meeting the labeling requirements of the new agency. In addition, the water was supposed to be sampled from different places around town, but, because of time constraints and a lack of understanding, most of the samples were taken from the same tap at the PUC itself (Perkel 2002; O'Connor 2002a). The operators knew that their practices did not meet the MOE guidelines and directives (O'Connor 2002a) but did not understand the possible consequences of their neglect (O'Connor 2002a; Perkel 2002). Walkerton was a disaster just waiting to happen.

Even after the well was approved, the provincial government should have been able to stop the neglect of the local water managed by the PUC by enforcing legislation, but Walkerton fell through institutional cracks. Premier Mike Harris blamed the previous NDP government for relaxing water standards when they privatized water and for budget cuts that weakened the MOE (CBC 2000; Perkel 2002). However, while the NDP, operating during a recession, had made substantial cuts, including cutting the MOE budget by approximately 30% (\$210 million) between 1992 and 1995-96, Harris' own Conservative government, elected in 1995, had slashed the MOE's budget and staff further in order to address a budget deficit of \$10 billion and in order to make it easier for business and industry to operate. These budget cuts reduced the MOE budget in 1996-97 by an additional 40%, and then another 20% in 1997-98, resulting in a net loss of \$200.8 million for the MOE over a two year period. The result was a dramatic reduction in prosecutions, convictions, and fines, and the number of inspections of public water works declined (O'Connor 2002a; Perkel 2002).

Instead of enforcing the regulations, the government predominantly relied on voluntary compliance to ensure that water regulations were met (O'Connor 2002a; Perkel 2002). Budget reductions led, among other things, to privatizing the laboratory testing for water quality in 1996. Unfortunately, the government did not at the same time require these private facilities to report failed test results to the MOE and the local public health official as well as the water management facility, despite recommendations that such guidelines be created. Had they done so, the boiled water advisory would have been issued much earlier and many of the deaths and illnesses may have been prevented (Perkel 2002; CBC 2002b; O'Connor 2002a).

Critics of the policy changes pointed out that the budget cuts dramatically reduced the MOE's effectiveness in identifying and fixing problems, but even with these changes the

government inspections should still have detected the improper treatment and monitoring practices at the Walkerton water facility. The Ministry had submitted an inspection report in 1998 to the Public Utility Commissioners expressing concerns about the water quality at the PUC, but the commissioners failed to correct the problem (CBC 2002b; O'Connor 2002a; Perkel 2002). Thus the improper practices continued until the catastrophic rains in May 2000 washed contaminated material into the town's water supply.

The Political Response: Water Policy and Political Discourse After Walkerton

Walkerton and North Battleford (Johns and Sproule-Jones 2009) pushed provincial governments to re-evaluate their water policies, including the way tap water was regulated and making watershed protection a greater priority (Johns and Sproule-Jones 2009; Shrubsole and Draper 2007). When news of Walkerton hit, it changed the political discourse about the neoliberal reforms and what role the government should have in protecting drinking water. Walkerton focused the critique of the neoliberal agenda, especially for people who had already been resisting it, and government policies were re-evaluated and revised accordingly (Prudham 2007; Snider 2004). One of the important roles of the Inquiry, beyond giving the residents the closure of at least knowing what had happened and why, was to thoroughly examine Ontario's drinking water legislation and figure out what, if anything, were the holes in it that had allowed such a thing to happen (O'Connor 2002b). These recommendations, along with demands from Canadian citizens for change, resulted in numerous policy changes in Ontario in response to Walkerton (Johns and Sproule-Jones 2009).

The Walkerton Inquiry revealed a number of significant flaws in the way Ontario had monitored, regulated, and managed drinking water. In particular, the Harris government, under the leadership of Premier Mike Harris, had systematically relaxed government regulations and

cut back funding to government agencies, including those affecting drinking water, in order to both streamline government spending and to encourage economic growth. Instead, the Harris government appealed to voluntary compliance to ensure that drinking water met drinking water quality standards (Johns 2009). The Inquiry revealed that the MOE had known for years about the problems with the operating procedures and had asked that these be corrected, but had never followed through to see if any changes were actually made (Perkel 2002).

After Walkerton, the successive Eves (2002-2003) and McGuinty (2003-2013) governments passed a series of water reforms strengthening water regulations and water regulating agencies (Johns and Sproule-Jones 2009), including the Safe Drinking Water Act of 2002, the Nutrient Management Act of 2002, and the Clean Water Act of 2006. These policies attempt to address the concerns highlighted in the Walkerton Inquiry, particularly strengthening the regulations and standards for drinking water systems and the regulations for non-point source pollution (Johns 2008).

In 2002, Ontario passed its first major water policy based on these recommendations, called the Safe Drinking Water Act. Essentially, this act establishes new, tougher, legally binding standards for contaminants in drinking water. It requires drinking water system owners to get their water tested at licensed laboratories and that these accredited laboratories report failed water tests to both the owners of the drinking water systems and to the Minister of Health within 24 hours. In addition, all operators of municipal water systems must be both trained and certified, and that all grandfathered operators have to be recertified within 1 to 2 years, depending on their job responsibilities. The Safe Drinking Water Act creates a licensing regime for drinking water systems, where in all municipal drinking water systems have to obtain approval from the MOE. The act gives the MOE broad inspection powers, and establishes a

statutory standard of care for managers of municipal drinking water systems. The MOE is responsible for enforcing this act (CELA 2004; Ontario 2002).

The Safe Drinking Water Act addresses one of the major issues that turned up in the Inquiry, which is that the water operators had not received proper training for their jobs. The provincial government has implemented stricter training requirements, and has created a new training center, the Walkerton Clean Water Center (WCWC), for municipal water managers. Located in the building where the Inquiry had been held, the WCWC is designed to train water managers in how to operate their water systems safely and inform them about the newest techniques and standards. Opened in 2004, the facility consists of offices, several classrooms, and a state of the art training facility that allows participants hands on experience with a wide range of water testing and treatment equipment. This facility is one of the largest hands-on facilities of its kind. At the WCWC, water operators can train in not only the most common water treatment equipment, but also on newer technology such as UV purifiers. Perhaps the most innovative aspect of the facility, however, is that it includes a mobile training unit that can travel to remote areas that may only have a single person in charge of the municipal water treatment, making it difficult for that person to leave for extensive training. A new hotel and conference center opened in Walkerton in 2005 to make it easier to host water related conferences and training programs (personal communications; WCWC 2012a, 2012b). Despite these changes, however, there is still a deep-seated skepticism in Walkerton about whether they adequately fixed the problem, especially in the short run (interviews; personal communications).

The Nutrient Management Act, passed in 2002 as well, focuses on the treatment and distribution of drinking water, replacing the voluntary compliance policy that had been in place prior to Walkerton. It establishes a nutrient management framework that includes the

agricultural industry, municipal waste, and other sources of nutrient contaminants. It incorporates modifications to the way the government regulates and certifies waste management plans and the certification of all land applicators, such as using manure as fertilizer (Johns and Sproule-Jones 2009).

The new Clean Water Act, which was being debated during my stay in Walkerton and passed in 2006, expands on the source protection issues addressed in the Nutrient Management Act. The Clean Water Act is intended to protect Ontario's water quality, particularly at the source. The political ideologies of the 1990s had caused Canada, including Ontario, to neglect regulating non-point source pollution in favor of the more manageable point-source pollution (Johns and Sproule-Jones 2009). Point-source pollution is pollution from specific location, such as industrial waste discharged from a pipe, and non-point source pollution is dispersed pollution from many sources, such agricultural runoff. Both types of pollution can have serious health and environmental consequences, but different strategies are necessary for protecting water sources from contamination (Johns 2009). In many ways, non-point source pollution is harder to monitor and therefore harder to control and regulate (Johns et al. 2008). The Clean Water Act and the Nutrient Management Act together are Ontario's attempt to correct this imbalance.

The Clean Water Act emphasizes watershed management and multiple stakeholder involvement at the local level (Johns 2009). Watershed protection programs are ways for communities and government institutions to safeguard public health by protecting clean, safe water resources from contamination through policies that identify and ultimately reduce watershed risks (Davies and Mazumder 2003). Governments typically approach watershed management in three ways, which can be applied individually or in combination with each other. They can opt for government control through a system of permits and penalties, they can

encourage citizen empowerment and participation in decision making, and they can utilize economic instruments such as incentives and water pricing strategies (Shrubsole and Draper 2007). In many instances, watersheds cross political boundaries, sometimes international ones, requiring collaboration and cooperation between the different governmental institutions involved, (Johns 2009), such as the Great Lakes watershed (Johns 2008).

Essentially, the Clean Water Act requires local communities to manage their water supplies by assessing threats and instituting practices to eliminate these threats. The communities are given the authority to enforce these practices. It requires public participation in every local protection plan, and that these plans be based on science. It also introduces the Ontario Water Stewardship Program which offers financial assistance to local stakeholders to reduce threats to local drinking water sources. The Ontario watershed areas are overseen by drinking water source protection committees who are overseen and assisted in turn by Conservation Authorities, who provide the committees with assistance with scientific expertise, administration, and scientific and technical knowledge. The Clean Water Act enables the drinking water source protection committees to evaluate risks to source protection areas and wellhead protection areas and to create policies to protect these areas. The risk management official, appointed by a council of the municipality, can use fines or police force to enforce these policies (Ontario 2006).

The Inquiry included as part of its policy analysis a discussion of the many water issues facing First Nation reserves and some recommendations on how these might be addressed, but the Inquiry had little authority over First Nation policy as that falls under the jurisdiction of the Federal Government (O'Connor 2002b). Still, the visibility of the water contamination in Walkerton helped open the door in the media to examine the First Nations water issues, and

some progress has been made in that area as well, though progress has been slow as federal water policy does not always fit well with First Nations' needs (McCullough and Farahbakhsh 2012; personal communications).

Clearly, after what had happened in Walkerton, some kind of legislative changes needed to be made in order to correct the weaknesses in the system revealed during the Inquiry. In particular, under-qualified water operators, the insufficient and in some cases non-existent chlorination of the water, the lack of communication between the testing laboratories, the PUC, the MOE, and the Public Health Unit, and especially the failure of the MOE to follow through on repeated violations of policies were all problems Ontario needed to address (Hrudey and Hrudey 2004; O'Connor 2002b). Government policies such as the ones Ontario passed since the Walkerton contamination come with certain costs, often economic costs, and while most people seem to agree in Ontario after Walkerton that *something* should be done, they do not agree about what that should be. More specifically, they do not agree about what is necessary, who should do it, and who should pay for it.

Hrudey and Hrudey (2004) argue that the majority of the problem that caused Walkerton to happen was not that Ontario had insufficient water protection, treatment, and testing regulations, but that these regulations were not effectively enforced. The massive budget cuts of the 1990s, combined with a 40% cut in personnel, left the MOE unable to effectively implement the existing regulations. The Inquiry uncovered that the MOE had known that the PUC was practicing improper operating procedures. The MOE inspectors had repeatedly cited the PUC for infractions but had never followed through on these citations to see if they were ever addressed (O'Connor 2002a). The MOE had relied instead on voluntary rather than mandatory abatement; basically, they had issued the PUC warnings but relied on the PUC to follow through

on them. The PUC failed to do so and allowed the improper procedures to continue (O'Connor 2002a; Hrudehy and Hrudehy 2004). Neither Koebel brother was qualified for his job, but this was not enforced. Well 5 had not been sanctioned by the MOE, nor had the town implemented the required watershed protection programs for it to be passed, but the MOE signed off on it anyway. As such, Hrudehy and Hrudehy (2004) argue that what needed to be done is to give the MOE both the finances and the authority to effectively enforce the regulations.

Justice O'Connor (2002b) outlined a more detailed list of recommendations, including a comprehensive source protection plan, improving the standards and the technology for municipal water systems, requiring that municipalities use an accredited operating agency to manage their tap water system, and strengthening the provinces ability to oversee water delivery systems.

O'Connor also focused on some areas that required special approaches, including small municipal systems, such as in Walkerton, small private water systems, such as private wells that serve the public including restaurants and gas stations, and First Nation reserves:

The water provided on many First Nations reserves is some of the poorest-quality water in the province. Residents of Ontario's First Nations reserves are also Ontario residents. I therefore suggest to the First Nations and to the federal government that the water quality standards for reserves should be no lower than those that apply elsewhere in the province and that those standards should be made legally enforceable. [2002b:17]

First Nations, however, fall under the jurisdiction of the First Nations themselves and the federal government, which limits the Inquiry's authority in this area (O'Connor 2002b). Even without the policy recommendations regarding the First Nations reserves, however, this is a more extensive set of policy recommendations than Hrudehy and Hrudehy (2004) recommended, and as such more expensive to implement.

As evident by the water policies passed since the Walkerton Inquiry, the provincial government chose to follow O'Connor's (2002b) more extensive recommendations over Hrudehy

and Hrudehy's (2004) suggestion that they simply fund and enforce their existing legislation. Despite Hrudehy and Hrudehy's (2004) stance, some of the new policies did address important flaws in Ontario's water policies prior to Walkerton. For example, before Walkerton, Ontario did not have a comprehensive plan for protecting drinking water sources from non-point source pollution. The Nutrient Management Act and the Clean Water Act both address this flaw, and while these acts are criticized for not being as inclusive as they should be, they are better than what Ontario had had in place previously (Johns and Sproule-Jones 2009). The Safe Drinking Water Act addresses a number of institutional issues the Inquiry uncovered, including the issue of the grandfathered water operators and the problems in communication between the testing agency, the local utility, and the MOE (O'Connor 2002b; Lal 2000). The WCWC addresses some of the problems the Inquiry uncovered regarding the training of water operators, particularly in small municipalities (O'Connor 2002b; WCWC 2012a, 2012b). On the other hand, as Hrudehy and Hrudehy (2004) argue, the existing standards for drinking water were adequate; the problem was that these standards were not enforced.

The provincial government still included stricter standards in the Safe Drinking Water Act (CELA 2004; Johns and Sproule-Jones 2009), provisions that many communities found financially burdensome (interviews; personal communications). The overall benefit of these new policies is unclear:

There is anecdotal evidence that drinking water is "safer" in Ontario post-Walkerton as a result of the reinvestment in water policy institutions, restructuring of the MOE, renewed faith in regulatory approaches, and a new policy instrument mix to address both point and non-point sources of water pollution in the province. There is no evidence, however, that water quality has improved. [Johns and Sproule-Jones 2009:227]

Johns and Sproule-Jones (2009) go on to argue that while Walkerton's water contamination hit a nerve, revealing the weaknesses in Ontario's water policy, the discoveries of the Inquiry and the

new water policies have not significantly altered Ontario's institutions. They attribute this to the agricultural industry's resistance of the reforms, since many of them directly affect farmers.

Views on the new acts are mixed in Walkerton. Many people are in favor of protecting their drinking water sources to keep their drinking water safe. They want to make sure that they never have to go through another experience like the one they had had with the *E. coli*. Some residents feel that, if anything, the new policies' stricter guidelines for water management and protection of natural water supplies are insufficient to truly protect communities. For some, no matter how good the legislation is on paper, there is always room for human error. For others, the proposed law is well intended but too many conflicting interests are weakening the proposed laws.

I think they're making strides in the right direction, are they there yet, no. They're certainly a more positive atmosphere of wanting to enact changes, but like anything else, it is really difficult to keep things stringent and pure enough. A government is in a very difficult position when they are dealing with the whole implementation of water security. There's so many different types of groups, different industries basically lobbying them to water down the rules in order to also allow them to make a profit. So therefore they have to in a certain degree. It is important, I mean take agriculture for example; I mean agriculture is a crucial industry. So therefore they do have legitimate concerns but at the same token if they totally said that yeah you have as big an operation as you totally want and you can totally spread everything that you wanted, and you don't have to worry about source protection then that's not going to help. [Andrea, 46]

On the other hand, members of the community worry that the restrictions put too much responsibility on a small segment of the population, particularly farmers who are asked to shoulder the expense of fencing waterways and other environmental protection strategies.

It's [the Clean Water Act] fine, we need restrictions, we need, we need legislation, we need policy to make sure things are done right, but we don't want to curtail the business of farming and the business of agriculture. So we can't be, we can't be that restrictive. I'm a little worried about the, partly because, uh, an area around a municipal water system where the ongoing operation of agriculture can't continue, or even slightly changed, I'm not saying you build a big farm near the water system, I don't believe that's the way to go, but not to be totally restrictive on a farmer who's operating

his farming with good environmental practices—being restricted to improve his facilities and grow his operation... improve his operation.

99% of the people who farm, 99.9% I believe are great stewards of the land. And why would they do anything to hurt them, the land that they own, that makes a living for them? So, they're not going to do, they're not going to pour pesticides all over the place and destroy water systems which they need for their livestock and their own health. It just makes—it's common sense. [Michael, 61]

The area around Walkerton is heavily agricultural and many people feel that the water protection laws unfairly targeted farmers. One farmer was particularly articulate about how he feels that the clean water laws in Ontario have unreasonably strict requirements for farmers to minimize agricultural pollution, especially since municipalities can get dispensation during heavy storms to discharge raw sewage but farmers have to pay heavy fines for letting manure contaminate water sources. If people can get sick from cattle manure, he pointed out to me, they are more likely to get sick from human waste, so he thinks it unjust that these policies insist that farmers make sure no cattle manure gets into surface water source or they pay hefty fines, while municipalities can do so with minimal consequences. He and other farmers said they are frustrated too because these laws require farmers to invest money in infrastructure. For example, in order to protect surface water sources, farmers are required to build fences to keep cattle out of lakes and rivers. While well meaning, this added to the farmers' costs of production at a time when beef prices had plummeted due to the United States closing its borders to Canadian beef in 2003 because of mad cow disease. More than one farmer feels that it is unfair to ask the farmer to shoulder the burden of protecting a clean environment for all Canadians. They feel that it is important to protect the environment, but that the costs of this should be shared by all Canadians. That means either raising the price of beef, which they felt was not an option at that time, or that these improvements should be paid for through taxes (interviews; personal communications).

Walkerton residents also expressed concern for the financial cost of the new water policies, particularly in regard to the cost of implementing the infrastructure measures required under the new laws for other small communities in Ontario. While Walkerton itself has received financial aid from the province to repair and upgrade their water infrastructure, other communities in the area did not receive the same kind of financial aid, and, as I was told repeatedly, blame Walkerton for these expenses. For small businesses and non-profit institutions, such as churches, the cost of updating the infrastructure in the buildings is a considerable burden (interviews; personal communications).

Ripples in the Pond: the Long Term Consequences

Many of the people I spoke to in Walkerton said that they wanted to leave the experience of the *E. coli* behind. During my field work in 2005-2006, many did not even want to talk about the contamination or even current water issues in the community. They just wanted life to return to normal. On the surface, much had gradually returned to normal. Events like what happened in Walkerton in May 2000, however, have long term consequences. No matter how much locals may wish to turn back the clock, the effects of the water contamination rippled outwards, not only permanently changing life in the small town but life throughout the province.

Some of the ripples were intensely personal. Many of them had been close to someone who had died, and many more had had close friends and family members who had been badly ill, some of whom had to deal with long term complications. Other consequences were financial, as the aftermath of the *E. coli* contamination ended up costing individuals, the municipality, and the province money, and negatively affected local businesses and the housing market. The *E. coli* contamination also resulted in political policy changes as Ontario endeavored to both prevent another contamination and to restore trust in the government's ability to protect its citizens.

These policy changes, in turn, had financial implications as they affected businesses and organizations. These changes, in turn, altered Walkerton's residents' relationships with not only their local and provincial governments but also with their neighboring communities.

The *E. coli* contamination ended up being economically very expensive. One study estimated that it cost at least \$64.5 million and as much as \$155 million when human suffering was taken into consideration (CBC 2000). Some of the personal expenses included transportation to the London or Owen Sound hospitals to stay with sick family members, replacing clothes destroyed by the bleach, fuel costs of boiling enough water for daily use, and traveling to visit friends or family outside of Walkerton to bathe and do laundry from May 21, 2000, when the boiled water advisory was first announced, until December 5, 2000, when it was finally ended. Ontario paid each family in Walkerton an average of \$4000 to compensate for the financial burden of the contamination, totaling \$6.9 million (CBC 2000). Yet many of the people in Walkerton had not applied for any compensation, saying that they were too embarrassed or that they felt bad about taking money when others needed it more than they had. Those who had accepted money said that it reimbursed them only a small part of their actual expenses. Others had decided to join the class action suit instead, and at the time of my fieldwork were still waiting for that to be resolved (interviews; personal communications).

Many local businesses closed for at least some of the months following the boiled water advisory until they could provide safe water for their employees. Restaurants in particular were hard hit. Who wants to eat at a restaurant in a town plagued with *E. coli*? Even after the boiled water advisory was lifted, few people in the region felt comfortable dining out in Walkerton. Local businesses ended up paying an estimated \$651,422 for things like bottled water for

employees and to disinfect or replace equipment that had become contaminated. Real estate values plummeted, and businesses lost money (CBC 2000; Burke 2001).

It cost Ontario \$15 million to fix Walkerton's municipal water supply and distribution infrastructure in order to bring Walkerton's tap water back up to Ontario safe drinking water standards. Following the events in Walkerton, the Ontario Clean Water Agency (OCWA) removed Wells 5 and 6 from service, permanently capping the wells. The agency upgraded filters and monitoring equipment on Well 7, installed a state of the art water filtration system, and updated operational procedures in order to prevent the tragedy from repeating. The agency also disinfected the entire system, including five kilometers of water mains that distributed the water to buildings and residences. The MOE sampled the water from both the treatment plant and the distribution system in order to ensure that it not only now met the Ontario drinking water standards but to verify the effectiveness of the new filtration system (MOE 2000; Perkel 2002; Hrudey and Hrudey 2004). Other provincial expenses included \$1.5 million to distribute clean water to institutions during the boiled water advisory, over \$3.5 million in legal fees, and the \$6.9 million in compensation to residents (Perkel 2002; CBC 2000).

While the Ontario government initiated legislation that tightened regulation of drinking water and initiated a number of changes in water policy, people were also encouraged to take personal responsibility for their drinking water. Immediately following the crisis, news articles encouraged people to test their household drinking water. Companies on both sides of Lake Huron ran out of kits for individuals to sample their water so that they could take it to a laboratory and have it tested for a small fee. The Ontario government suggested that households test their water twice a year (Fletcher 2000). Despite this, only one person interviewed who is on

the municipal water supply independently tests her home drinking water, and few continue to read the published water quality reports (interviews).

The *E. coli* contamination in Walkerton is often touted as an example of the problem with privatizing water (for examples, see Charbonneau 2000; VanOverbeke 2003; Forrest 2000), but Walkerton was really a victim of the neoliberal ideologies that dominated the Harris' governments policies rather than privatization itself. Ironically the water infrastructure in Walkerton was owned and managed by the municipality at the time of the contamination. Only the water testing was privatized. After the contamination, OCWA took over the waterworks in order to disinfect and revamp their water treatment and distribution system. Once the water system was considered safe, OCWA continued to manage the municipal water supplies for a number of years. OCWA is technically a private company, but it has close ties with the province and unions. In 2006, the town switched companies, as the new one, Veolia, promised to provide the same quality of service for less money. Veolia is a French company with a solid reputation (personal communications) but less familiar to the residents.

While Walkerton residents are ambivalent about the switch to private management companies, as many feel that it really should be the responsibility of the municipal government, others feel that private companies have access to a broader range of resources, including experienced personnel, and have a more personal investment in providing quality service. More importantly for most of the residents, however, is the awareness that Walkerton remains in the public eye. Because Walkerton continues to be under the microscope when it comes to water issues, they feel that no private company would survive the bad publicity if there were ever a problem with the water again (interviews; personal communication).

Another long term result of the *E. coli* in Walkerton is the Walkerton Health study. From a health research perspective, Walkerton gives the medical community the unusual opportunity to study the long term consequences of *E. coli* on a relatively large group of people with a wide range of ages. The Walkerton Health Study was organized to trace these effects over time (Clark et al. 2008). The original study was intended to last five years, though when I was in Walkerton at the end of those five years, there was a discussion of continuing the study for longer, particularly tracing the effects on children who had suffered from the illness as they mature. Located at the local hospital, the Walkerton Health study doctors did follow up appointments with volunteers from the community on a yearly basis (interviews; personal communications).

The boiled water advisory in Walkerton lasted six months, but the *E. coli* continued to leave its mark not only on the bodies of the people living in Walkerton but on their relationships as well, both within the tightknit community and between Walkerton and neighboring towns. In the early days, residents struggled to simultaneously cope with the water situation while caring for sick family members. For some interviewed, this was a bonding moment for the town, bringing people closer together.

We as a community, we drew upon each other's strength and drew upon each other's caring for each other. We developed a sense of community that probably was there before, but had never been put forward and tested. So therefore you went out and helped your neighbor. If the lady next door was sick, or the couple next door was elderly and they needed to get water, you went to get water for them at the municipal water depot. [Alexander, 66]

For others, it increased social tension as neighbors were afraid to help or even socialize with friends with sick children for fear of catching the disease. While communities far away from Walkerton overwhelmed residents with support, many residents reported being unwelcomed in businesses in neighboring communities, for fear of spreading the taint of the *E. coli*.

Even in Hanover, I remember when *E. coli* first came out we had it and they'd have a note in [sellers] women's room. They really didn't want us in their washrooms. They had disinfectant for people from Walkerton... You know you think you were almost a leper. [Claire, 57]

Many residents described a rapid disillusionment with their government as they struggled to learn what had gone so badly wrong while the media continued to make Walkerton a household name across the country. The residents felt that their questions were met with stone walling, evasion, and even lies. Others claimed that the more vocal residents were dismissed in the media and by politicians as being out of town rabble rousers and leftist extremists. Some of the members of the community were frustrated because the local government did not call a state of emergency at the time.

In a typical emergency situation in a community, and let's say it's, it's something that involved nature or whatever... Your local government is basically is going to start calling for government assistance, and they're going to start calling for a State of Emergency, because basically it gets to a point where's it's overwhelming. But, because, very early on, there was the whole idea that this was the local government that could be culpable in this situation, they very quickly went into a defensive situation, and as a result they weren't really prepared to... to really be the voices and advocate in the way that they should have. [Andrea, 46]

A State of Emergency would have allowed them to better assess community needs and to have a wider range of resources to address the problems, including bringing in the military to help; the military had the tools and training necessary and could have gotten the water system back up and running in weeks instead of months. The provincial government even turned down assistance from the United States, preferring to resolve the problem on their own. Many residents feel that Walkerton could have gotten back on its feet much more quickly if a state of emergency had been called (Perkel 2002; interviews).

Everyone in the town not only knew people who had become sick and even died, but they knew the people who had been responsible for managing the water as well. The people involved

were not just faceless government employees, politicians, and victims in the news, but people they knew well. They were neighbors and friends; they went to the same churches and their kids went to the same schools. The conflicts and accusations that followed were intensely personal and disrupted, even destroyed, friendships (Perkel 2002; CBC 2000; interviews).

The *E. coli* contamination altered relationships in the community in other important ways as well. While the CWC members were organizing and spending their time and personal resources trying to find answers and help for their community, they were simultaneously defending themselves at home as well, as they were criticized by neighbors and friends for what the CWC was doing.

I had so many sleepless nights those two years, involved in all those stuff. I don't want any more of it. So, people mad at you, angry. People phoning the house once and a while, and... couple people threatened me downtown. And I said do I really need this in my life? And my wife was getting pissed off at me, because she wanted to have a quiet life, and I don't blame her. [Jack, 52]

Some Walkerton residents resented the CWC, claiming that they had no right to think that they represented the town (Perkel 2002). Some of those who disagreed with the CWC felt that individual members of the CWC were more interested in being the center of attention than in helping the town. Another argued that the CWC actually made things worse by being confrontational, which put the government on the defensive rather than focusing on fixing the problems in Walkerton. The CWC members, on the other hand, argued that the government would have simply buried the water contamination if it had not been pressured to hold the Inquiry and by the media attention on the town (interviews; personal communications). Other Walkerton residents viewed members of the lawsuit as being unnecessarily greedy, for example, because they were pushing for more compensation than was offered by the government reimbursement plan (Burke 2001).

Other personal relationships in the community fractured because people were so afraid of the *E. coli*. I was told that physician Esther Raymond, mother of Mary Rose, the little girl who was the first victim to die of the *E. coli*, was blamed by other Walkerton residents for not recognizing *E. coli* sooner. Other residents reported being abandoned by friends when they needed help because the friends were afraid of catching *E. coli* themselves (personal communications; interviews). For some Walkerton residents, the experience was so traumatic that many affected by the *E. coli* moved away, even if moving meant losing money on the sale of their home (Burke 2001; personal communications). This fracturing of the community, between politicians, the Koebel brothers at the PUC, and other members of the community led to a widespread breakdown in trust relationships, one that has been even slower to recover than the physical injuries left by the bacteria.

In addition, new provincial regulations adopted as a reaction to the *E. coli* contamination requires many businesses and public institutions like churches throughout the province to upgrade their plumbing and kitchens. Residents told me that people in neighboring communities highly resent these expenses and feel that Walkerton residents have an unfair advantage because the province had paid them money to make these upgrades but had not given similar funding to other communities and organizations. Walkerton locals feel that most of this funding went to the lawyers and the Inquiry while the money that had come their way did not cover the expenses that they had incurred. Others had chosen not to take the money from the government (Perkel 2002; Burke 2001; interviews)

The changing relationships between the residents of Walkerton and the larger political system can be seen in the struggle over the Walkerton Water Tower. Even though Walkerton had been absorbed officially into the larger Brockton, the local water tower had continued to

carry the name “Walkerton.” The tower had become a media icon representing the water contamination in Walkerton, as it appeared in every news story concerning the *E. coli*. Shortly after the water contamination, the province tried to repaint the water tower. People in the town fought the move successfully, arguing that the decision to repaint the water tower had been politically motivated to make the community of Walkerton disappear (see Figure 19 in Appendix B; Perkel 2002). To this day, the tower remains, a powerful reminder of not only the water contamination but of how the town has persisted despite everything that has happened to them.

Certainly these changes in the community have altered many of the lives of the people who survived, but the effects ripple beyond the community. It has become intimately intertwined within the political economy of the region, affecting commerce, personal finances, political relationships, inter- and intra-community relationships, and even residents’ relationships with the land and water.

CHAPTER 4

TRANSFORMING TRUST RELATIONSHIPS IN WALKERTON

The *E. coli* contamination in Walkerton touched on every aspect of the lives of the people in the community. It influenced their health, their finances, their schools, and their relationships with their neighbors, both local and provincial political institutions, and the media (Burke 2001; Perkel 2002; interviews). Even though many of the community members spoke of wanting to move on with their life and forget that it had ever happened, the contamination will continue to affect them for years to come. An important part of how it influenced their lives is the effect it had on their trust—trust in their neighbors, in politicians, in private companies, and in health care professionals. They had trusted the government to protect them, to provide them with safe drinking water, and that trust was broken. The Inquiry that followed laid the blame at the feet of neighbors, coworkers, and fellow church members as well as at agencies outside the community, the Ministry of the Environment (MOE) and the provincial government in particular (O'Connor 2002a). It shook the community's trust, causing them to re-evaluate not only their trust in these individuals and agencies but also their trust in general, particularly their trust in anyone involved with providing drinking water.

After the *E. coli* contamination of 2000, the Brockton municipal government and the Ontario provincial government spent considerable time and money not only updating Walkerton's distribution and treatment infrastructure but also implementing provincial water policies to help make sure that something like this would never happen again. These changes served two purposes: first, to protect the people of Ontario from a similar water contamination and, second, to regain their trust in the system. Certainly, the upgrades in equipment went a long

way toward fixing the problems in Walkerton's infrastructure, addressing mechanical flaws that had allowed non-chlorinated water to enter the system. Similarly, the policy changes implemented after the water contamination in 2000 addressed the policy holes the Inquiry had found, such as grandfathering the certification of water operators without verifying that they have proper training do their jobs (O'Connor 2002a, 2002b; CELA 2004; Ontario 2002).

Regaining trust, however, has been a lot slower. Many of the people of Walkerton are understandably slow to trust their government and their local water providers after their experiences. My research in Walkerton, five years after the contamination, was 1) find out where people were getting their drinking water from and why, 2) to measure the trust in the local and provincial government as well as private water providers, 3), to understand why they do or do not trust the institutions responsible for their drinking water and 4) to understand the strategies of trust and distrust they employ as a result.

The Players Behind the Drinking Water

For the residents of Walkerton, the process by which they get their drinking water is complicated as numerous institutions play various roles in the extraction, treatment, distribution, monitoring, and regulation of drinking water. Every time someone turns on the tap or buys a bottle of water at the supermarket, the person is interacting with that larger web of political, economic, and social agents who extract, treat, manage, distribute, test, regulate, and monitor the drinking water before it arrives in that store or at that tap. By the time the water reaches a tap in a private home, the water has passed through the jurisdiction of a number of different institutions. Local land-use, such as cattle farming, processing and removal of municipal waste, and local industries, can put contaminants into the local watershed, which then filters into drinking water sources. Local geology and ecology can also influence the drinking water at its

source by either protecting it or leaving it vulnerable to contamination. The water is then extracted, whether from the aquifers or a surface water source, treated to remove contaminants, kill harmful bacteria, protozoa, and viruses, and to improve water quality, and then distributed to local homes and businesses (Smith et al. 2006). During this process, the water quality is constantly monitored, and it is regulated by institutions that establish a base line for water standards and reinforce those standards to make sure that they are followed. Local and provincial government and private companies are responsible for extracting raw water from the environment and treating, distributing, monitoring, and regulating it before it finally arrives at the tap (Davies and Mazumder 2003). Bottled water adds another layer to the institutional management of that water before it reaches its consumers. Bottled water is extracted from the aquifer, treated, and tested, and regulated by a different, but parallel, system to the one for tap water, but then the water is also bottled, stored, shipped, and marketed. The bottled water industry is an entirely capitalistic endeavor, with the government role being reduced to that of a regulating agency rather than provider (Chapelle 2005; Gleick 2010; Royte 2008).

These relationships are not purely economic or political, but deeply embedded in shared and contested ideologies. In Chapter 2, I discussed how the construction of meanings helps shape health and illness experiences (e.g. Garro 2000; Good 1994, 2010), and how the construction of both nature and knowledge shape resource use (e.g. Baldwin 2003; Westman 2013). The same is also true for trust relationships because cultural perceptions, expectations, values, and cultural identities can often alter the basis for how people relate to other people, institutions, and their natural environment. These layers of perceptions, meanings, values, assumed responsibilities, and knowledge inform all of the measures of trust for all the participants in the trust relationships.

The roles of those institutions are fluid, constantly changing as the political and economic context changes, resulting in ever-evolving relationships between the individual water consumers, the natural environment, and the agencies and businesses that handle, monitor, and regulate the drinking water. Trust/distrust and power are two important factors that influence these relationships. As discussed in Chapter 2, trust is not an action, but rather an orientation to the other in the relationship that informs people's decisions, and these relationships are not egalitarian.

The Government

The government is a large, multilayered institution that plays many roles in the distribution, testing, and regulation of drinking water—not just for tap water, but for commercially bottled water as well. It includes not only politicians at the local, provincial, and federal levels, but also a large number of government agencies who are responsible for protecting the public welfare, including the Ontario Ministry of Health and the MOE, both of whom played important roles in the Walkerton *E. coli* contamination discussed in detail in Chapter 3. As the events mentioned in Chapter 3 illustrate, the government is often a disjointed, fragmented entity made up of multiple institutions working in ignorance of each other and occasionally in conflict with them. Political parties, and the politicians who make them up, have their own goals, interests, and priorities, which can create conflicts of interest (Perkel 2002; Burke 2001; O'Connor 2002a; see also McCullough and Farahbakhsh 2012).

The government potentially plays three key roles when it comes to drinking water, though in some cases these roles are turned over to the private market instead. The first role, mainly by local governments, is to operate the local water extraction, treatment, and distribution infrastructure, as was the case in Walkerton before the *E. coli* contamination in 2000. The

second key role the government may be responsible for is the testing of municipal water quality, as was the case in Ontario until 1996. The third, and arguably the most essential, role the government has is in the regulation of drinking water quality. This includes not only establishing policies to protect natural water sources and determining guidelines for proper operational standards for municipal water management and testing, but also setting standards for the training of municipal water operators and establishing budgets and mandates for the agencies that enforce the regulations.

For most of the 20th century, the government has played the principal part in all three of these roles, but in the last few decades there has been a movement to increasingly privatize the management and testing of water. The argument supporting this change is that private companies are more effective and efficient at these jobs than the government because they are driven by profit (Barlow 1999; Bakker 2007). On the other hand, private companies are motivated primarily by profit, and there may not be much profit in providing water for lower income populations.

Canadians tend to value the collective good over the individual, and generally view their government as a benevolent institution whose purpose is to protect the common good and to protect Canadians from their hostile natural environment (Lipset 1990; Adams 1998; Mackey 2002; Biro 2007). This inclination to prioritize the public good over individual benefit can translate into a predilection for trusting in institutions that benefit the public good over institutions motivated by self-interest because they have this value in common. Hardin (2006) argues that people are more likely to trust others who have similar values, experiences, and expectations because it is easier to predict behavior if the participants in a trust relationship are operating under the similar guiding principles. Motivations that are based on self-interest, on the

other hand, are likely to be uncomfortable to Canadians who prioritize society over the individual because they are more inclined to be suspicious of self-serving motivations, such as profit. The Canadian tendency to view the government as a benign protector not only inclines Canadians to trust their government, but creates an expectation that the government *should* be the one providing for the Canadian people. When it comes to drinking water, it leads to a tendency to expect the government to provide for its citizens by guaranteeing safe drinking water.

Canada is a large and extremely diverse nation made up of people belonging to different political parties, who speak different languages, practice different religions, and come from different ethnic backgrounds. So while there are certain basic assumptions most white, English-speaking Canadians share about themselves, national identity continues to be contested and redefined through discourse, especially when it comes to their relationship with their government. Walkem (2007) argues, for example, that the history of First Nations peoples' interactions with the government has led them to tend to view the government as a colonial institution designed to represent the interests of white Canadians over the interests of the indigenous population. So while many Canadians prioritize the public good and see the government as a benevolent, this viewpoint is not shared by all Canadians. This viewpoint toward public welfare and the responsibility of the government is still one shared by many of the Walkerton residents, despite their experience with public institutions during the *E. coli* contamination, and it forms a critical component of their trust relationships with the various government institutions responsible for their drinking water quality.

Walkerton residents feel that it should be government agencies, not private companies, that are ultimately responsible for municipal water supplies, even if the municipal government

chooses to contract the job out to a private company to manage. They disagree, however, about whether or not the municipal government needs to be held personally responsible for the actual management and distribution of the tap water, or if hiring a private company to manage the system is an acceptable alternative. While residents spoke about individual government agencies and politicians when talking about the events of the *E. coli* contamination and the aftermath, in regards to the role of government in drinking water now, they focused mainly on two aspects. The first is the role of the municipal government for the distribution of local tap water, whether managed by the municipality or a private company hired by the municipality. The second is the role of the provincial government for regulation (interviews).

When asked what role the government should play, none of them brought up water testing unless directly asked about it, though almost everyone said it is important that the water be consistently tested to ensure that it met safety standards. This suggests that testing is not regarded as a particularly important role for the government so long as someone did the testing. On the other hand, the residents agree that the government should be responsible for both the education and training of municipal water operators, and for regulating municipal water quality. They feel that if the water operators in Walkerton had been properly trained before 2000, and if the provincial government had properly enforced provincial water regulations and followed up on water violations, the *E. coli* contamination in 2000 could have been avoided. As a result they feel that these two elements are essential for maintaining safe drinking water.

Establishing the perceived proper sphere of the government when it comes to domestic drinking water is important because if the locals believe that that the government has abdicated this responsibility to the private sector, this can undermine trust in the system of government over all. However, establishing the proper sphere of influence for the government when it comes

to drinking water is only part of the question of trust in drinking water quality. In order to trust their drinking water, residents need to be assured not only that the appropriate institution is responsible for each step of the water management, testing, and regulation, but also that this institution can be trusted to do the job. In order for residents to trust the government to be able to effectively manage water supplies, they must believe that the municipal government has the funding to maintain up-to-date infrastructure and hire skilled employees. In addition, they need to believe that the provincial government not only provides proper training for water operators but also establishes effective policies for protecting the drinking water supplies and that it enforces these regulations. In cases when the municipality contracts a private company to manage the water infrastructure, the public needs to believe that the municipality has the ability to negotiate a contract favorable to the community.

Nature

Nature is not a human institution like the other major players in drinking water, but it still plays an important role in water quality and quantity. While it lacks human agency—nature has no motivation, ethics, or desires as a human actor would—it still consists of a complicated web of processes that humans interact with. Every municipal water system has to get their water from somewhere, and the local geological formations and ecology affect the local drinking water sources. Dense vegetation, for example, retains water and reduces erosion and runoff, keeping more water in the area to seep down into the aquifer. Stagnant water can result in blooms of algae and bacteria, and local wildlife can transmit contagious diseases into the drinking water taken from surface sources (Davies and Mazumder 2003). This content not only affects the taste of the water but also affects its usefulness in industry. Natural processes are not untouched by human ones; local land use, such as farming, disposal of municipal waste, and local industries,

can result in contaminants entering into the hydrological cycle and therefore into the drinking water source. Paving roads and cutting down trees can increase the runoff and reduce the amount of water absorbed into the aquifers. Wise resource management by humans, on the other hand, can protect these natural resources, which is why Ontario passed clean water legislation to help reduce the pollution of natural water sources (Ontario 2002, 2006; Johns 2009) and why there are government incentives for farmers to implement environmental protection plans.

Canada is a large country; the majority of the population lives in the southern portion of the nation, near the border to the United States, while the north is vast, cold, and sparsely populated (McCullough and Farahbakhsh 2012). From the early days of Canada as a nation, references to national identity referred to the land itself, as Northern, immense, rugged, wild, cold, and wet. The expanse of open spaces and the challenges of the rough Northern wilderness have both been a fundamental part of who Canadians are as well as something that they needed to overcome (Biro 2007). In 1936, Prime Minister William Lyon MacKenzie King remarked, “If some countries have too much history, we have too much geography” (qtd. in Biro 2007:322). Canada, one of the largest nations in the world, has a lot of geography—much of it remote and inaccessible, creating obstacles to human settlement, transportation, and development (Biro 2007; McCullough and Farahbakhsh 2012).

The extent to which wildlife is common currency in Canada is one manifestation of the central place that nature, and particular wilderness holds in defining national identity. Canada’s cultural producers literally “naturalized the nation” by rendering certain landscapes iconic. The Canadian shield of the Group of Seven, Emily Carr’s rainforests, and William Kurelek’s sky and grass are celebrated for capturing both the essence of the place and the people’s relationship to it. Canadians, for all their differences, are said to be products of their environment: a “northern” people whose character was forged by a particular encounter with nature, and whose history and political culture are defined by the country’s geography and the serial exploitation of natural resources—cod, beaver, trees, wheat, minerals. [Loo 2006:1]

Even their relationship with the government is influenced by this narrative. According to political scientist Seymour Lipset (1990) and research consultant Michael Adams (1998, 2003), the majority of Canadians perceive their government as a benevolent institution that protects them and helps them survive in a hostile environment. Anthropologist Eva Mackey (2002) claims that Canadians thus view the pressures of the northern climate as a crucible that forges a stronger Canadian people, northerners who are stronger, more democratic, and who have a strong moral fiber as a result of the hostility of their natural environment. Canada itself is a strong, civilized nation *because* it has carved itself as such out of raw nature. “In Canada, for example, the idea of creating a nation was tied to the idea of transforming ‘wilderness’ into ‘civilization’” (Mackey 2002:17).

Yet this view of Canada as being defined by the expanse of rugged terrain and rich resources is not a politically neutral one, but rather the product of a colonial ideology that perpetuates the illusion of an unpopulated wilderness and obscures the First Nations that live there (Loo 2006). Those wide open spaces of the North are predominantly settled by First Nations peoples, many in communities on federally recognized reserves that are inaccessible for most of the year by road (McCullough and Farahbakhsh 2012). The science underlying much of the environmental management, conservation, and preservation discourses is also not value-neutral. Both Baldwin (2003) and Westman (2013) critique the assumption that science is a value-neutral way of understanding nature, pointing out how this not only privileges the scientific view for studying, managing, and regulating nature, but it creates an illusion of an apolitical nature in ways that favors corporate interests while marginalizing First Nations people’s knowledge and history. The conflict over how natural resources are used then is not just a matter of environmental science, or even conflicting economic interests, but an issue of

power and authoritative knowledge. Baldwin (2003) argues that how nature is defined legitimizes how it can be used, and therefore struggles over how nature should be used have translated into struggles over how nature is defined.

These constructions of nature play an important part in the way humans relate to their natural environment—including any potential trust relationships with their environment. T. King (2005) argues that while people in urban areas or remote government offices may view the natural world as outside human relationships, just as the trust theorists such as Sztopka (1999) perceive it, this is not the case for the people who live and work the environment, even in Western societies. Even for people who do not work closely with the environment, as mentioned in Chapter 2, natural is increasingly being equated with better, more pure, and healthier (Cronon 1996; Gleick 2010). These meanings play an important part in the way that Walkerton residents, in particular, evaluate their drinking water. Many described good water as water that was natural, untreated, and chemical free. This concept that natural water is better for them is embedded in the larger discourse of nature. Whether people perceive the natural world as benign or threatening, predictable or unpredictable will influence their interactions with it, including trust relationships.

Walkerton's water comes from naturally forming aquifers in local bedrock. The hydrologic cycle brings water to the area in the form of rain, which then flows over the ground into the local lakes and rivers and filters down through the limestone platform to eventually reach these aquifers. The local geology of Walkerton causes the deeper aquifers to have very hard water—high in mineral content, particularly calcium carbonate that results from dissolving limestone. Desire for a softer water source had resulted in the municipality drilling Well 5—a shallower well that had much softer water—but the same factors that resulted in softer water also

left the water more vulnerable to surface contamination (Perkel 2002; O'Connor 2002a). After 2000, Walkerton converted back to older, deeper wells, which are more sheltered from surface pollution but also producing considerably harder water (Perkel 2002; CBC 2000).

The local geology combined with the local agricultural and industrial base affects not only the quality of the water being used for the municipal drinking water system, but also the quality of the raw water in the region. A number of people get their water directly from the source, an artesian well in the nearby town of Mildmay that is referred to locally as the Mildmay Spring (see Figure 20 in Appendix B for a photo of the Mildmay Spring). This water is monitored by the local Rotary Club but is not treated in any way. This means that local geology not only influences the starting quality of water that is treated and processed to remove contaminants, but also directly affects the drinking water of a number of Walkerton residents who fill their own jugs at the natural spring.

Private Enterprise

Like the government, private companies potentially play multiple roles in providing and managing safe drinking water. Just as the “government” is actually comprised of individuals working within different political parties, agencies, and levels of government, private enterprise is a conglomerate ranging from small, locally owned, family run shops to large, international corporations. Private enterprise is a broad term that includes business owners, stockholders, and employees, each with their own personal ethics, values, goals, and priorities. While they are all based on the common principal of making a profit in the capitalist market, the variation in scale and organization between the different private companies can result in diverse relationships with their consumers.

Initially, private enterprises were only responsible for water that was commercially bottled and marketed, but increasingly they have also taken over managing municipal water sources. This means that the municipality signs a contract with the private company, hiring them to extract, treat, and distribute their drinking water for a specified length of time. Typically, these contracts include providing maintenance on the water infrastructure, but the municipality remains its owner (Bakker 2007). Before 1996, municipal water in Ontario was tested through a province-run laboratory, but in 1996 water testing was privatized and municipal drinking water institutions sent their water to be tested at private laboratories (Burke 2001). After the *E. coli* contamination, Walkerton also switched from public to private management of its water supplies as well (interviews; personal communications).

Just as underlying constructions of meanings can shape people's trust relationships with the government and the environment, they can also influence trust relationships with the private enterprises that test, regulate, manage, and sell drinking water. Canadians are often wary of the motives of for-profit, private enterprises (Lipset 1990; Adams 1998; Mackey 2002; Biro 2007), and while again it is important to be careful of generalizations over such a large and diverse population, this trend is certainly visible in the interviews, especially in regards to private companies managing the municipal water systems. While residents are less concerned about private companies selling bottled water, and several prefer to buy bottled water to the tap water, many are still leery of the bottled water companies' motives, concerned that the profit motivation creates a conflict of interest when it comes to creating safe drinking water. Unlike their discourses in regards to government and nature, the Walkerton narratives about private enterprise are considerably more fragmented, and how they talk about private institutions varies considerably depending on what type of service the company is providing.

Walkerton residents are the least concerned when it comes to the private management of the laboratories that test their drinking water. So long as the water is tested properly and the testing institution is answerable to the government, Walkerton residents do not care if this institution is privately or publicly owned. The only concern mentioned when it came to the laboratories, public or private, is that they do not try to hide bad test results and that the lines of communication with both the municipal water supplier and the MOE are clear. The narrative discourses present in their discussion of other private institutions that influence water quality, particularly the issue of being profit oriented, are absent in their discussion of the laboratories.

While none of the Walkerton residents referred to the neoliberal political policy by that name, many of their views on privatizing municipal water systems tie into the discourse on Ontario's neoliberal reforms discussed in Chapter 3. The majority of residents view tap water as an essential resource, leading to mixed opinions about whether it should be privately or publicly managed. Despite the failure of their local and provincial government in the past to protect their drinking water, the vast majority of the Walkerton residents agree that it is important for the government to take responsibility for providing tap water, whether directly or indirectly. Some feel that as long as the municipal government is held ultimately responsible for the local tap water, it is acceptable for the day-to-day management to be handled by a private company. After all, the PUC had been a public institution, and it had failed badly at its mandate of providing safe drinking water; perhaps a private company would do better. Veolia, the company that took over managing the municipal water system in 2006, has a good reputation and a number of residents feel that it is perfectly capable of doing the job. Only one person, however, feels that private companies would be better or more motivated to do a good job. The rest, even those who think privatization is an acceptable alternative to a publicly managed system, only trust the private

company if the government holds them responsible. Most residents have reservations about the motivation of private companies, and a number argue that this means that the local government has to directly manage the local tap water infrastructure, especially for poorer communities and for remote areas where tap water distribution is less likely to be profitable. Many view drinking water as a human right and are uncomfortable having it managed by an institution driven by profit (interviews).

I am very fearful of privatization of municipal water supplies. I think that is an abdication of responsibility by governments that allow that to happen. I think that it is wrong. If private companies want to go into bottled water, like EG at Culligan or whatever that is, that's fine and dandy. But as far as the public water system; that belongs in the hands of the municipalities. It does not belong in the hands of private companies. If I choose to use Culligan water or any of the other suppliers of water, that's my choice. But I do not believe for one second that water *per se* belongs as a private venture in any municipality. [Alexander, 66]

Part of their hesitation when it came to privately managed municipal water is an ethical issue of selling tap water for profit in general, but others express concerns specifically about limiting access to communities too small, remote, or impoverished for there to be much profit.

Yeah, and serious problems about—you know the private people say, well we've got to go way up north to protect their water; no profit in it for us. That's when the government has to take up the slack, you know. I'd say there's a role in it for both, but I think it's probably more the government that's got to be more, probably more government. Though I still think private companies should be involved, but there's probably—especially in remote areas, where the cost, you know, private companies, you know, can't make a profit at this, they're not going to do it. So, yeah, in those cases the government's got to. [Jack, 52]

Canada has regions that are very sparsely populated, as well as enclaves of relatively impoverished First Nations, neither of which are going to be much draw for a private, profit-oriented company to come and provide drinking water. At the very least, in cases like these, Walkerton residents feel that the government needs to step in and make sure everyone, rich or poor, urban or rural, has access to safe drinking water. In addition, at least one person is

concerned because the cost of her tap water went up as a result of the switch from public to private. In the past, her tap water had been included in her taxes, but after the switch to the Ontario Clean Water Agency (OCWA), water meters were installed in the community and they are now charged directly for the water they used (interviews).

Several residents pointed out the problems facing First Nation reserves in particular. The water issues on First Nations reserves were receiving considerable media attention at the time due to the Ontario government declaring a state of emergency and airlifting nearly one thousand people from the Kashechewan Reserve because of *E. coli* in their tap water (CTA.ca 2005b), and a number of Walkerton residents sympathized with their plight. “One of the worst examples, and one of the tragedies, if you go to First Nations communities across Canada, I don’t know about the US, but you see in Canada. I would say that that issue is a huge situation that needs to someday be addressed” (Andrea, 46).

At the same time that neoliberal reforms are changing Canada’s tap water, Canada’s bottled water industry is growing (Rahman 2007). People often choose to drink bottled water based on personal factors, such as time constraints, personal taste preference, and convenience (Ingham County Health Department 2000). Social and cultural influences lend additional meanings to bottled water; it is often viewed as prestigious, trendy, healthy, and natural (Chapelle 2005). Bottled water is often viewed as part of a healthy lifestyle (Gleick 2010) and is closely associated with a number of social identities, such as “yuppy,” “athlete,” and “teen” (Chapelle 2005; Gould 1999). People are increasingly drinking bottled water, however, because they view it as both more natural and healthier than tap water, yet while it is considerably more expensive than tap water, it often is not any safer than tap water (Chapelle 2005; Royte 2008; Gleick 2010; Ingham County Health Department 2000). Unlike Walkerton residents, most

consumers do not have direct access to natural spring water, so if they seek a healthier or more natural alternative to tap water, they turn to the plastic bottles sold at the grocery store. Bottled water marketing gives them the illusion that the water is pristine and natural, but bottled water is far from untouched by humans—the water is extracted, purified, bottled, and transported to the stores where consumers buy it. The combination of prestige and trust in the purity of the bottled water and the growing concerns over the quality of tap water has resulted in the rapid growth of the bottled water industry (Gleick 2010; Chapelle 2005).

Bottled water is the epitome of commodifying and privatizing water, and its rapidly expanding popularity is closely tied to the neoliberal ideologies (Opel 1999). At the same time, private water companies have deliberately marketed water as not just prestigious, but also healthy. They have simultaneously fed on people's fear by questioning the quality of tap water while promoting its product as more natural and pure (Gleick 2010). So at the same time that ideologies are shifting to favor privatization and consumerism, bottled water companies are presenting themselves as the healthier, more natural alternative to tap water, appealing at once to both the independence and free market ideologies of neoliberalism and the shared perception that natural is better.

Though Peters (1997) does not mention the influence of advertisement images specifically in his discussion of the influence of the media on reshaping local knowledge, these images play an often overlooked role in shaping the way people think about their world. The point of advertisements is to manipulate images and information in a way to entice the customer to purchase the advertised product. Advertisements are designed to draw consumers in by providing them with images and problems to which they can relate, and then offering them a solution to their problem for a price. Advertisements feed on people's insecurities while

promising assurance. They appeal to shared economic desires, such as saving money and receiving quality goods and services, as well as to social ideals such as family, friends, and community. They even create new needs by pointing out to consumers the ways in which their lives could be improved, be made more convenient and more enjoyable, or be more prestigious.

Advertisements are a space that allows for the development of a shared “common sense,” ideas that are simply not questioned because of the very pervasiveness of these images. Bottled water companies rely on a wide range of familiar images in order to promote their product. Beautiful women may be drinking the product, for example, suggesting that by drinking bottled water consumers, too, can either be beautiful or at least associate with beautiful people (Gleick 2010). A common trend, however, that has been targeted extensively by critics is to use nature to advertise bottled water (Gleick 2010; Olson 1999; see Figure 21 in Appendix B for a variety of bottled water labels).

Responding to critics who accused the bottled water labels of being misleading, the United States passed stricter guidelines for how bottled water can be labeled. There are now specific definitions of what can, for example, be labeled as as spring water versus artesian well water, but these distinctions do not necessarily mean anything to the average customer (Gleick 2010; Olson 1999). Much of the water on the market is processed tap water, especially the big sellers like Aquafina and Dasani. Companies take tap water and process it further to remove chlorine and other minerals and to add other minerals back in for taste, and they must be labeled as such (Gleick 2010).

While the bottled water industry is now limited in the claims they can explicitly make about the water source, nature is still sold to consumers through marketing images, even when the small print indicates a municipal source. Bottled water providers rely heavily on natural

imagery to sell their product, implying without explicitly stating that bottled water is more natural, and therefore untouched, than tap water (Gleick 2010). Bottled water utilizes images of wild, untouched nature to sell its product, appealing with an often unspoken, unrecognized visual vocabulary. In bottled water advertisements, mountain tops and glaciers imply “pristine” and “pure.” Along with bottled water, people consume images of streams flowing over rocks, snow covered mountains, and monumental glaciers (see Figures 22-26 in Appendix B for some examples of natural images used in bottled water labels). Natural, unspoiled, and safe: the images themselves sell the notion of nature as better for humans than anything created by humans. Without outright telling the consumer anything about the source of the bottled water, they draw on these familiar, culturally shared meanings to suggest that their water is more pure, fresher, and safer than water from less romantic sources, especially the tap (Gleick 2010; Olson 1999).

Studies in the United States have suggested that bottled water may not be as pristine as marketers make it seem (Olson 1999; Allen and Darby 1994). In a number of studies, bottled water not only proved to be no higher quality than tap water, but in some instances bottled water was actually worse. In response to an advertising campaign where it was stated that Fiji bottled water was better because it was not bottled in Cleveland, the manager of Cleveland’s municipal water system had the city water-quality department test both waters. While both met federal standards, the lab tests found that the Fiji water contained “volatile plastic compounds, 40 times more bacteria than are found in well-run municipal water systems, and most noticeably, over six micrograms per liter of arsenic. Cleveland tap water had no measureable arsenic” (Gleick 2010:16-17). While the Cleveland/Fiji conflict is one of the more public instances of bottled water contamination, it is not the only one.

One of the big problems bottled water critics have with the bottled water industry is that it is regulated differently from tap water. Municipal water in the United States is regulated by both national and state water quality standards by the Environmental Protection Agency, whereas bottled water is only under federal jurisdiction when it crosses state lines and then it is regulated by the Food and Drug Administration (FDA). Depending on the local water regulations, the tap water regulations may be stricter and better enforced than the regulations for bottled water (Carlton 1999), and, according to Gleick (2010), in some states the water is not be regulated at all if it does not cross state lines. Even when the water falls under the FDA jurisdiction, the regulations are weak. The water does not need to be tested as often as municipal supplies, and the oversight is minimal, nor do test results need to be made public, as is the case for municipal water supplies. Even more disturbing, when water is tested and found to be contaminated, the FDA is not authorized to order the recall of the contaminated bottles, but rather relies on the companies to take full responsibility for the recall. In many cases, when a bottled water recall is announced, it is months after the water has hit the market and most likely too late to prevent people from buying and consuming the water.

The full list of bottled water recalls issued in the United States alone, even under a regulatory system that doesn't require careful monitoring, reporting, or recalls of contaminated bottled water, includes a remarkable list of contaminants. In addition to benzene, bottles have been found to contain mold, sodium hydroxide, kerosene, styrene, algae, yeast, tetrahydrofuran, sand, fecal coliforms and other forms of bacteria, elevated chlorine, "filth," glass particles, sanitizer, and, in my very favorite example, crickets. [Gleick 2010:47]

Nor is the United States alone for problems of bottled water contamination. Other countries have reports of similar instances, ranging from *E. coli* found in bottled water in Ireland to a company in Indonesia that reclaimed bottles from a local dump, filled them with the local ground water, and relabeled them (Gleick 2010). In Canada, all bottled water is regulated by the federal

government, but that still means that the water is regulated by a separate set of standards than the municipal tap water, which falls under the provincial regulations, and so bottled water is not necessarily held to the same standards (Johns et al. 2008; Valiante 2002).

The bottled water discourse is complicated by conflicting accounts of whether bottled water is actually any better than tap water. At first glance, the issue of whether bottled water or tap water is safer seems straight forward. It is the kind of question that, in theory, should not allow for the kind of ambiguity found in the research studies, news reports, and marketing campaigns. Unfortunately, science is ambiguous; it cannot determine the “truth” but only support or disprove alternative truths. Considerable discrepancies exist even at the level of “hard” data comparing bottled water and tap water quality (Olson 1999; Yankelovich Partners 2000; Gleick 2010; Allen and Darby 1994), and different organizations, depending on their private agendas, can use this data for conflicting arguments.

As a result, the public is faced with numerous, conflicting arguments that seem internally consistent and externally contradicting. These rival discourses do not compete as equals, however, nor are they politically neutral (Peters 1997; Jarvela and Rinne-Koistinen 2005). As Baldwin (2003) and Westman (2013) argue, scientific discourse is not always a neutral party, and that it is used by industrial interests to promote resource extraction. Thus the weight of authoritative knowledge from certain parties, such as the media and scientists, can override and devalue personal experience and knowledge (Peters 1997; Jarvela and Rinne-Koistinen 2005). Rather than being given a single truth, people receive a series of incompatible claims from which they must somehow choose the one they believe is the most accurate, based on the perceived authority of the source and their personal experiences and knowledge.

In Walkerton, bottled water is regarded as a luxury rather than a necessity, and so their priorities and concerns for bottled water are somewhat different than those for tap water. The people I interviewed generally agreed that, if private companies want to bottle and market drinking water that is fine as long as bottled water is regulated by the government.

Well, I don't mind them selling me my jugs of water. As long as you know, that's regulated somewhere along the line. I think living in small towns and knowing of the people who run the Water Center. I have confidence in it, but I think you need more than that. You need to know that there's some regulation to what they're doing. I mean people who make wine and beer and milk and everything else have to pass certain level of quality control. You know? So why not? I think water's more important than any of those things. I don't think it is unreasonable to expect that private entrepreneurs have to follow guidelines and regulations when providing something people are going to eat or drink. But I have no problem with it being private—selling me my bottle water.
[Michael, 61]

Their main concern over the relative cost of bottled water is in instances, such as the Kashechewan Reserve case, where the tap water is unsafe. Molly in particular is concerned because she feels that while the Walkerton residents are able to afford bottled water, giving them a choice, not everyone is that lucky.

No we don't, but there are people still below the poverty level, right, so I think you would reach a certain point where there would be people that couldn't afford... They'd have to use tap water where they couldn't afford bottled water or if the tap water were unsafe they'd be forced to take their chances, you know what I'm saying? I think regardless there's still a line that would be drawn that certain people wouldn't be able to reach.
[Molly, 39]

While tap water discourses in Walkerton typically center on concepts of motivation, access, and human rights, the bottled water discourses are more focused on ideas of health, nature, government oversight, and water quality. Whether or not a water source is regulated, perceptions on how natural the water is, views on the motivations and reliability of the water provider, convenience, beliefs in the relative purity of the water, and taste are all factors that influence bottled water consumption choices. Cost, on the other hand, is not a deciding factor in

Walkerton (interviews). Each of these factors can affect the choices a person makes, as does how people prioritize these factors.

While none of the Walkerton residents directly referred to natural imagery in advertisements, many of them did claim that they want water that is natural, untouched, and pristine—the more natural, the better—and that bottled water is more natural than tap. This water, they told me, is both better tasting and healthier for them than water from other sources. Walkerton residents are not alone in this perception, though it is perhaps more remarkable for them given their past experiences with untreated water in their taps. The bottled water industry markets heavily on the perception that natural water is somehow better than water that is not. Unprocessed water is better than processed, but even more so is water that is perceived to be both natural and from a natural, pristine setting.

Drinking Water in Walkerton Five Years Later

Before May 2000, the residents gave little thought to where the water came from or how it was treated and regulated other than to object to the level of chlorine in the water; they had all assumed that their water was safe because their government would make sure it was. As the Inquiry uncovered what happened leading up to May 2000 that resulted in the *E. coli* in their drinking water, residents became very aware of the many institutions involved in their drinking water—and that these institutions were not infallible (interviews; personal communications).

The majority of the people I talked to, whether they were people interviewed formally or people I got to know while living in the town, changed their drinking water habits after the water contamination, including 60% of those interviewed. Even those who claimed they have not changed their drinking water habits have added extra treatment to their home tap water, such as a UV treatment system. While some have resumed drinking the tap water for at least part of their

drinking water, many now filter their water using reverse osmosis systems or tap water filters such as PUR and Brita, buy bottled water for their water coolers, or get their water from other sources, mainly the natural, untreated spring in Mildmay. Only 27% routinely drink the municipal water without at least some additional filtering (see Figures 14 and 15; interviews).

Those who drink the tap water said that they do so because the water is safe. While they could have mentioned any number of reasons to drink their tap water—it is cheaper than bottled water and it is convenient to just turn on their tap and get their water there, for example—the only reason most gave for drinking their tap water is that it is now safe. In addition, Molly mentioned letting her children resume drinking the tap water if they were so inclined because she wants their life to resume a sense of normalcy. “And my children have actually started drinking out of the tap. And I let them. I don’t want them to grow up paranoid. If they are comfortable going back to it, I want to let them be” (Molly, 39).

The reasons Walkerton residents choose not to drink their tap water varied. Most do not like the taste of their tap water—they describe it as hard, too highly chlorinated, and smelling bad (Claire, 47, said that it sometimes smells like rotten eggs, for example). In particular, the chlorine in the water is very unpopular. While a number of the consumers acknowledge that the chlorine plays an important role in protecting their drinking water quality, many strongly dislike the way it tastes. One even described the water as “burning.” Many feel that their water choice—bottled or natural—is safer than the tap water for a number of reasons, which I will discuss in detail later in Chapter 5. While the smaller, single-serving bottles are uncommon as most people buy the 19L containers for water coolers, those who do purchase the smaller bottles said that their portable size makes them more convenient. Others indicated that their bottled water supplier is convenient because it is local. One, whose family uses a reverse osmosis

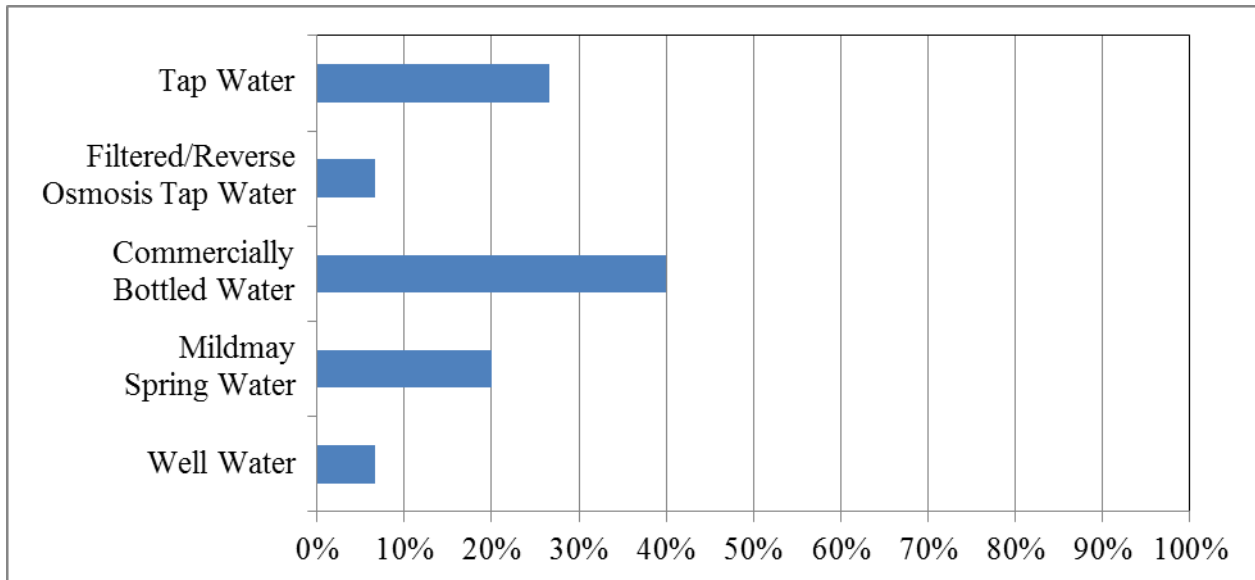


Figure 14: Primary water use by interview subjects. *Figure shows the primary source of water used by the interview subjects.*

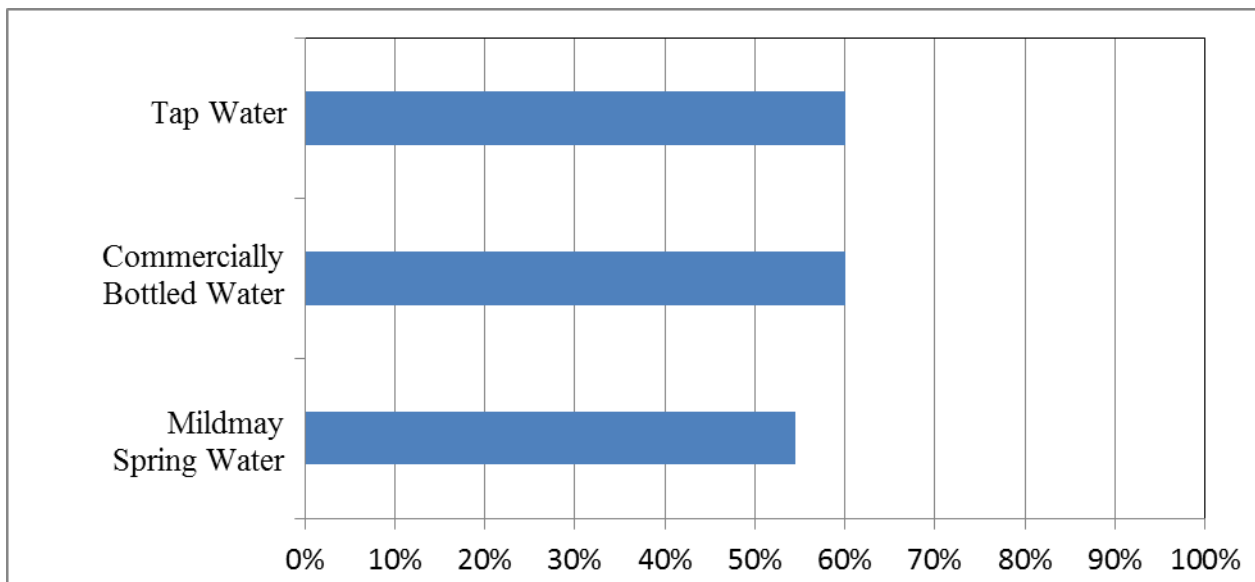


Figure 15: Trust in water sources by interview subjects. *Figure shows the total water sources trusted by residents. Since they can trust more than one source, this adds up to more than 100% of the total interview population. Note that one person with a private well trusts the tap water, and one does not.*

system, does so because a family member has a health problem that makes it difficult to drink the regular tap water (some people have health problems that make them sensitive to common

compounds dissolved in drinking water, such as salt). A couple of interview subjects also said that they feel that their bottled water source is safe due to a shared sense of community with the vendor; these vendors are people they know and see going about their lives within the community. Some of the people I spoke with said that they choose to continue to drink bottled water because even though they know intellectually the water from their tap was safe, they could not bring themselves to drink it. Others indicated that they continue to drink bottled water simply because after they had been drinking bottled water under the boiled water advisory for so long, it had become habit. See Figure 16 for a breakdown of reasons given for preferring bottled and natural water over the tap.

The two most common reasons given for drinking the Mildmay Spring water are that the water is safer than other water sources and that they prefer the way it tastes. One interview subject, for example, said that while he is sure that the bottled water is safe enough, he thinks purified water tastes flat and dead, and feels that water needs to have natural minerals in it. For that reason, he prefers spring water—either commercially bottled or from the Mildmay Spring. Many people described the Mildmay Spring as “good water” and better than other sources because the water is “natural” and without chemical treatments. While the water from the Mildmay Spring is free—consumers are encouraged to leave a donation to help pay for maintaining the spring—the inconvenience of having to drive to Mildmay to collect the water compensates for that. Consumers of the Mildmay Spring water also have to provide their own containers to store the water in, and the people I spoke with said that they disinfect the containers between uses, either at home or through a local disinfecting service, though they do not feel that this practice is all that common in general. None of them choose to drink the Mildmay Spring water primarily because of its price, though it is a perk, but rather because they prefer the way it

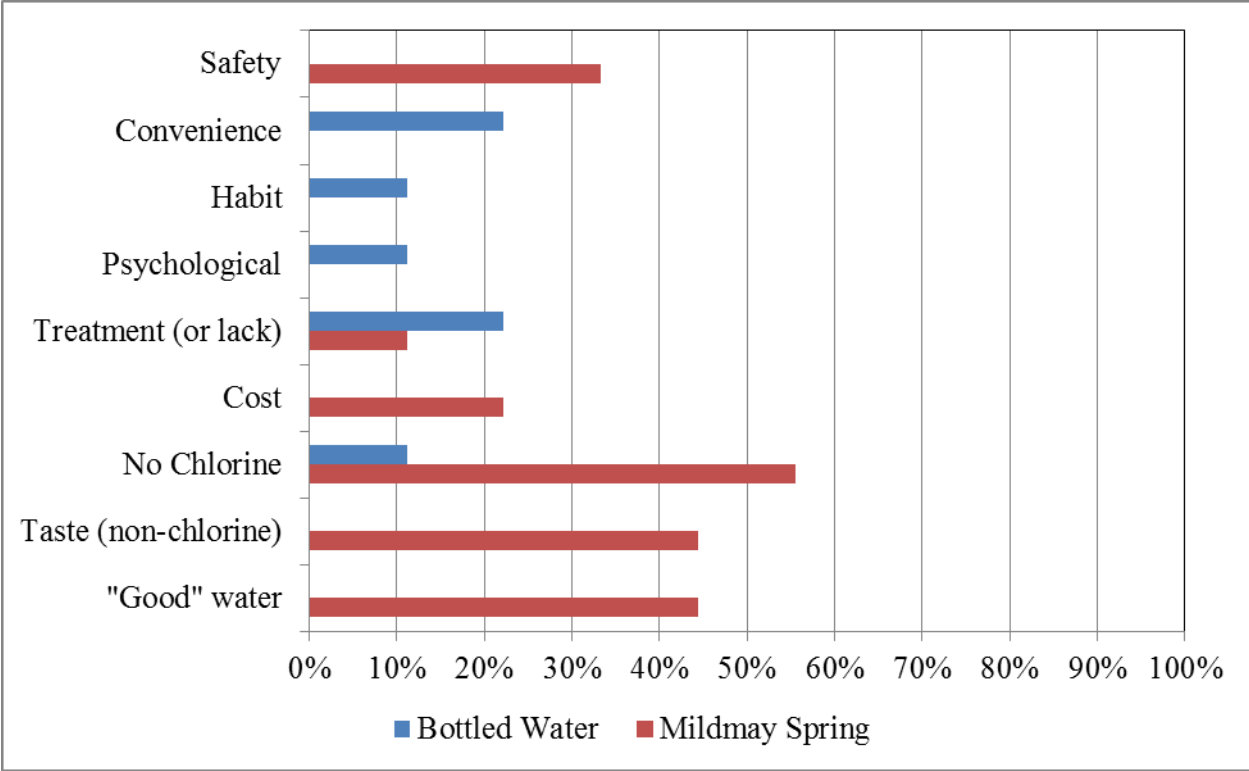


Figure 16: *Reasons for choosing alternatives to tap water. Reasons given by residents for why they chose other sources than tap water to drink.*

tastes and because it is safe. Many of the Mildmay water consumers trust commercially bottled water no more than they do their tap water, and feel that the Mildmay Spring is the *only* safe water choice available to them.

While my sample size was small because I was conducting in depth, open-ended interviews, I did conduct a number of chi-squared tests comparing a number of different variables to see if there were any significant patterns in my interview samples. I compared basic demographic data—age by decade, gender, occupation type and highest level of education with patterns of water consumption—with the primary water source before 2000 and in 2005-6, whether or not they trusted the tap water, commercially bottled water, or natural spring water at the time of the interviews, and whether or not they changed their drinking water habits in the long run. I also compared whether or not they trusted the tap water in 2005-2006 with whether

or not they trusted commercially bottled water and natural spring water. These results cannot be generalized to the population of Walkerton as a whole because the sample size is much too small, but it can provide the basis for at least something to consider. The results can be seen in Table 1.

Only two of the variables proved to be significant at the $p = 0.05$ level. Occupation is the first variable that is significant in determining whether or not an individual is likely to trust the natural water, though it does not affect whether or not a person is likely to trust water from other sources. One of the individuals in the group with “Occupations unique to primary industry (farmer)” has two occupations, the second a health occupation. Because the fact that this person is a farmer, however, this individual lives outside of the town proper and so has a private well; thus I made the decision to label the person as a farmer for the purpose of these tests. The second significant relationship, and one I found more personally interesting, is that people who do not trust the tap water are significantly more likely to trust natural, untreated spring water than those who do trust the tap water. Many of the people I spoke to who trust the natural spring water and prefer it over other sources do not trust in either government or private enterprise to effectively treat and regulate drinking water to make it safe. On the one hand, many of those I spoke with who do trust the tap water emphasized the importance of effective human management of the natural resource. Trust in bottled water, however, does not have any significant relationship with trust or distrust in other sources, probably in part because many of the people I spoke to are ambivalent about commercially bottled water. On the other hand, many see no reason why private companies should not market bottled water and they even trust their local commercial bottled water sources, while simultaneously nearly every person I spoke to expressed concerns about bottle water being unregulated in Canada. While trust relationships, as

Table 1: Chi-squared test results.

Gender	χ^2	df	significant?	df	$p = 0.05$
Primary water source pre-2000	5.74	3	no	1	3.84
Primary water source post-2000	3.95	4	no	2	5.99
Trust tap water	0.71	1	no	3	7.82
Trust bottled water	0.71	1	no	4	9.49
Trust natural water	0.20	2	no	5	11.07
Change in drinking water habits	0.58	1	no	6	12.59
				7	14.07
				8	15.51
				9	16.92
				10	18.31
				11	19.68
				12	21.03
				13	22.36
				14	23.69
				15	25.00
				16	26.30
				17	27.59
				18	28.87
				19	30.14
				20	31.41
				21	32.67
				22	33.92
				23	35.17
				24	36.42
				25	37.65
				26	38.89
				27	40.11
				28	41.34
				29	42.56
				30	43.77

Age	χ^2	df	significant?
Primary water source pre-2000	7.43	9	no
Primary water source post-2000	9.95	12	no
Trust tap water	2.44	3	no
Trust bottled water	2.86	3	no
Trust natural water	3.36	6	no
Change in drinking water habits	4.04	3	no

Occupation¹	χ^2	df	significant?
Primary water source pre-2000	15.83	21	no
Primary water source post-2000	23.96	28	no
Trust tap water	6.67	7	no
Trust bottled water	7.36	7	no
Trust natural water	14.92	7	yes
Change in drinking water habits	4.956	7	no

Education	χ^2	df	significant?
Primary water source pre-2000	26.25	18	no
Primary water source post-2000	26.75	24	no
Trust tap water	3.75	6	no
Trust bottled water	11.88	6	no
Trust natural water	13.35	12	no
Change in drinking water habits	6.76	6	no

Trust Tap Water	χ^2	df	significant?
Trust bottled water	0.19	1	no
Trust natural water	8.03	2	yes

Table shows the breakdown of the χ^2 test; only two relationships show significance.

1. One individual had two occupations, but is listed as “Occupations unique to primary industry (farmer)”

discussed later in Chapter 5, are more complexly nuanced than can be measured in a simple chi-squared test, it is illuminating what relationships are statistically significant.

The Walkerton residents disagreed on whether or not they feel that the changes made after the contamination are sufficient to ensure that their tap water would be safe in the future. Half of the residents who drink water from private wells trust the municipal tap water. Of those interviewed who live in town, 54% trust their tap water and 46% do not. Essentially, those who feel it is safe feel that the government is motivated to fix the mistakes of the past and that the changes it has implemented have gone a long way to doing so. They feel that the infrastructure and policy changes made after the contamination corrected the flaws in the system that had allowed *E. coli* to get into their drinking water five years before. The repaired and upgraded water system means that the water now is being properly treated to prevent contamination from reaching users. “As I said I think the, the system in Walkerton has been upgraded and improved and tested and monitored that, and it’s—it’s quite safe. I’m confident in that” (Michael, 61).

Those who do not feel that the tap water is safe essentially feel that nothing has really changed. They argue that the policies promoted by the province will not make a difference so long as the politicians and others involved in managing and regulating the local water systems are still primarily motivated to look after themselves first. Sarah, 46, pointed out that nothing has really changed locally because the good ol’ boy network remained in place. She feels that as long as politicians prefer to hire locals who do not necessarily have the knowledge and skills needed to do the job, there will continue to be problems. Others mentioned that there are ongoing problems with people lying about the water quality. They believe that the politicians are more interested in protecting themselves than in protecting the public’s safety. Several residents also question the competence of the local management companies in the light of repeated news

stories concerning water loss in the municipal systems and boiled water advisories both Walkerton and in other small towns from nearby.

CHAPTER 5

TRUST AND WATER IN WALKERTON

While none of the interview subjects worried about the quality of their drinking water before the *E. coli* contamination of 2000, this is no longer the case afterwards. The *E. coli* contamination made people aware of just how vulnerable the drinking water could be, and many continue to distrust the system despite the changes that have been made. It is not really surprising that many do not trust the system after what they have experienced—perhaps it is more surprising that so many *do* trust the system after what has happened—but it is informative to look at *why* they trust or do not trust the various institutions responsible for their drinking water.

I have analyzed the interview data using five measures of trust and distrust: fidelity/infidelity, competence/incompetence, honesty and transparency/dishonesty and opacity, accountability/immunity, and global trust/global distrust. These concepts are discussed at length in Chapter 2. I have applied these five measures of trust/distrust to the way my interview subjects regard their government, private companies, and natural drinking water. Some of these measures are more salient than others to the people I spoke to, and some measures are more relevant to one category than others. These measures of trust play out somewhat differently for each of the major players in water quality and management—the government, private enterprise, and the natural environment—because the nature of their relationship with the individual person drinking the water is different. Table 2 gives a breakdown of how the five measures of trust can be applied to each of these institutions.

Measures of distrust—listed in Table 3 as infidelity, incompetence, dishonesty and opacity, immunity, and global distrust—are the opposite of the elements of trust. While the

Table 2: Measures of trust

	Government	Private Enterprise	Natural Environment
Fidelity	Government serves the public; priority is the public good.	Businesses serve their customers; priority is their customer's good.	Nature is benevolent, and things that are natural are good for humans.
Competence	Politicians and public employees have the resources, skills and knowledge necessary to be able to do their jobs well.	Employees have the knowledge, resources, and skills necessary to be able to do their jobs well.	Natural processes are effective in creating safe, good tasting drinking water.
Honesty and Transparency	Information about the government and its processes are accurate, complete, and available to the public; politicians and employees speak the truth.	Information about business practices and policies are accurate, complete, and readily available to the public; business representatives speak the truth.	Natural processes are easily observed and understood both by science and the individual and that knowledge gained from this is accurate and complete.
Accountability	Government and its employees will do a good job because they are answerable to citizens through elections and laws etc., and these mechanisms are effective.	Businesses will do a good job because they are answerable to consumers through market pressures, laws and regulations, etc., and these mechanisms are effective.	Natural water is tested and monitored to ensure water quality.
Global Trust	Government is inherently good, and the mechanisms of government will serve the public's interests regardless of individual politicians.	Businesses are inherently good and the capitalist market is an effective mechanism for protecting individual rights and interests.	Nature is inherently superior to anything made, managed, or treated by humans.

Table shows examples of the interaction between the measures of trust and the various institutions.

elements of trust help build up trust by creating conditions where people know that the other person or organization will act in a way that is in their best interests, measures of distrust detract from trust, making people uncertain or even fearful about the others' actions. People may feel that the trust partners would not willingly do harm (fidelity) but if they do not have the skills or resources necessary to fulfill their promises (incompetence), then people are unlikely to trust in them. Scoring high in one area of distrust does not necessarily mean that a person would not trust that individual or institution, however. For example, a high level of infidelity can be countered by a high level of accountability. A company whose priority is profit may still be self-motivated to provide a safe product if the owner, CEO and Board Members all know that they will face the loss of customers, large fines, or even jail time if they do otherwise. Measures of trust and distrust are not isolated measures and it is only by situating them in context with each other that scholars can understand how trust and distrust inform decisions. Together, they give researchers an understanding of how and why people trust or distrust the various sources of drinking water in the institutions responsible for them.

These charts are a simplification of how the measures of trust can be applied to each of these entities, especially considering that each entity can play different roles in drinking water, but they highlight some of the fundamental differences in their relationship with individuals and institutions. Government trust relationships, for example, are those between elected and electorate, between voter and the public officials elected into office and the people they, in turn, hire to fill specific civil service jobs. This is an entirely different basis of a relationship than that of a private company and its clients, which is based on certain economic assumptions and mediated by market pressures. This is different again from humans' relationship with their

Table 3: Measures of distrust

	Government	Private Enterprise	Natural Environment
Infidelity	Elected officials and government employees are looking after their own self-interests and interests of lobbyists and special interest groups before the public good.	Businesses prioritize profit and the interests of stockholders over the public good.	Nature is malevolent or at best neutral to the interests of humans.
Incompetence	Politicians and government employees do not have the training, resources, or skills to effectively do their jobs.	Business employees do not have the skills, resources, or knowledge to do their job well.	Natural processes are ineffective at providing safe, good tasting drinking water.
Dishonesty and Opacity	Politicians lie and evade the truth, or provide information that is confusing or misleading; complete and accurate information about government policies and processes is difficult or impossible to get.	Businesses only tell the public what they want the public to hear, telling lies or providing misleading or confusing information; complete and accurate information about business policies and processes is difficult or impossible to get.	Natural processes are opaque to science or confusing and poorly understood by the individual; information gained from observing these processes is incomplete and misleading.
Immunity	Mechanisms for holding politicians and government employees responsible, such as elections or legal actions, are ineffective.	Mechanisms for holding businesses responsible, such as boycotts or legal actions, are ineffective.	Nature is unregulated and there are no effective mechanisms for making sure that natural products are safe.
Global Distrust	Government is by nature flawed and corrupt.	Businesses are inherently corrupt, self-serving or greedy.	Nature is inherently inferior to anything made, managed, or treated by humans.

Table shows examples of the interaction between the measures of distrust and the various institutions.

environment, which is based on a combination of natural processes and people's personal assumptions and understanding of the quintessence of the natural world.

Fidelity/Infidelity

Fidelity is the belief that individuals within an institution have the public's wellbeing at heart, that it will be first motivated to protect their wellbeing, and only after that by personal motivations such as a desire for profit, a good name, or to concentrate power. For the government, fidelity means that the top priority of civil servants in agencies such as Public Health and the Ministry of the Environment (MOE) is to protect the public health. It means that politicians act primarily in the service to the community, rather than being motivated by their own self-interest or the interests of lobbyists, businesses, and other special interest groups. Perceptions of government fidelity took a nosedive in Walkerton after the *E. coli* contamination in 2000. When asked about how the government handled the contamination, interview subjects described Mark Harris and his government as being essentially self-serving. Politicians and government employees were repeatedly described as "covering their asses" (interviews) and looking after their own reputations and careers rather than fixing the problems during the aftermath of the *E. coli* contamination.

You know, politics took over in my view and the only thing I can think of, the analogy is it's like a grenade went off in a room and all the politicians ran for cover, you know they're all interested in their backside and covering their ass. And you know, that became more the motivator—I'm not saying they didn't want to help—but, politics came first, help second and I still think that was very wrong. [Jack, 52]

Everybody wanted to blame everybody else. Even David Suzuki came with a Dr. Quinn from out of town. And these were big guys in it. And everyone wanted to blame 'the other guy'. No one would say let's get our heads together, find out what this problem is. No it was his fault, this person's fault, or that person's fault. Well these are trained people, you know. You're in there to save the people. They were dying just as fast and here people are arguing. Like put your heads together—let's do it. [Claire, 47]

And then that doctor—I'm blanking on his name, but he was the public health official—came off looking like a hero when he announced the water contamination when they had dropped the ball all along. I think they were covering their tails there. [Sarah, 46]

The Concerned Walkerton Citizens (CWC) raised funds to hire their own expert witnesses to testify in the Inquiry because the ones paid for by public funds were there, so they told me, to defend the interests of the government rather than the community. The politicians, and later the lawyers, were seen as more interested in laying the blame on someone else than in taking responsibility for finding a solution.

Their relationship with their elected officials improved somewhat with the election of new people to public office. After 2000, Walkerton elected a new mayor, and at the provincial level the Opposition during Harris's time as Premier, the New Democratic Party (NDP), took over, forming a new government. These changes helped restore people's belief in the fidelity of their elected officials, especially in light of the new training center in town and the water policy reforms. Many people spoke favorably of the new Mayor in particular, sometimes portraying him as fighting the system to protect Walkerton. "And the authorities, I'm not referring to the Mayor, or anything, but some other reporting agencies, I'm not exactly sure, they tried to keep it a secret. And they said 'well we didn't mean to keep it secret.' But it all blew up. The Mayor was mad" (Jack, 52). Despite these changes, there remain persistent reservations about the intentions of politicians and government employees. When push comes to shove, many people feel that people in the government would look after themselves first and only after that the public wellbeing. Jack was particularly articulate about this, returning to this subject repeatedly over the course of the interview.

You know in August, I don't know if you heard, they had problems in Chepstow in a village up there. Chepstow is a small village near here. They had problems out in Chepstow with the water and they tried to keep that secret—not the Mayor. And I'm going, what's been learned? It's been nothing learned. And I don't think that's just the

local level, I think on the national level it's been nothing learned from this and it pisses me off. The government says they're passing laws; they're doing this, and doing that. But deep down, I don't think anything's been learned because as soon as something comes up with tap water again, the first thing that people are going to do is cover their ass. All their thinking is "I'm going to cover myself," you know, "my job, protect me, protect that" and you know how the hell are we going to resolve the situation if they go into protection mode? [Jack, 52]

I would say I don't trust them because I think that they're motivated by lawyers, legalese—they're going to cover their own ass first, okay. They want to cover their ass legally. I don't know enough about this, because I'm not a lawyer. But I just find that they're placing their own interest first, before our interest and that's not what it should be about. It should be the community's interest, you know, to report the water's factual. The Mayor's been pissed off about this a lot over the years, you know, he's been pissed off. And, uh, so no, I don't trust them because I think they're gonna put their own, their own interest before ours. [Jack, 52]

If the government is to regain the public's belief in their fidelity, they have to overcome the perception that political officials will look first to protect their own interests, and that is easier said than done, especially for provincial officials who are remote strangers who the public only knows through the news. The mayor of Walkerton is someone they see regularly about town; it is a small town so it is not that unusual to run into a town council member or the mayor at a local restaurant, the post office, or at church. The members of the provincial government are remote, as are the government employees at the various agencies—the closest are located in Owen Sound, a good hour's drive north of Walkerton. Toronto, the seat of provincial government, is farther away still.

In comparison, the May 2000 *E. coli* contamination had relatively little negative effect on the perception of fidelity of private companies. The perceptions of private enterprises during and after the *E. coli* contamination were positive ones. While the source of the *E. coli* came from a private farm, the owners of the farm had practiced impeccable environmental protection practices—above and beyond what was required by law—and no one I spoke with in Walkerton considered them remotely responsible for what happened. If anything, people went out of their

way to make sure I knew that it was not the Biesenthals' fault, both in interviews and in more casual conversations about water in Walkerton. The laboratory that had tested the water in 2000 was also privately run, but the problem when it came to the water tests was that they reported the positive test results for *E. coli* only to their client, the Public Utilities Commission (PUC). They did not notify the MOE, as the previous, publicly managed laboratory had, but they were not required to inform the MOE and had done their job of testing and reporting the results to the PUC. Nor did the residents blame the laboratory for the delay in announcing the boiled water advisory. The only problem anyone commented on regarding the private laboratory was a single person mentioned a problem with communication—but that it had been fixed.

Private companies in general came across favorably in the days immediately following the *E. coli*. Private enterprises, along with aid organizations such as the Red Cross and individual donations from people all over the world, were faster at providing relief for the town than the government was. While the government took weeks to respond, within days, businesses were donating bottled water, probiotic yogurt, bleach, and other useful things to help people in Walkerton. Culligan even reimbursed residents who bought water coolers, like those often found in businesses, so that every house I visited while I was in Canada has one of these coolers in their kitchen.

You know you always hear corporations are evil and this and that. They were the first ones to help us, like big corporations and stuff before government. And I had water delivered to my house from Canadian Tire and Zaire's and bleach from, I forget what company that was. The very first few days of the water crisis we had tons of help from these big corporations, eh. And, uh, and some relief agencies, but mostly the big corporations. And, uh, the government didn't help us right away. We didn't get any help from the government for a few weeks, eh, for two or three weeks, but right away the corporations are out of the gate to help us immediately. [Jack, 52]

While the government came across as more interested in casting blame than in helping people, private companies were quick to lend aid during the days following the *E. coli* contamination, no questions asked.

On the other hand, private companies' purpose is to make a profit, and only survive if they are successful at this. Many people I spoke with had reservations about the fidelity of a company managing their tap water whose prime directive is to make money.

It shouldn't be for profit. Got to be health more than profit. And they need to be the watchdog. In a small town you know there's uh many buddy-buddy relationships where it's awkward for the town councilman to check up Fred who's been doing it since they were buddies at school, that sort of thing. Too close of a relationship, often. I think it should be some outside person that comes in and does that monitoring of how it's going. [Sarah, 46]

When it comes to water, Sarah feels, health has to be the priority over profit, and she is especially concerned that there be an outside agent who is not personally invested in the relationship with the owner of the company or its financial success to make sure that water meets provincially established standards. Alexander put it more bluntly, saying that private companies are primarily interested in profit and all else came after that. "I think they are as effective as the bottom line. Like when—as soon as you say private you're talking about profit and therefore I think that, you know, some of them will do a good job, some of them won't" (Alexander, 66). Andrea, if anything, is even more critical of private bottled water companies, seeing them as preying on the fears of the public while simultaneously undermining the importance of affordable, public water.

Well there's a couple of reasons [why I drink tap water]. One is them is that that there are many large companies that are basically making a lot of money and feeding off of the fears of people when it comes to water and not necessarily taking the kinds of precautions to ensure that it is a good product. And also, water is a basic human need and right. And when you start charging for water, then basically you are beginning to draw a line between those who can afford to pay for quality water and those who can't. So it begins to create an atmosphere almost of, well if we're going to bottle our water and buy that,

then does it really matter if we follow the rules of the systems, because if you're just going to be using it for washing, and, uh, laundry and you're going to be drinking bottled water anyway... It creates a whole philosophy that translated into the people who regulate the water. I think we you treat water as a commodity, than as a right that is leads to abuse so I think from an ideological point of view that's one of the reasons. [Andrea, 46]

Henry also expressed concern about how much profit is affecting decisions when it came to municipal water management.

Just a little bit of uncertainty about this um, the business of OCWA and the overrun of their costs and the council bringing on the new agency to regulate our system. And hoping that they have done their homework. That we're going to get a reputable firm to maintain it. Oh, well, I must, I mean I'm just a little skeptical, in that it seemed to take them a while to do it. And the other thing that kinda bothered me is that it seemed to come down to dollars and I'm just hoping that it wasn't an issue. You know that they are, you know maybe they are undercutting to save money, and yet we need their service. Because OCWA is obviously very well thought of in Ontario—they're all over the place. [Henry, 61]

Jack feels that there is room for both private and public management of water, depending on local context, but that it is important for the government to step in when the market does not sustain private management.

I would say there's a role for both, but I would say probably the government [in regards to who should manage municipal water supplies]. The only reason— Canada, speaking of Canada more than the United States, because if you get up in Northern Ontario and there's no profit really, in private enterprise, being involved in the water. [Jack, 52]

One person who I spoke with even commented that the companies' decision to donate water was good business in end, though he is grateful for the donation.

And in a way looking back on that, there was a little bit of ulterior motive to them, but it was a good marketing. Because these companies that were donating free water, I'm sure since have a 1000% more business, I don't know how much, they've done since then. [Henry, 61]

Indeed, many of the people in Walkerton continue to get their water from Culligan and other bottled water companies, particularly the local Water Center, long after the boiled water advisory ended. Others are concerned about the quality of bottled water, and a number believe

that it is necessary for government to oversee private companies responsible for drinking water, whether bottled or municipal. Some I spoke with are hesitant to trust bottled water in general but are confident that their bottled water supplier sells safe water, particularly when the supplier or sales representative is a local who is known to them personally. For them, that personal connection is an important component in trusting their bottled water supplier. “Yes. Not so much about the big jugs, like the 19 L, 18.9 sizes, but the smaller bottles. Because this [the jugs] I know how they treat it, I know the people personally who do it, so I don’t have huge concern there, but small bottles I do” (Molly, 39). In these cases, past experience with the company and, in the case of the local business, the fact that it is owned and operated by a member of the Walkerton community has reinforced a belief in the fidelity of the company, even when they are concerned about bottled water quality in general.

Fidelity when it comes to nature may seem like a strange concept because it has no agency in and of itself, but fidelity in nature would be the belief that nature is inherently benign. That it is in essence good and as such, things that are natural are good for humans. Marketing campaigns, as mentioned earlier, target this concept all the time—eat this product, take this medication, it is *all natural*. And natural means, consumers are subtly told again and again, it is good for them.

In Walkerton, the contaminated tap water that made people sick was basically un- or under-treated tap water, but still some of the people I interviewed prefer to drink the untreated water from the Mildmay Spring over the highly chlorinated tap water. No one I spoke to described nature as malevolent or dangerous, despite residents’ experiences resulting from water that was effectively untreated in 2000. Some of the people who purchase bottled water did not really describe natural water as one way or the other, focusing their trust and concerns about

their drinking water on the human agents who handle their water. In their minds, the safety of their water does not rest on the source but rather the people who process it. On the other hand, those who drink the untreated water from the Mildmay Spring described it as better because it is “natural” and “chemical-free,” saying it is better because it is untouched by humans. Some of this is clearly a taste preference, as virtually everyone I spoke with complained about the strong chlorine taste in the tap water, but many also equate “natural” with “better.”

I think you need spring water, I really do. There some minerals and things in there are healthy for you. So I don't want dead water as such, a lot of that purified some of it to me is dead water. It won't kill ya, or anything, but I don't—I think you do need some nutrients, somehow and spring water'll give that to ya, eh. [Jack, 52]

He feels that natural water is better for him, not only because it tastes better without the chlorine and filtering processes but also because it has natural minerals dissolved into it that the body needs. Processed water is just not as beneficial and tastes “dead.” A number of people I spoke with described Mildmay's spring water and the natural water of some of the other neighboring communities as “good” water, feeling that their communities should not need to treat their tap water if it is “good.”

Competence/Incompetence

Competence is an important component when it comes to trusting another person or institution because if a person is incompetent, no matter how well intended or otherwise motivated, he or she is simply unable to act effectively. Because competence requires not only that the person have the skills, knowledge, and resources necessary to perform as promised, but also the autonomy to act without being overridden by other invested interests, power is a key component to competence. Competence/incompetence refers to the ability of the person or institution a person is considering trusting being *able* to do as promised; without power, this is not possible. Being competent means that the individual has access to the essential resources,

the education, and the freedom to make the promised choices—all of which are elements of power. If the provincial government is powerless to set water regulations, or lacks the funds and the workforce to enforce them, then it does not have the power to regulate water supplies effectively. Outside forces, such as federal regulations, lobbyists, political parties opposed to big government, and economic recessions can all weaken the provincial government's ability to set and enforce water standards. At the local level, small-scale water systems such as in Walkerton are limited because these small towns do not have many resources to invest in it.

Many rural towns struggle financially to provide and monitor public drinking water because of their relatively small tax bases, and Walkerton was no exception. The PUC handled both hydro and water, with a relatively small portion of its income being received from water and a limited number of people dealing with the water infrastructure (Perkel 2002; O'Connor 2002a). In Walkerton, competence/incompetence—the ability or inability to do the expected job—went beyond funding issues and lack of employees. One of the major factors in the *E. coli* contamination was the lack of sufficient education in the water operators. The PUC manager had not completed the 12th grade, nor had he or his other operators been formally trained in managing public water supplies, having been grandfathered into their positions (Perkel 2002; O'Connor 2000a). While the proponents of privatizing municipal water systems argue that private companies are better equipped financially to ensure that their employees are properly trained and have the right equipment (Barlow 1999; Bakker 2007), they are still constrained by the budget of the municipality hiring them and the pressure to provide a competitive bid for the contract.

At the same time, funding cuts made the MOE ineffective at following up on violations in proper operating procedures and therefore unable to adequately enforce the existing water

regulations (O'Connor 2000a). After the contamination, the provincial government, using the Inquiry recommendations as a guideline, passed new water policies specifically intended to correct the flaws in the system, strengthen water regulation, and establish stricter training requirements. They also invested in updated training programs (Lal 2000; O'Connor 2002b). Many of the people I spoke with feel that these changes go a long way to address the problems that had been revealed during the Inquiry.

Walkerton residents do not make much of a distinction between privately and publicly managed companies running their municipal system in terms of their ability to provide safe drinking water. One person made the comment that private companies are more likely to have the resources to effectively manage their drinking water, but for the most part they are more concerned that the water operators have proper training and equipment than whether they work for the public or private sector. Instead, they emphasized the importance of proper training and continuing education, regardless of private or public sector. To many of the people I spoke with, the new training criteria and training centers means that the people who managed their municipal water system have the knowledge and skills necessary to do their job well. Many feel that Walkerton's water contamination was caused in large part by the Koebel brothers being grandfathered into their positions without the necessary education and training. In addition to not having the skills to properly do their jobs, they did not even understand why chlorination was important in the first place or appreciate how dangerous *E. coli* was.

If they would have been educated on it, that wouldn't have happened. They'd known right then and there we were in big trouble. And even some that were on the board for the water and they'd have their meetings and they didn't have a clue what *E. coli* was. Good lord. I was a farmer. I knew what *E. coli* was. *E. coli* kills! [Claire, 47]

While the PUC had adequate funding for training and infrastructure, the Koebel brothers were by every measure too incompetent to do their jobs. They lacked the education and training to

understand what they were doing and why it was important, and as a result had made grievous errors of judgment that, while not malicious in intent, nonetheless resulted in seven people dying and thousands becoming seriously ill. For a number of people, the new training center addresses this problem by making sure that local water managers have the skills and knowledge necessary to do their jobs correctly. The WCWC even has a mobile classroom that can travel to small water facilities in remote areas, where limited staff makes it difficult, even impossible, for the water managers to get away for training (WCWC 2012a, 2012b; Lal 2000; personal communication; interviews).

The *E. coli* contamination also served to inform the public of the importance of properly managing and testing municipal drinking water. The people I interviewed feel that what had happened in Walkerton has increased awareness not only in their small rural community but also in the province and, indeed, throughout Canada. Not only are water managers more aware of the risk, but so are local municipal governments.

We were coming home from Myrtle Beach last March and we stopped to get some, we stopped at Duty Free and there was a chap from Nova Scotia, out east, and I saw his license plate and I said hello to him and “Welcome to Ontario.” And we got chatting and he wanted to know where I was from. And I said “Walkerton” and he said “Oh my gosh, I got to thank you.” I said “What’d I do?” And he said “well just thank you for Walkerton, because I ran the water system in my town for thirty years.” And he said “now that Walkerton has occurred we now have finally proper procedures and policies that we follow and we also have some power and authority where we didn’t have it before because we used to get pushed around by the local government telling us what to do.” Not unlike what happened here prior to this. [Henry, 61]

This awareness, combined with the training, gives local water managers the power and tools they need to make sure that their community’s tap water is properly treated and tested. This heightened awareness means that problems like those the Walkerton water system had experienced prior to 2000 are not likely to be ignored—neither by the water managers themselves, nor by the municipal council members who the managers report to. Not only does

this mean water managers are more likely to have the training, equipment upgrades, and repairs that are needed to maintain water quality, but when something does go wrong, they will be much faster in warning the public before it has a chance to hurt as many people as happened in Walkerton.

I think the response would be different because I think that what happened here in Walkerton focused the whole nation—perhaps the whole continent. This was beyond Canada. Information went out across the States. People knew about us. And that's fine. So I think that the response would be more immediate, more directed, and I think that the information would be given out much more quickly, more readily. I don't think you'd have that delay that I spoke about in regards to the alarm of the situation. I think people would be wise enough at the local level to say we've got a situation, the alerts go out immediately. Bang, bang, let's get on it. [Alexander, 66]

I think it could happen again if something breaks down. I mean mechanics are mechanics. If something happens, you know to the mechanics to one of the pumps or what have you. Yeah it could happen again, but I think it would be caught much quicker. And I think it would be handled completely different. There wouldn't be a cover up. It would be fixed immediately. It would be on the news. There would be door-to-door canvassing. You know, things they didn't do before, they would do this time. [Molly, 39]

Despite these changes, however, skepticism remains in Walkerton about whether they have adequately fixed the problem, especially in the short run. While no one suggested that Walkerton would hire locals without experience to handle their water, Sarah, 46, said that nothing has really changed in terms of the attitude of the municipal government. They continue to hire local people for other jobs without regard for their experience, and she pointed out that Walkerton is not the only town who hires locals based on their connections to the town rather than their job expertise. However, in Walkerton, the water infrastructure is no longer managed by the local government but by a private company, so the municipal government cannot hire anyone directly, local or not, qualified or not, to do the job. In Walkerton, once the municipality signs the contract with the private company to run their water supply, the government's only effective role in their water is in setting the regulations, which are set by the province rather than

local government, until the contract with the management company expires. Instead, the management company makes decisions regarding personnel and maintaining infrastructure. While some people expressed reservations, most of the people feel that the changes, particularly in training, are beneficial.

On the other hand, some of the people I spoke to expressed doubts as to the Ontario Clean Water Agency's (OCWA) competence in particular and municipal systems in Ontario in general as a result of recent news stories about the loss of water from the municipal system and boiled water advisories in the area. Water loss from municipal systems is common, the result of multiple small leaks that are nearly impossible to locate and fix entirely; the problem is so widespread in Canada that water loss accounts for 13% of the total water used (Johns et al. 2008). Some of the residents view this as a sign that the company does not know what it is doing, however, and feel that they are being asked to pay for another's mistakes.

We are. We are, we hired these people to look after this and this is thousands and thousands and thousands of gallons, you know like, what do they do and chances are we'll never know where it went. But who's paying for it? Tax payers. That, that water went someplace, but why blame us? We're paying these people, you know, to do it. That's what makes me mad. And we got all these people on these on these committees. Well then, how can that slip by? [Claire, 47]

The assumption is that if OCWA were properly managing the municipal water source, they would not be losing large amounts of water from the system. Similarly, the heightened awareness of what can happen when people drink contaminated water has made municipal water suppliers extremely cautious about their water quality and calling boiled water advisories as soon as anything out of the normal happens. One informant told me that they called a boiled water advisory, for example, because the water was showing unusually high levels of turbidity. Turbidity is not in itself dangerous, but the water operators felt it was better to err on the side of caution. Rather than appreciating the prudence of their water operators, however, a number of

people I spoke with are concerned that the number of boiled water advisories in their area means that the system is still broken; if it had been fixed, then their water would be good and they would not need the boiled water advisories.

If they did have, why would they still be shutting it down so many times in a year? If they had the problem corrected. That's what I'm saying. If they really—that's lots of times you hear over the radio, well, Paisley is shut down, they're going to Chelsea, Chelsea isn't a very big outfit, if a water cable goes down there, ya know, and their taking the risks there cause your water cable was down, and your wells you could run into sand and dirt, ya know. But I mean if they really had it solved they wouldn't be saying three or four times a year, well, our water's bad, boil it. [Claire, 47]

This breakdown in communication and the lack of understanding of how municipal water supplies work and what the boiled water advisories really mean have cast doubt, at least for some people, on the competence of people managing their tap water.

For these and other reasons, many people in Walkerton continue to purchase commercially bottled water. Some felt bottled water is safer and others prefer the way it tastes. When asked about the relative quality of bottled water to their tap water, a number of them expressed concerns. They are not sure if the water is regulated, unlike tap water, and expressed concerns regarding problems with bottled water, such as news stories about contamination in bottled water.

I have some concerns, yeah. I've heard some stories that it has been tested and doesn't test as well as tap water. A friend of mine actually did that. He sent two samples in, right at the time of the Walkerton water tragedy. He lives just outside of Clifton. He sent one of bottled water and one of tap water. And the tap water came back real good, the bottled water didn't. I can't tell you what was wrong with it, with the bottled water, but the tap water tested better. I don't know what brand it was either. And you hear that every once and a while. It sometimes isn't as good—as good as it should be. [Michael, 61]

They expressed concerns in particular about companies cutting corners—whether in terms of equipment, training, or testing—in treating and bottling the water in favor of profits. The water is then shipped to the stores, where it is left to sit out without refrigeration until purchased.

Well. It's not well taken care of either. If it's not stored properly it can be just about as dangerous. You know, they load these trucks and take 'em to store. They're out in the hot and they take them and refrigerate them. If they refrigerate them. Just put them on the shelf, without refrigeration. And if you notice, um, any store you go into, none of the bottles water is refrigerated. It all just sits on the shelf. [Claire, 47]

These concerns suggest a lack of fidelity on the part of the owners of private companies by placing profit over consumer safety. The uneasiness over improper handling also undermines the perception of the competence of workers, who are limited in their ability to do their job if they do not have sufficient training, equipment, and time to do their job properly.

At the same time, many of those who purchase bottled water—even those who expressed concern for bottled water in general—expressed confidence in their particular source of bottled water. Many of them had spoken with a representative from that company asking how their water is treated and are confident that the company knows what it is doing and that their water is safe.

I've heard enough on CBC radio talks on the fact that there is not necessarily any regulation of bottled water, but really the majority of what we get if from the Water Center here in town and they use three different kinds of purification. So I don't actually worry about that. They do UV, they do osmosis, and something else... Three processes it goes through. [Michael, 61]

Michael believes that the reverse osmosis is what protected him and his family during the *E. coli* contamination, and he still has the system on his home tap and feels safe drinking from it. He prefers the bottled water, however, and he is confident it is safe because of the way it is treated. "And, so the fact that they do that and UV... I'm quite happy. I'm quite satisfied that we're getting good quality water" (Michael, 61).

For nature, competence is quite different; nature is not educated or trained; it does not depend on finances or access to equipment. Instead, competence in the environment refers to the effectiveness of natural processes to achieve the desired result—in this case, pure, safe, and good

tasting drinking water. For example, does the matrix of the bedrock effectively filter out contaminants? Is the source protected from both natural and man-made pollutants? Is the water of high quality (not brackish or overly hard)? While the people who prefer the natural water all said that they prefer the way it tastes and feel it is safer without the potential for human error, most do not directly mention the processes to explain why this was the case. Nor did they express concern about the Mildmay Spring being vulnerable to the same types of contamination that had happened in Walkerton, despite the similarity in the local bedrock and its proximity to Walkerton. Only one person made a reference to how the geological features of the spring affect the water quality by saying that Walkerton's Well 5, where the *E. coli* entered the system was a shallow well and so vulnerable, but the Mildmay Spring is deeper and so more protected. For Walkerton residents, competence is not much of a factor in trusting natural water—unlike water processed by fallible humans, where competence is an important issue they came back to again and again.

Honesty and Transparency/Dishonesty and Opacity

Essentially, honesty and transparency are about the reliability and accessibility of information in a trust relationship. Honesty and transparency combined allow people to better evaluate their trust partner's intentions, ability, and priorities. While neither honesty nor transparency directly contribute to an individual's motives or ability to fulfill their intentions, they are essential in a trust relationship because they help the person who is trusting (or not) to better predict how that person or institution will act in the future. If person is well-intentioned, but lies or avoids answering the questions, they are not likely to be trusted because their motives are opaque. It not only suggests that they have something to hide, but inhibits accountability mechanisms from being effective. Honesty and transparency, therefore, form one of the most

critical of the measures of trust because it informs all the other measures for assessing another person's trustworthiness.

Imbalances of power in relationships often result in an uneven flow of information; in trust relationships knowledge really is power. The more powerful the person or entity the trust partner is, the more likely that individual or institution can manipulate the flow of information and resist pressure from others to tell the truth. Governments have many ways to get information from citizens. They are required by law to fill out tax records; they submit personal information when they apply for a driver's license or passport and when they register to vote. Governments have records about where and when people are born, where they live, any legal infractions they may have made, and even personal statistics such as eye color, height, and weight. Governments can do this because they have the legal authority to require this information and because they can withhold important abilities (such as driving, the ability to travel to other countries, and even the ability to vote) if the populace is unwilling to provide them. Businesses also have considerable leverage to learn about consumers. Stores track purchase histories by regions and even individuals through collecting zip codes, savings cards, and by tracking internet history. Businesses, governments, and political parties have the resources to gather information through surveys and polls, and to hire experts to analyze this data (Heimer 2001).

At the same time, while some government activities may be public record, such as voting records of politicians, much of the process of government happens behind closed doors and the information that is available to the public can be difficult to find, so technical it can be difficult for the average citizen to understand, or written in a way that is misleading, the better to support the interpretation the government wants people to draw. Governments protect themselves by withholding information from the public in the name of national security, making it difficult if

not impossible for the average citizen to get accurate and complete information about the issues. In Walkerton, access to information during the *E. coli* contamination was a problem for everyone I spoke to, and many cited it as one of the major stressors in the months following the contamination. “But yet, you had people who weren’t being given answers and there was a lot of railroading going on in terms of just getting people well settled, won’t be a big deal, initially, and so therefore people were asking questions” (Andrea, 46).

Similarly, while governments can and do require businesses to make public certain information about themselves, much of business still happens out of sight from the public in the name of good business and trade secrets, and information that is made available can be difficult to find or interpret or tells consumers only what the business wants them to know. Both the government and private businesses hire professional public relations specialists to help them present information the way they want it presented (Heimer 2001). This makes the citizen/consumer more transparent to the government and business, while simultaneously keeping the government and business obscured from the citizen/consumer.

Power shapes honesty and transparency in another, more subtle, way as well—and that is establishing certain people or institutions as being more knowledgeable than others. Baldwin (2003), Westman (2013), Peters (1997), and Good (2010) all illustrate ways in which power establishes one source of knowledge as more credible than another, thereby marginalizing, discrediting, and ultimately silencing views that oppose the dominant perspective. The media, medical doctors, scientists, and people in positions of legal authority often speak from positions of authority, overpowering local perceptions. Science in particular is often the basis for authoritative knowledge because it creates an illusion of an apolitical, factual analysis of the world that hides the way it is used politically by the government and corporations to marginalize

personal experiences of local peoples when there are conflicts (Westman 2013; Baldwin 2003). Power thus creates imbalances in the discourse that constructs meanings and knowledge. This imbalance has not only ideological consequences, but political, economic, and social ones as well, as knowledge and meanings shape decisions such as the water policies, medical treatment, and financial compensations following the *E. coli* contamination.

Education is also a factor of power in relationships. Education and access to information resources such as libraries and the internet can help balance the equation by giving average citizens access to more detailed information about businesses and government agencies, as well as the ability to interpret between the lines and to think critically about the information they find. At its most basic, literacy is a form of power in that being functionally able to read is an important skill in a technological world. Beyond that, though, education helps a person to both find information and to be able to understand what they have found. People with higher educations are more likely to be aware of the numerous resources available to them for information. They are more likely to know how to use the library, including interlibrary loan, to search the internet, and to know how to access public government records. They are also more likely to be able to comprehend what they find, and to evaluate the information critically. It is telling that many of the people active in the CWC are teachers (Perkel 2002; interviews)—people who are not necessarily higher in income than their neighbors, but often better educated.

The residents I spoke with, many of whom had a higher level of education than the average Walkerton citizen, talked about how lack of information increased their stress during the *E. coli* contamination and the days that followed—lack of information about the *E. coli*, but also the lack of information about what was going on, what resources were available to help residents through this time, and why the contamination had happened. Even after the Inquiry, information

was not necessarily readily accessible. While the Inquiry was open to residents and every resident was given a copy of the report of the Inquiry, the information was not always easy to understand for the average Walkerton resident whose highest degree is a high school diploma.

In terms of government, honesty and transparency include not only press releases and other statements by public officials, but also access to government records and that the average citizen readily understands the processes of government. If government processes are confusing to the average citizen, making it hard to understand why officials are acting the way that they are, why courts rule the way that they do, and what the law actually does as opposed to what the proponents and opponents *say* it will do, it clouds the issue, making the government institutions both less transparent and apparently less honest.

During the months following the *E. coli* contamination in 2000, the Inquiry revealed numerous instances of information being withheld from the public and even of outright lies concerning Walkerton's water. The residents had no idea until the Inquiry that the MOE had cited the PUC repeatedly for violating proper water treatment practices, and that nothing had been done about it. Whether or not Stan Koebel had realized that his choices had put people in danger, residents argued that Stan Koebel was responsible for many of the illnesses because his repeated insistence that there was nothing wrong with the water delayed finding the source of the *E. coli*.

And I don't think the people would have been so mad at him if he would have said, "Okay. I made a mistake." Like shredding evidence, and that... he knew he was doing something wrong. [Claire, 47]

It was improper supervision of the water system in Walkerton and some incompetent staff situations which helped to cause part of the problem, but there was also some outside effects as well and that was government—government checking of water samples wasn't appropriate. So they, I think they knew there was a problem, but they didn't warn anybody about it, so it just kept getting worse and worse. [Michael, 61]

Well it occurred because of the—the individuals that were running the municipal water at that time, made some grievous errors. They made some terrible, terrible judgments, errors in judgment in regards to the samplings; they made some terrible judgments post the samplings and as to how to correct the situation. And they got into a frightfully difficult situation. They didn't know what to do. So they in fact, fabricated some information, and there for that led to the *E. coli* contamination, the death of several people and sickness in several thousands of some other people. [Molly, 39]

Every person I interviewed talked about how one of the principal causes of the *E. coli* contamination was human error (incompetence) combined with deliberately lying or otherwise withholding information (dishonesty and opacity). That information would have aided the Public Health officials in finding the source; instead, it delayed the boiled water advisory by over a week—a week while people were drinking contaminated water and more and more people were becoming sick.

Even after the source of the *E. coli* was found, though, a number of people I spoke with were frustrated with the lack of information they received—lack of information about *E. coli* itself, lack of information about resources available to people in town, and perhaps most importantly a lack of answers as to what had really happened.

Yeah, not the individual person or people, I think that caused that. Because there was nothing in place to do a follow up you have *E. coli* in your water. Because there was no individual follow up on that, oh you need to find out what they're doing, we need to give instruction on how to take care of this. Because that wasn't followed up and even if it was followed up, nobody came here to make sure and retest themselves. So that that was a certain group of individuals that handled that incorrectly. Had the government stepped in and said: okay we're coming into town; we're going to supply this, this and this. We're gonna answer questions, we're going to educate we're going to let people know what's safe to do and what's not safe to do. We're going to bring more people in—like the line ups at the hospital were tremendous. It was just handled totally inappropriately and had it been handled differently I probably would feel more trusting. [Molly, 39]

Throughout their whole experience, information was warped or outright withheld. The information that was available was often sporadic, based on personal networks. Many people reported finding out about the boiled water advisory by word of mouth from neighbors, family

members, and friends rather than a formal announcement. The Koebel brothers insisted that the water was safe and destroyed evidence that they had been notified that it was contaminated. Residents received conflicting instructions from their doctors, their pharmacist, and even friends and neighbors. The acute diarrhea had been misdiagnosed at the beginning and many people were given medication normally prescribed for most types of diarrhea but not in cases of *E. coli* because it can make it worse. They were also sent home and told to drink lots of water, to avoid dehydration—not knowing that the water itself was the source of the problem. Perhaps because the hospital was so overwhelmed by the number of people who were sick, they never followed up on the people who were thus sent home, and many only found out there was a problem with their medication because the local pharmacy called them to tell them to stop taking it. The provincial government, when it arrived in town, was perceived by many as more interested in deflecting blame and sweeping it under the rug than in answering questions. It took the CWC, with the aid of the Canadian Environmental Law Association (CELA), to pressure the government into holding the Inquiry, which only served to reinforce the perception that the government was reluctant to seek out and share the truth of what happened in Walkerton.

I wasn't very happy about it at all. I think they should have come in much more quickly and dealt with things more immediately instead of the way things were handled. Something I think they just really wanted to go away quickly. You know and there were people who were sick for such a long time, and it just it was not handled really well at all. And had they shown more support at the beginning I think people would have been much more put at ease, and much happier. And had they come out immediately and kinda given more information, but it was like they were trying to hide—hide things and not give us true facts. [Henry, 61]

Thankfully for CWC, they connected early on with CELA who helped them not only with the legal aspect of pressuring the government to hold the Inquiry, but also in helping them navigate the media and to use it to force the government to act. Within the community, however, some of the people were better connected than others, which facilitated them finding information and

learning about resources that others did not know about. “I think if you knew those right one or two people who had the ins and outs. And there were people—I hate to point fingers, but there are fingers to be pointed—certain people knew that you could do that” (Molly, 39).

Clearly, to the majority of people I spoke to in Walkerton, the government had failed to be both honest and transparent in the events leading up to and immediately following the *E. coli* contamination. But what about the government five years later? After what they had experienced, the possibility of the government continuing to lie or hide information certainly must seem very real. On the other hand, their experiences with the Inquiry, the Premier, and the various government agencies in charge of protecting their water quality and health gave them a better understanding of how government actually works. It gave them the knowledge of resources they can use to get access to information that they had not had before 2000—knowledge that may make it easier for them to sort fact from falsehood and to find information that the government is reluctant to share. Residents, especially the core members of the CWC, learned very quickly how to get help from a variety of institutions and how to interact effectively with the media. The people of Walkerton, in general, are well informed about not only what the Inquiry recommended but the policies that had resulted from those recommendations.

It is no surprise that the people I spoke with are somewhat reluctant to believe that the government is honest and transparent. Jack, 52, for example, repeatedly mentioned instances when there were problems with their water quality readings—nothing as serious as *E. coli*, but spikes in the readings that were cause for concern, and the agency in charge tried to hide it. At the same time, many said that they cannot believe that the government would make the same mistake twice, especially the local politicians, who are not only people who have lived through

the contamination as well but are also part of the small, tightly knit community and known to the residents.

The man who ran the water system here before and he said right to my face, it's not the water. I know specific people that was said to. So you know I'm kind of biting my tongue as I'm saying that. Because, but I know these people and I think there would never be a problem, and if there was we'd know immediately. [Molly, 39]

In addition, residents mentioned policy changes that they hoped will prevent the kinds of miscommunication that had helped enable the *E. coli* contamination to happen.

There was a breakdown in communication. They thought they had fixed it. They started flushing the lines, trying to fix it without telling anybody. Though, I think there's a protocol in place now to notify people as soon as something like this happens so that people won't get sick. So I don't think—I think it would be controlled a lot better than the Walkerton situation. [Michael, 61]

On the other hand, it is hard to forget that it happened once already. What is to prevent it from happening again? “Because you know there's some part of me that says ‘well they lied once about it.’ And I know that's—that's not the right way of thinking. I know that. But I guess it's a fear. A fear. I've been there once; I don't ever want to go back” (Molly, 39).

Many Walkerton residents expressed similar concerns. Many are starting to believe in the promises in the government that such a failure to communicate will not happen again, perhaps because they need to believe it so that they can move on with their lives. At the same, they are hesitant to believe in what they are told; they had been there once and, as Molly said, they never, ever want to go back.

Honesty and transparency for businesses means that businesses provide accurate and complete information about their products, businesses processes, and policies to the public. Consumers should feel that they are able to make an informed decision about which product they choose to purchase. Laws such as those requiring truth in advertising can make it easier for consumers to get accurate information and help reinforce the perception companies are truthful,

but advertisements are still often misleading and information about products can still be difficult to find. Like the case of government, the media is often a valuable source of information for the public, as are evaluating organizations such as Consumer's Reports, but information is still limited by the degree corporations are successful at restricting it.

Successful businesses are very good at manipulating public information for their own benefit, particularly through marketing. Effective marketing convinces the consumer that this product is something that they want or need—even if it is a want or need they were previously unaware of—and that this product does this better than anything else available on the market. Advertisements aim to convince consumers that their lives would be easier, more comfortable, and more entertaining if they use a particular product. Alexander pointed out that commercial water sources do not necessarily have to be *better* than the alternative to be successful businesses; they just have to convince the consumer that is the case.

A lot of it, a lot of how effective they will be is predicated on how well they do their marketing. In other words, if you get the right marketing strategy out there, the product is almost inconsequential. It's how well you can appeal to the people. You know that from all the privatizing on the TV, Radio, and whatever. [Alexander, 66]

At the same time, marketing can make it hard to sort out the real truths from marketing truths, unless people have access to information about the businesses from neutral parties.

Few people I spoke with in Walkerton do much research when it comes to their in-home water filtration systems or bottled water, however. If they did any research into a business before they bought the products, most went no further than recommendations from neighbors and family. Some asked thorough questions of the business about their product before investing in reverse osmosis, in-home water filter, or bottled water. It is interesting that even as people repeatedly expressed concerns to me about politicians lying to protect themselves and withholding information from the public, they do not share similar concerns about businesses,

but tend to take information they received from businesses at face value. At the same time, however, the people who most strongly expressed concerns about the safety of their tap water and the fidelity, competence, and honesty/transparency of the institutions who manage, test, and regulate it, are also the ones most likely to distrust bottled water as well. Instead, they drink water they bottled themselves at the Mildmay Spring.

Since the natural environment cannot exactly lie or deliberately withhold information, honesty/dishonesty and transparency/opacity refers to how accessible information about natural processes is. If nature is honest and transparent, it means that scientists can readily observe natural processes and understand them. It also means that this information is accessible to the general public, who can use this information to evaluate the quality of natural resources. If nature is dishonest and opaque, these processes are either not easily observed or if they are, they are complicated and not readily understood. Perhaps scientists do not yet understand how the forces involved interact, or if they do, perhaps the average person cannot make sense out of the reports.

Every Walkerton resident was given a copy of the two parts of the Inquiry, which includes in it a detailed analysis of *E. coli* and how the bacteria ended up in their tap water (O'Connor 2002a) as well as a discussion of the hydrologic cycle and source protection as it applies to Ontario (O'Connor 2002b). Many experts came to Walkerton to testify on the source of the contamination and how it got into the drinking water, and these sessions of the Inquiry were likewise open to the public. Access to this information, however, does not necessarily mean that they have the training and education to understand it. The discussion in the Inquiry on the source of the contamination, how it got into the well, source protection, and multi-barrier approaches to water treatment are written in a highly technical language (O'Connor 2002a,

2002b), and so not necessarily accessible to the average Walkerton resident with at most a high school diploma. One person described their experience as having a crash course in water systems, hydrology, and geology, but for others the science likely remains as mysterious as ever.

At the time of the *E. coli* contamination, a few people—many who either work in the health sector themselves or have friends or family who do—had access to information about what *E. coli* is and how it was transmitted, but many remained confused and uninformed. Years later, they have access to information such as the local water reports, which some of the people still read on a regular basis, but they are self-taught on what that information means, and this can limit their ability to understand the natural forces that affect their drinking water.

Few people I talked to, not even those who preferred to drink the untreated water from the Mildmay Spring, spoke about the natural processes at all and how they influence their drinking water quality. The only references I was given to it were concerns about the quality of the source of water for bottled water companies, but, no one mentioned what particular process or conditions caused those concerns, nor did anyone express any concern regarding the untreated Mildmay Spring.

Accountability/Immunity

Accountability is the concept that someone or something will be able to hold an individual or institution responsible for his or her actions. Since power, by definition, is the ability to both act autonomously—resisting the pressure from others to act in a way a person does not want—while getting others to act the way the person desires (Weber and Carter 2003), accountability is very much embedded in power relationships because accountability is one of the ways to control the actions of others. While people may think of the systems of accountability, such as laws, the market, and elections as neutral institutions of justice, unequal

power means that accountability is applied unequally. As Heimer (2001) points out, laws often favor powerful corporations and government institutions. Political power, legal authority, knowledge of the system and how to use it to people's advantage, and the financial power to hire experts and lawyers to work the system in their favor can help keep them from being held accountable by others. In the case of Walkerton, residents feel that both the local and provincial governments spent more energy in trying to deflect blame, and therefore avoid being held accountable, than they did on trying to address the actual problem.

And right from the start, even though we had legitimate concerns there was a desire in the government to minimize their, culpability is too strong of a word, but their responsibility with the situation. But there was a lot of time spent, basically, trying to silence people. And people had legitimate questions and legitimate concerns... They had a huge fleet of government workers who were working on the Walkerton case... a whole floor in one of the government ministry of environment buildings that were dedicated to the Walkerton at the time, and a lot of it was rather than really advocating, a lot of it was damage control. [Andrea, 46]

In Walkerton, the PUC concealed information at least in part to avoid repercussions, and the Premier from the beginning did his best to deflect blame and to discredit locals. Jack, 52, said that the Member of Provincial Parliament Bill Murdoch described the CWC as radical, and claimed that one of the leaders of the CWC "was a radical, bused in from 35 miles away... He said that on the radio, he said she's a rad—just an agitator." Frustrated with their voices not being heard, members of the community started getting together and talking about possible solutions.

So, we got talking, there was four or five of us at the time. And Bruce said, well, I want to have a meeting so come over to my house and so we went over there... And this was all, it wasn't really advertised, just talking, just phone calls back and forth. The next thing you know, it wasn't more than a day later we had about 50-60 people at the first meeting at Bruce's house to talk about this. It was a very grassroots thing; it wasn't like we put an ad in the paper "come to this meeting." It was just, it was spread around the town, eh. [Jack, 52]

Once organized, the CWC was able to connect with others to help them lobby the government for real answers. They connected with CELA and minority party leaders, which gave them the leverage they needed to press for the Inquiry. Even once the Inquiry was established, however, the provincial government had more resources to hire expensive lawyers and expert witnesses; the CWC had to raise funds and depend on outside assistance in order to pay for their own lawyers and expert witnesses to testify for the town. They also learned very quickly how to use the media to get their own messages across.

As is discussed in Chapter 2, there are a number of ways in which a person may be held responsible for his or her actions, but as far as the government is concerned, the two most common ways an individual is held accountable are through elections and legal sanctions. Both systems for accountability require that there be some kind of oversight system in place to monitor the action of individuals within the government. This oversight can also have multiple forms, including the mass media, NGOs, and legal institutions such as the police department and court systems. Immunity occurs when these mechanisms of accountability are not effective. It could be that the person has legal immunity, such as diplomatic immunity, but more commonly it is because the person has the power—such as political influence, wealth, and connections—to avoid the repercussions of their actions. At best, they might get an insignificant punishment, such as a small fine, and that is all.

While honesty and transparency play a direct part in trust relationships by allowing an individual to personally assess the actions, choices, and intentions of people working in the government, they also play a role in accountability as well. When an individual working in the government lies about a positive test result for contaminants, or attempts to hide evidence of improper operating practices, it is only in part in order to preserve his or her reputation to the

public. If the test results or the improper operating practices are the result of criminal negligence, for example, hiding or lying about their existence also serves to protect that individual from criminal charges. If the people do not believe that the government workings are transparent to both public and the authorities, they are unlikely to believe that people working in the government are going to be held accountable for their actions.

Legal sanctions give the government direct power to hold both individuals and institutions responsible for their actions. In the case of legal sanctions for politicians and government employees responsible for water management, the government first must establish guidelines for training, proper operating standards, and water quality. These guidelines establish a baseline of what the government requires of the people in charge of water quality. In addition, there must be a system in place to oversee local water practices and testing and to establish sanctions, typically in the form of fines and jail time, for people who fail to maintain those standards. Regulations do not do any good if there is no mechanism in place to make sure they are followed, which is why the MOE's dependence on voluntary compliance in Walkerton failed so badly. While politicians should be held legally responsible if they break the laws, when it comes to safeguarding drinking water, this form of accountability is more likely to apply to government employees working in agencies such as the MOE, for local utilities such as the PUC, OCWA, and Veolia, and for bottled water companies because they are the ones directly, legally responsible for safeguarding local water supplies.

In comparison, politicians are held responsible for creating effective legislation for protecting drinking water supplies through elections. Ultimately, in democratic political systems general elections are the most important way that the government is held directly responsible to its citizens. Politicians who represent their constituents' interests are more likely to be elected,

and if they are successful in fulfilling their promises, they are more likely to be re-elected. At the same time politicians who fail badly at the job are likely to be replaced come election time. In Canada, being a parliamentary system, general elections not only hold individual Members of Parliament (MPs) responsible to Canadian citizens, but also political parties. A political party who is successful at winning the public's favor and can form a majority government, or can establish enough alliances with other successful political parties to gain the majority as a block, gains the right to name the Prime Minister and to form the government until the next election. A party that is unsuccessful as a group in doing this, therefore, has less influence in the government as a whole despite the popularity of individual MPs. Therefore political party leaders may choose to reign in individual politicians whose unpopular actions threaten the party majority.

Just as honesty and transparency plays an important role in effective legal accountability, it also plays an important role in effective electoral accountability. The public can only vote on actions and issues that they know about, so having access to accurate and in-depth information is important for elections to be an effective mechanism for accountability. The public needs to not only be aware of the politicians stance on a number of different issues and his or her past actions, but voters also need to understand what this means and how it will affect them. Resources such as a neutral news media, access to public records, and nonpartisan NGOs can all help increase public awareness of the issues and the actions of individual politicians, but closed door politics, biased media reports, lies, manipulation of information, and cover ups all undermine the ability of citizens to vote in their own interests. Just as the perception of dishonesty and opacity can undermine a person's belief that an individual or institution can be effectively held responsible legally for their actions, the belief that political truths are hidden under lies and subterfuge can make it seem like a politician is beyond electoral accountability for his or her actions.

Elections as a means of accountability are also a means limited to citizens who are eligible to vote. This limits the accountability not only to citizens of that particular county, but often the voters who live within a particular geopolitical district. Many of the people affected by the *E. coli* in Walkerton did not live in the municipality, and so the local politicians were not directly accountable to them. They could not vote for that mayor; they had had no say in the selection of the town council members, nor did they have any say in the political changes made in Brockton after the contamination. New people were elected to public office, and a new, private company was hired by the town to manage the municipal water supplies, but residents from other communities still have no say in these choices, even though they may drink water in Walkerton when they come to work or to visit family. The people affected are, however, mostly Canadian citizens from Ontario, and so they do have a say in the politics at the provincial and national level. Voters in neighboring communities, even those not directly affected by the water contamination, demanded that changes be made because they did not want something like that happening in their communities. At the same time, residents in neighboring communities resented the changes made by the new policies, feeling that they were paying for what happened in Walkerton without the financial aid Walkerton received to implement these changes (interviews; personal communications).

Private companies who manage municipal water supplies or provide bottled water are certainly subject to regulations and sanctions in Canada. Just as in the USA, Canadian bottled water is regulated as a food and so separate from municipal tap water (Johns et al. 2008). In addition, the capitalist market can be a powerful mechanism for holding companies accountable for providing quality products. Just as politicians rely on public elections to keep them in office, profit-oriented companies need customers to buy their products to stay in business. Market

pressures can not only pressure businesses to keep prices down and quality high—as people will go elsewhere for their water if it gets too expensive or is inferior in quality—but boycotts can also be used to pressure companies to change socially unacceptable policies, such as underpaying workers or for production processes with too high a level of environmental pollution. As is the case of elections, honesty and transparency are essential for consumers to effectively protect their interest through boycotts and consumer habits. The consumer has to know the truth about the product qualities and business practices in order to effectively make decisions in his or her best interests. Otherwise, those who control the flow of information can manipulate the information available to benefit people other than the consumers themselves, causing consumers to make choices that are not in their own best interests.

As for nature, accountability is a weak mechanism for basing trust because the natural environment is immune to social, political, and economic sanctions. People can—and do—monitor the quality of their natural resources and make that information available to the public, but they cannot jail the bedrock for letting contamination into the aquifer or fine the rivers for not meeting provincial standards. People can exert some control over nature through science and technological breakthroughs, such as dams and levees to control flooding, but they cannot punish or demand retribution from nature; instead they turn to man-made institutions such as insurance for compensation when things go wrong (Heimer 2001). This makes accountability a weak mechanism at best as a base for trust in nature. Unlike processed water, untreated natural springs are situations of user beware—consumers drink at their own risk. Interestingly enough, in the case of the people in Walkerton who routinely drink water from the Mildmay Spring, most of them said they think—and hope—that the water is monitored but do not know who does the monitoring or what their results are. Jack, 52, is the exception, saying that while there are some

people who question the quality of the Mildmay Spring, especially since it is so close to Walkerton, it is being monitored and is safe.

Now there are people question whether that's a safe source. It has been, it's checked regularly there and it's always been safe, free of *E. coli*. There are a lot of people saying "but why are you drinking out of there, it's so close to Walkerton," but anyway, I don't think there's a problem with their water. I've never been sick on their water. But it's checked—ever since the tragedy—it's been monitored tightly. [Jack, 52]

In general, they trust that the water is safe, though many said that they should probably not be so trusting.

In Walkerton, the water was originally managed by the PUC, a local, public institution. The PUC consisted of three commissioners: two of which were elected directly through elections and the third, the Walkerton Mayor, who served in an *ex officio* capacity. The general manager, Stan Koebel, answered directly to the Commission. It was founded under municipal mandate though also answerable to provincial legislation (O'Connor 2002a). The PUC, therefore, answered not only directly to the voters in Walkerton but also directly to the municipal, provincial, and ultimately federal governments. In addition to publicly managing Walkerton's water supplies, the government set guidelines and regulations for water management and distribution. Unfortunately, they failed to effectively enforce these regulations, or the water contamination might have been prevented (Hrudey and Hrudey 2004; O'Connor 2002a).

In the case of Walkerton, both legal and political accountability for what happened came about as a result of the Inquiry and the lawsuits that came afterward. The Inquiry focused on getting to the heart of what happened and why. Law enforcement questioned the individuals involved and commandeered countless memos and records from not only the PUC but also Public Health, the MOE, and from politicians' offices at both the municipal and provincial level (O'Connor 2002a; Perkel 2002). The PUC sued the Biesenthals, who owned the farm where the

E. coli originated; many residents in Walkerton participated in a class action suit against the local government and the province, while others chose instead to accept the province's settlement plan (Perkel 2002; interviews). The Biesenthals were absolved of any responsibility for what happened, though many Walkerton residents still felt that the government and the media did their best to pin blame on them (interviews). The Koebel brothers were charged with public endangerment, fraud, and breach of trust, but were able to plea bargain for a "common nuisance" charge by pleading guilty of risking public safety through their failure to monitor and treat the water properly. Stan Koebel, the manager, was sentenced to a year in prison while his brother and foreman, Frank Koebel, was sentenced to 9 months of house arrest (CBC 2004).

Some of the people in Walkerton think that there should have been stronger sanctions that came out of the Inquiry—and for more than just the Koebel brothers. While many blamed the Koebel brothers for what happened, they also felt that not all of the blame was theirs and that the brothers had been sacrificed as scapegoats. Some felt disillusioned by the process, particularly because of how the lawyers handled things and how they felt that the government tried to lay the blame on the Biesenthals. Even though the Biesenthals was officially absolved of responsibility, many still felt that the government and the media had treated them unfairly. "And they tortured those poor Biesenthals something terrible. 'It was their fault.' It was not their fault! They lived through hell. Everybody was blaming them" (Claire, 47). Despite the fact that the Inquiry made it clear that the blame for the 2000 contamination went well beyond the brothers (O'Connor 2002a), no other criminal charges were pressed in regards to Walkerton.

Carl, 63, said that he was disillusioned by the Inquiry when, after extensive analysis of the local geography by experts who concluded that the contamination could not possibly have traveled over the surface to Well 5 because there was a slight slope up to the wellhead, Justice

O'Connor still left that as a possibility, however remote, even as he officially absolved the Biesenthals of any responsibility. Most of the people interviewed, however, feel Justice O'Connor had been an excellent choice to lead the Inquiry and that the Inquiry had gone a long way to address the issues that the *E. coli* contamination revealed. "He was an excellent, excellent man—is— an excellent, excellent man, Justice O'Connor. If we had to have—and we did have to have—somebody to lead an Inquiry, he was probably as an excellent choice as we probably could have" (Alexander, 66).

Justice O'Connor uncovered a number of flaws in the existing regulations and enforcement and recommended proposals to address these issues. Ontario has subsequently implemented a number of these changes in provincial policy, tightening up regulations and therefore strengthening the mechanisms for accountability.

I think that it's their job and I think they are doing a good job due to Justice O'Connor. He put it to them, and basically, with it gets to government I think they are coming along. And prior to that, the conservatives had to do something. Mr. Harris, because they were dragged in front of the public so much that they had to do something. Yeah, I think they are quite capable and quite trustworthy. [Henry, 61]

After the contamination, Walkerton hired a private company to manage the water supplies. Accountability for a private company is somewhat different than for a publicly managed one. A public institution is ultimately answerable to the voters. A private company, however, is answerable to its stockholders and its customers rather than to voters. In this case, OCWA and, later, Veolia, the company who took over managing Walkerton's municipal water system in 2006, are accountable to their clients—the municipal government who offered them the contract and who is, in turn, accountable to the Walkerton voters. Theoretically, this means that the companies are indirectly accountable to the residents as well as the board that hired them, but tap water systems cannot effectively compete for individual residential consumers.

Instead they compete only when it comes to bidding on the contract, where the local government hires the winner (Barlow 1999; Baker 2007). Residents can express their preference by putting pressure on municipal council members, but once the contract is signed have little choice other than to go off the grid for their water (Bakker 2007), such as turning to the Mildmay Spring or bottled water.

Just as private companies emerged from the fallout of the *E. coli* contamination better than the government on the fidelity/infidelity scale, so too did they come out better when it came to legal accountability. Only two private enterprises—the privately owned and operated laboratory that had tested the water and the family owned farm where the *E. coli* originated—were involved in any way in the events leading up to the contamination, and both the Inquiry and the civil lawsuit absolved them of any wrong-doing. In the case of the laboratory, they did their job of testing the water and reporting their results back to their client, the PUC. While it is unfortunate that the company did not also report the bad test results to the MOE, as the previous laboratory had done, they were not required to do so and they had no reason to suspect that their results would be buried by Stan Koebel. The Biesenthals had not only done everything they were legally required to do to protect the environment, they had voluntarily implemented additional environmental protection protocols, and the court acquitted them as a result (O'Connor 2002a; Perkel 2002). In both cases the private enterprises were absolved of guilt and no legal or civil sanctions resulted from it, and Walkerton residents agree with this assessment of guilt and feel that justice had been served (interviews).

The single most common reason I heard for trusting the tap water in Walkerton now is simply that the current government and water management institution, whether public or private, cannot afford anything to go wrong with the local water supply because of the backlash that

would result. I was told repeatedly that Walkerton remains very much in the public eye when it comes to water.

Our municipal water system in Walkerton is the most scrutinized of any municipal water system in Canada. [Alexander, 66]

Now probably the good news from Walkerton is, any time you have a water situation, in any municipality, the media is almost immediate responders. In other words, they get there very quickly to find out what's going on. And if you, the term "Walkerton" is synonymous with water. Anytime there's anything about water across North America invariably within the comments that are made whether they be made at the technician level, the municipal level, the governance level, the gove—you know whatever, the term "Walkerton" comes out and you can find that all the time. [Alexander, 66]

Number one, because it's kind of a poster child here now. Walkerton is a bit of a, it's what's being shown as the water town. Subsequent to that I'm sure the testing; the due diligence is probably 100% as far as knowing how much chlorine concentration is in the system. And also as they do their testing anything would show up would be immediately captured. [Henry, 61]

With all the scrutiny in the media, even years later, when it comes to Walkerton and water issues, Walkerton residents feel that it would be disastrous to be the politician or water management company that let something like that ever happen again. As a result, many feel that the visibility of Walkerton is the most effective mechanism for holding the water providers accountable.

But I think private; if a private company—at the time it was a PUC, public utilities commission—if it was a private company based like OCWA today who had let that happen, and say OCWA was in half the world, half of Canada, say, providing water, and they let this happen, tried to cover it up and didn't fix and didn't do. That business would be ruined. Gone. [Molly, 39]

As a result, many of the people I spoke to said that after everything Walkerton had been through, the changes that have occurred, and the scrutiny the town is now under, Walkerton probably has the best drinking water of anywhere.

And again that's said with the fact that we probably have the safest drinking water in the world right now. [Molly, 39]

I guess every time we went to town or to a restaurant we'd drink bottled water. Like everybody else. Some people still are. But I think it's probably the safest water in Canada now. [Michael, 61]

Despite this, though, less than half drink any tap water at all, and most of those who do drink it only rarely.

An interesting issue of accountability came up in regards to the private testing of the water in Walkerton at the time of the contamination. Government agencies are held responsible to the public, but private companies are held responsible to their clients. These are different relationships, based on different underlying assumptions about the nature of their relationships. Testing municipal tap water originally fell under the umbrella of the provincial government as well, but in 1996 the government privatized it. The provincial government is still responsible for setting up guidelines and regulations for water testing, such as regulations on how frequently the water is tested and for accrediting laboratories, but individual municipalities choose the private company to test their samples (O'Connor 2002a; Perkel 2002). The testing agencies are held accountable to their customers legally, under provincial regulations, and by market pressures that allow municipalities to go elsewhere if they are unhappy with the service. The government agencies are accountable to their employers—the publicly elected local governments, who are, in turn, accountable to their voters.

One of the criticisms coming out of the Inquiry was that when water testing was privatized, no guidelines were put into place for reporting bad water samples (O'Connor 2002a). When a publicly managed institution had done the testing, failed water samples were reported to both the MOE and the water company. After the water was privatized, the PUC had continued to work with the same facility, now privately managed, for a while, and it continued to operate under the same basic assumptions. Just before the *E. coli* contamination, they had switched to a

new water testing company, however. Not only was there quite a bit of confusion over how the water samples were to be submitted, but the new company operated under the assumption of client confidentiality, in this case, the PUC (Perkel 2002), much as a medical laboratory only gives test results to the patient. As a result, they did not inform the health units and the MOE with the results of dangerously contaminated water, but only contacted the PUC, assuming that they would act accordingly. The PUC did not; the manager told the Inquiry that he had misunderstood which water samples had failed and thought that they were for a new water main that had not yet been hooked up to the system. In any case, he did not act on it and the report was buried (Perkel 2002; O'Connor 2002a).

While a couple of people interviewed are concerned about laboratories and municipal water system managers covering up negative test results—whether from a desire to protect themselves or to avoid alarming the public, no one expressed any concern that the laboratories are not being effectively held accountable. Accountability for the testing companies, private or public, was not really addressed at all in the interviews, other than to say that they should be regulated by the government and that there is a need to clarify the chain of communication to prevent the kind of miscommunications that happened in 2000. Several believe that the new provincial policies have addressed these issues.

Many Walkerton residents turn to privately supplied bottled water, which is accountable to its customers, through laws and market pressure, and to its stockholders. Unlike municipal tap water systems, however, it is easy for consumers who are unhappy with a particular bottled water product to go elsewhere. They did not talk about the market as a means to keep companies accountable, however, or for that matter express much belief that private companies can be held directly accountable to their consumers. Molly, for example, when asked who private companies

are responsible to, responded that their first responsibility is to the client over other interested parties such as the owner or stakeholders:

I think a business is ultimately responsible to the client. If you're promising them something, you need to follow through with what you promised. Whether it be safe drinking water, some meat, a properly built home. Regardless of what it is. If you've promised something, or written a contract to agree to something, you need to follow through. [Molly, 39]

Later, however, when asked whether the government or private companies would be better at managing municipal water systems, Molly stated "I would think government. They have to be accountable." This strongly suggests that she does not believe that private companies are held accountable to their consumers.

For Walkerton residents, the role of the market in holding privately owned bottled water companies accountable is secondary to the role of the provincial government as a regulating institution. Scholars have argued that Canadians in general are more likely to trust their government and expect their government to take care of them and are less likely to trust private enterprises to do the same than are Americans (Lipset 1990; Resnick 2005). Despite the fact that the people of Walkerton had suffered substantially as a result of the failure of their government to deliver safe drinking water, the majority of the people still trust government regulations over the capitalist market to protect their drinking water. Rather than talking about the capitalist economic system motivating business owners to provide a quality product, they stressed the importance of government regulation and monitoring, and expressed concerns about whether or not private water supplies, especially bottled water companies, are adequately regulated.

Well you wonder if it's being stringently monitored tested at the source, if they carry regular tests out. I mean, they're taking out huge volumes of bottled water, more than they ever did before. Year after year it's increasing what they're taking out, the amounts. And more and more people are using it and so you are these being stringently tested? Are they being monitored? So I say, I worry about it—hopefully it is being stringently tested, eh. And I think it is, I actually say this because of the government regulation

that's happened since this water tragedy, but, yeah, sometimes I think about that. [Jack, 52]

The people I spoke with are very familiar with how municipal water is regulated post-2000, but know little about how bottled water is regulated—or even if it is regulated at all. News stories and information from friends and family questioning the quality of bottled water in comparison to tap water raise concerns about the quality of bottled water in general while leading them to believe that bottled water is poorly regulated, if at all. They do not, as a rule, trust businesses to be held accountable without government intervention.

But yeah, but those organizations as private have to be monitored by the government. They just can't come in and do it their way. There has to be a standard procedure for making sure water is safe and if they're looking after it they have to follow those standard regulations. I mean, if you didn't have that, they'd cut corners. They're responsible, they're liable, and they've got to follow the rules. [Michael, 61]

For Walkerton residents, accountability means that the government is effectively regulating the water providers, whether the providers are publicly or privately operated.

Global Trust

Global trust and global distrust refer to trust, or distrust, in a collective of agents, such as politicians or entrepreneurs, or a system as a whole, separate from their trust or distrust in a specific individual or institution. Global trust and fidelity are often linked, however, as trust in a particular system or type of people tends to reinforce trust in individuals within that type or system. Essentially, global trust in government is the belief that either politicians or the political system as a whole are, in themselves, inherently good. People who have a global trust in the political system are more likely to trust the system to look after their self-interests. Trust in politicians as a group means believing that politicians will serve the public good. While global trust is linked to fidelity, it is still separate from it; a person can believe that their particular MP is a trustworthy person while still believing that politicians in general are not. Global trust also

means that people can distrust politicians, including specific politicians, while still believing that the mechanism of government itself protects their self-interests (Hardin 2006).

Global trust and distrust are grounded in the construction of meanings, knowledge, and values of the people because global trust is trust in concepts rather than individuals. Canadians, as a general rule, tend to distrust profit-oriented institutions. They tend to trust in the government, believing it a benevolent institution that serves the collective good and protects Canadians from their harsh natural environment. These discourses are embedded in culturally shared values, such as valuing the collective good over individualism, and closely tied to political and economic policies and resource use (Lipset 1990; Adams 1998; Biro 2007; Mackey 2002). Constructions of nature are particularly complicated, as conflicting discourses on the environment are rooted in national identity discourses (Loo 2006; Mackey 2002), the view of Canada's natural resources as raw materials for economic development (Biro 2007; Mackey 2002; Loo 2006), and the concept that nature is valuable because it is untouched, pure and healthy (Gleick 2010; Cronon 1996). These discourses do affect the other measures, but not to the same extent that they are visible in the analysis of global trust and distrust.

All of the people interviewed said that before 2000, they never doubted the publicly managed water system. They believed, in general, that their government would look after their welfare. In 2000, this trust, understandably, was shaken. The system had failed them in 2000, and it will take considerable time to repair that relationship. Even though many still believe in the importance of government oversight, they are much less certain in the trustworthiness of government institutions and actors. For many, it may never return to what it had been before 2000.

Jack said that he feels that people living in rural communities tend to have a high degree of global trust in their government, and tend to trust the system blindly, but after 2000, he could no longer do so.

I think it's more rural than urban, there's a real trust of government and authority. I wouldn't say I have distrust, but I don't have this blind faith in government that they do in a rural area. They trust their authority figures and they, there's this blind trust that they'll do the right thing. And it's just not the case. They're out to protect themselves first and cover their ass. And if they can help us, they will, but they're more after to cover their own butt. [Jack, 52]

At the same time, most of the residents feel that the government is still the best entity out there to protect their drinking water quality, even though they no longer trust it unconditionally like they had before the *E. coli* contamination. Despite the strong level of distrust they expressed in terms of infidelity and dishonesty/opacity, most of the people I spoke to still feel that the government regulations are the best way to protect their water quality. They unanimously agree that the government is the best institution for regulating and overseeing drinking water, but are divided on whether or not municipalities should directly manage their own drinking water. Some feel that water management should be the responsibility of the municipality. Others feel that it does not matter if the water is publicly or privately managed as long as there is public oversight. Most were only willing to trust private corporations because of government oversight, however, rather than trusting them in their own right. Only one person feels that private businesses are better at managing and distributing water.

In an ideal world, the government is better at it, but you know, shit happens. It did. I just see that as the role of government myself, personally, to keep people safe and look after us. The basicness I think of life. It's probably a very Canadian Outlook. Just cause our medical system is provided for. [Sarah, 46]

The *E. coli* contamination of May 2000 severely weakened residents' trust in their government and its ability to protect their drinking water quality. The contamination affected all

five components of trust, and despite serious investment in training and new infrastructure and the new, more powerful water policies that had been passed, all five areas of trust in the government remain shaky. For some people, the changes after 2000 have helped to restore a tentative trust in the government, but many remain skeptical and unwilling to trust the government so freely again. That residents in and near Walkerton are reluctant to trust the government is not so surprising, perhaps; what is more surprising is that any of them are willing to trust in their government at all, no matter how cautiously.

Just as global trust/global distrust in the government can refer to both trust/distrust in government officials in general or in the system itself, global trust/global distrust in private enterprise can mean either trust/distrust in businesses in general or in the capitalistic system itself. Global trust is the belief that private enterprise and the capitalist market are inherently good and are better at providing services and products than other institutions. It is the belief that capitalism and private enterprise combine to make the best system for protecting individual rights and interests. Henry thought that private companies are more motivated to manage municipal water systems effectively because they are more invested in it.

Well, only in the fact that you're running a business at the bottom line you have to have a profit and you have to be able to pay the people for whom you have hired, so you actually do a good job in order to do that. Government agencies, uh, hey, there's nothing wrong with government agencies, except they're not working for profits. And there is just sometimes the same kind of zeal and ownership when it's a private business. [Henry, 61]

Global distrust in private enterprise and capitalism, on the other hand, is the belief that the system is inherently flawed, and that most private enterprises are corrupt or at best self-serving and motivated by greed. Henry is the exception to the norm; most of residents are skeptical of private companies because they are motivated by profit, which they see as weakening the fidelity of the private company. While they might have seen the motivation to

make money as an incentive to provide a quality service in order to gain and retain more customers, as Henry, 61, does, nearly every person feels instead that it undermines their ability to trust the institution and the capitalist system in general. They can and do trust individuals in this system—specific companies and water suppliers—but as a whole they tend to distrust private enterprise. Whether this is because they belong to a rural community, as Jack, 52, suggested, or because they are Canadian, as Sarah, 46, claimed, most of the people I spoke with prefer to put their trust, however hesitant, in the government to look after their wellbeing.

This skepticism toward private enterprise is particularly true for private companies managing their water supplies, but less so for their bottled water. While I certainly heard a significant amount of concern about the quality of bottled water and whether or not the government regulates it adequately, as mentioned earlier, there remains a tendency for some to feel that bottled water is inherently safer than their tap water. “Bottled water, I don’t think about it very much. I guess I’m absolutely trusting of the bottled water is somehow clean and pure. Any levels of any kind of whatever in it I haven’t given much thought to” (Alexander, 66). Alexander is conscious that just because he tends to trust bottled water does not necessarily mean that it is safe, however. He is aware of some issues regarding bottled water, and when talking to me about water issues in general and bottled water in particular acknowledged he is not sure that bottled water is the right way to go either. Still, he still tends to assume, unless proven otherwise, that bottled water is okay.

I’m not even sure that bottled water is the answer, either. Because, from what I’ve read and the little bit I know of it, it doesn’t necessarily; you know there’s some questions about sources of bottled water, too. I guess if you figure it’s in a bottle, it’s sealed, then it must be something fine. [Alexander, 66]

The interviews indicate a strongly pervasive trust in bottled water as being good and safe, even as most are hesitant to trust the companies who provided it.

An interesting pattern that turned up repeatedly is a strong global trust in people who are local to Walkerton and who have invested in the town. Local identity and community matter to the Walkerton residents, and this is reflected in their trust relationships. Even Justice O'Connor, an outsider by any definition, was received more favorably in the town because, unlike the many lawyers and newscasters who visited Walkerton, he chose to live inside of Walkerton itself while running the inquiry. He had lived in the community and, as a result, many felt he had become invested in it. "He moved right into the community, spent time here. Has returned for visits over the past few years; like returned for certain occasions, different things" (Alexander, 66). While he would never be considered a true local, his commitment to share their experiences during the boiled water advisory and the Inquiry, his visibility walking to the building that held the Inquiry, and his willingness to even help push a car out of a snow bank earned him respect in the community.

Repeatedly, residents are more willing to trust people or institutions if they are local to Walkerton, even when the residents are unlikely to trust the type of person or institution in general. Molly, 39, is leery of bottled water in general, saying, "Bottled water, I don't think... I think the kind you buy in stores is mostly spring water and if I'm not mistaken I don't think that's really tested, is it?" When asked if she had concerns about bottle water, she responded:

Yes. Not so much about the big jugs, like the 19 L, 18.9 sizes, but the smaller bottles. Because this [the jugs] I know how they treat it, I know the people personally who do it, so I don't have huge concern there, but... small bottles I do, and actually just had a conversation this week with one of the teachers at school about bottled water. [Molly, 39]

She went on to say that the fact that she knows the people who run the water center where she buys her water makes it "more comforting. And I know they told me the process, I went in a

specifically asked about the process and how it's done. So, I'm comfortable with what they've told me" (Molly, 39).

Part of this is likely because the regular interactions someone has with people they see on a regular basis builds on each other, helping them to establish closer, stronger ties than they would with people or institutions they interact with on a limited basis (Hardin 2006).

Nevertheless, being "local" in Walkerton goes beyond that for most of the residents I met; it is an important part of how they define themselves, a definition that made them part of the community in a way that visitors, even regular visitors, cannot share. Sarah, 46, touched on that when she said that it does not matter how long she lived in Walkerton; the fact that she did not grow up there means she will never be truly local. Even her children, who did grow up there, would never be considered local because their parents are not local. Being local means not only do local residents have a personal investment in the community, but they have a generational investment in it, and multi-generation connections with other people there. While this tends to build a stronger encapsulated trust (Hardin 2006), and most of the people interviewed see this as a good thing, some see drawbacks to the tendency. Sarah, in particular, is frustrated because it also means that the community continues to prefer to hire locals for municipal jobs, even if the locals are not qualified. Her concern is that the global trust in locals is not necessarily backed by competence.

Global trust/global distrust in natural water—and by extension in the natural world—is probably the single most important aspect of trusting natural, untreated water for the residents of Walkerton. Global trust in water means that people feel that nature—and natural, untreated water by extension—is inherently better for them than anything that has been processed, treated, or otherwise handled by humans. Global distrust in nature is the opposite belief: the belief that

nature is inferior to the products of humans and that people can improve on nature. It is distrust in the forces of nature. Rather than believing that natural processes are beneficial, it is the belief that any hurdle can be overcome through more, not less, science and innovation.

In Walkerton, they have a clear example of the fallibility of humans, and as a result, many turn instead to nature, which is untouched by flawed human systems. They are hesitant to trust their tap water, even those who know intellectually that their water is probably the best in Canada. While some drink commercially processed and bottled water instead, many still prefer natural water.

It just as you come into Mildmay from Walkerton. The north end of Mildmay. It's a natural spring, spring water, I don't know. And it's just at a little park and you can pull in and fill up with lovely wonderful water. And it used to be what the town got, the town Mildmay got that lovely water in their taps, but then with all this stuff that went down here they added chlorine and everyone was very grumpy about that, I think. It really is fabulous water. And so sometimes when we were putting on events where we were going to make tea or coffee. Like we did a coffee shop fundraiser once when I worked in Literacy. Way before 2000, but we would go down with jugs and fill up with that water because it was so nice. And it's free. Like now I think they have a little donation bin, but you don't have to pay for it. So people go down and get. Cause most places around here now are heavily chlorinated, and it doesn't taste good to drink the tap water, so.
[Sarah, 46]

For some, they prefer the taste of the Mildmay Spring because the water there tastes better than water they can get from other sources, but, for many, they prefer it because they also believe it is safer because it is natural. "Besides it's safer than bottled water. They say bottled water can have as many germs in it as your own water. So, and I've tasted some of it too, we had to drink it from the start and it doesn't taste like real water" (Claire, 47). Claire, though very skeptical of the quality of both her tap water and bottled water and the only person interviewed who routinely tests the quality of her tap water, has complete trust in the quality of the water from the Mildmay Spring and has never tested it to make sure it is still safe. "No, I just test my tap water, because the water from Mildmay is out of a spring and like it's fresh water all of the time. I do it for my

mother too. I bring her water and I get it from Mildmay” (Claire, 47). Michael added that if he were to buy bottled water, he would only buy water that came from a natural spring, even though he admitted that he does not know that this water would actually be any better.

If I was, if I was looking for bottled water to buy, I’d want to see Natural Spring Water on the label. Maybe it’s just my idea that that would be better. It might not be better, who knows. Maybe the Lake Ontario water after it’s treated and filtered is better than Natural Spring Water. I don’t know. [Michael, 61]

In addition to being safer and better in a general sense, many expressed a preference for the untreated water from the Mildmay Spring because it is not treated with chemicals. Before 2000, Walkerton’s tap water system was routinely under-chlorinated (O’Connor 2002a; interviews), and now that their water system is functional again, their water is strongly chlorinated (interviews). They were not used to that much chlorine in their drinking water before 2000 and every one said they strongly dislike it. Even I, who am used to chlorinated tap water from a surface source, found it strong. Jack, speaking of getting his water from both commercially marketed bottles and from the Mildmay Spring, said that he feels that a natural source is better and safer than his tap water because it has not been treated with chemicals, unlike his tap water, which smells and tastes strongly of chlorine.

I would say I prefer it, I guess I’m thinking it’s a safer source. Some say it’s tap water anyway, but I don’t think so, I’ve heard it comes from, most of the bottled water I get comes from Mildmay or from Feversham where there’s a bottling company. So, I think it’s safer and it doesn’t have chemicals, it doesn’t burn, can’t taste the chlorine. There’s not, I don’t think there’s chlorine in it, because it doesn’t taste really good. It doesn’t have that burn, or, like the tap water’s got that burn and bit on it. I think it’s safer. I can tell I haven’t been sick or diarrhea in six years and I’ve been drinking it for six years and I haven’t had diarrhea like I did before. [Jack, 52]

When I asked how the people who got their water at their spring cleaned and disinfected their water jugs between uses, I was told that some take them to a local business that purifies them.

Others, like Jack, clean them at home. When he was describing how he cleans them, Jack repeated his aversion to chemicals:

Oh, I just wash them out, actually, there, with their water. No I don't put in any chemicals, I treat them there... Yeah, I do, I do, I don't know if that's good enough, but I think it's safe because I'm washing it out with their water. I don't use chemicals and maybe I should be, but so far it's been safe. I mean how safe can you get? You know, you wonder like take precautions, but like—. [Jack, 52]

For Jack, chlorine and other chemicals in his tap water are the main reason he does not drink it. While he and many other residents have a number of things they want done before they would trust their tap water, such as enforcing effective regulations and making sure that municipal water operators are properly trained, the primary thing Jack wants is to remove the chlorine from the water.

Well first off I don't want that chlorine in there, the burn. I'd want that out. Chlorine and the burn I'd want out. I'd want it to be more natural. This is not natural water at all it's been all; it might be safe, legal, what else, but its tastes crap and its taste burns. So they would have to take all those chemicals and crap out of it. And you want that out of it. I suppose then you've got the risk of *E. coli*, but I'd want that crap out of it. And then, before I'd drink it, yeah, and that's likely never to happen. And it's kind of a shame because like I told you earlier, Chelsea has got, it's always had really clean water. There are communities in this country that really don't need to—*E. coli* and all—rather they don't need these chlorine and everything has to have chlorine now, it's more or less law. But there are a lot of these sources that are already free of contaminants—not everything is totally contaminated, a lot is, but, yeah, it'd have to be free of all of that. That's probably impossibility in this day and age. Free of chemicals in the water, tap water. [Jack, 52]

While he admits that there is a time and place for chlorine if the water is contaminated with a biological contagion such as *E. coli*, he feels that many municipalities in his area have clean, pristine, safe sources and that there is no reason to chlorinate them.

Trust, Power, and Water

Trust relationships are multidimensional and complex. The five measures of trust break trust down into five different, but interrelated, components. When residents of Walkerton talked

about their relationship with the sources of their water and the institutions responsible for it, they expressed ambivalence and contradictory trust perspectives. It is understandable how one person may feel that, with the new public awareness of water issues, the institutions responsible for their water will be very careful not to make the same mistakes, but can still be aware that they had trusted these institutions before and people contracted *E. coli* and died. Walkerton residents are aware, to a degree that they had not been before the 2000 contamination, of how vulnerable they are and how powerful the institutions they are dealing with are relative to themselves.

They got away with a lot up here and mainly because it was a backwater community. And we weren't on the, we did become on the map, everybody knows where Walkerton is now, but we were an out of away community where a terrible thing happened. And it was easy for them to you know to, you know to use the system, machinations, everything, in order to help themselves, eh, and survive as a government. And it would not have happened if it'd happened in Vaughan Township or Muskoka or any town where there's influential people. And that pisses me off, but in a way they're damned lucky it happened up here. [Jack, 52]

They want to believe, perhaps even need to believe, that the changes made since then have addressed the problems revealed during the *E. coli* contamination; at the same time, they worry that nothing has really changed. On the one hand, they are much more visible than they had been before 2000—as Jack, put it, they are now “on the map” and people all over Canada know who they are—and they have learned how to strategically use the media to shape national discourses and to form alliances to help even power imbalances. On the other hand, they are still a small rural community with an economy based on a combination of agriculture and industry.

While these measures of trust do interact with each other, they are not applied equally in every situation, especially when power in the trust relationship is unequal. Power is about control. Competence/incompetence, honesty and transparency/dishonesty and opacity, and accountability/immunity are all essentially matters of power. Competence requires the trusted institution to have the ability and authority to do as promised, which depends on that institution

having the power to do so. While an institution may voluntarily opt to be honest and transparent in its dealing with the citizen/consumer, in many cases it may choose not to. If it has the power, it may withhold information and share only that which benefits it from the public knowing, while power in the hands of the public can pressure it to reveal what it does not want to.

Accountability relies on the knowledge that, should the institution fail to uphold its part of the trust relationship, power can be applied to hold them responsible, whether that is the financial power of the consumer, the legal power of the government, or the social power of withdrawing social favor. Power in the area of competence reinforces trust relationships, but power—especially unequal power—in the areas of honesty and transparency/dishonesty and opacity and of accountability/immunity undermines trust relationships because the more powerful entity is less vulnerable.

In cases where the individual is less powerful than the individual or institutional partner in a trust relationship, the measures of fidelity and global trust become more critical. When people cannot rely on other people and institutions to be honest and transparent, or that they will be held accountable for their actions, then trust relies on perceptions of their benevolence and the functioning of the system—fidelity and global trust. Unfortunately for the government, fidelity and global trust are the most fragile of the measures of trust—the easiest to break and the hardest to rebuild. Both were shaken in Walkerton after the *E. coli* contamination, and it will be a long time before the residents fully believe in the fidelity of the government or have global trust in the system again, if ever.

At first glance, power has little to do with fidelity/infidelity and global trust/distrust. Fidelity is, after all, belief in the well-meaning intentions of the trust partner rather than control or influence, and global trust is trust in the overall system or group, but that would not be the

case. Fidelity in the trust relationship does not necessarily reflect the *reality* of the other's good intentions, but rather the *perception* of those intentions when entering into a trust relationship. Power, therefore, has the potential to shape these perceptions in two ways. First, people and institutions in positions of power tend to have a stronger ability to shape and control their public image. This can happen in a number of different ways, including access to the media, utilizing PR departments, and using legal or financial pressure to suppress negative PR. This is one of the reasons why authoritative knowledge can have such a profound effect on trust relationships. The power in the case of fidelity is not all in the hands of the wealthy and powerful, however. While it is one thing to pay for positive images on the television and to suppress news stories regarding unethical overseas practices, reputation is a fragile thing; it can take years to build up a positive reputation and a few bad experiences to undermine it, or even destroy it completely (Hardin 2006; Cook et al. 2005). Word of mouth can be a powerful reputation builder or destroyer, particularly in a small, tightly knit community like Walkerton.

Power also influences perceptions of fidelity in relationships in a more subtle way. Where people have a choice, reputation and experiences can guide people to choose the most trustworthy person or institution to be in a relationship with. When people are dependent on a sole person or institution for something they need, they may unconsciously view that person as benevolent in order to safeguard themselves from the stress of being trapped in a relationship with someone who does not have their interests at heart, even when there is evidence to the contrary (Weber and Carter 2003). Many of residents of Walkerton are at some level aware of this tendency, saying how they choose to trust a given water source because the alternative is to constantly be living in fear. Lisa, 37, admitted "I guess I'm just as guilty as before just assuming that it's in the right hands." Molly, 39, expressed some conflict; on the one hand, she lets her

children drink water straight from the tap because she does not want them to grow up “paranoid,” but, on the other hand, acknowledged the fear of experiencing something similar again. While the policy changes of the new safe water acts and the new training center helps people feel that the government has learned its lesson, numerous residents told me that they just want to “move on” with their lives and stop living in fear (interviews; personal communications). This may also be why only one resident regularly checks the quality of her drinking water. Testing the water requires that the person acknowledge the potential need, which means admitting the possibility of risk.

Similarly, fidelity and global trust are particularly important in trust relationships with the natural environment. People are not powerless when it comes to the environment—they can influence nature through science and technology—but especially for people of modest means and education, the means of controlling the environment are limited. Nor can they do anything to hold nature accountable—people can monitor the source to verify continuing quality, but beyond that their recourses are few. Therefore, people either believe that nature is inherently better and that natural water is healthier for humans, or they put their trust in human institutions instead.

When trust is not sufficient to support an essential relationship, such as between an individual and his or her water provider, Heimer (2001) argues that they turn to strategies of distrust instead. When trust relationships are unequal, the weaker member has a limited ability to negotiate the terms of uncertainty and vulnerability, and the stronger partner may choose not to invest in the trust relationship. When this happens, the only choice the weaker partner has is to either not participate in the relationship or to rely on alternative strategies that reduce their vulnerability. Strategies of distrust are strategies specifically designed to minimize risk and vulnerability in a situation where individuals have little power and do not trust the person or

institution they need to have a relationship with. For example, when it comes to water quality, people can do their own research. They can regularly read the water reports and, if they choose to get water from a private source, they can do research comparing the various water providers. They might even have their water tested independently so that they can confirm that the water they are getting is of good quality.

Surprisingly, given how ambivalent most Walkerton residents are about their water quality, few of the people I interviewed implement any strategies of distrust. Instead, they focus on trust to make their water consumption choices. Claire, 47, routinely tests her tap water to ensure its quality, but mostly drinks water from the Mildmay Spring, which she does not test. Alexander, 66, continues to read the water quality reports that are posted in town. The farmers I interviewed, who live just outside of the town boundaries and so have private wells, test their wells every year or two. However, for the most part, even when residents acknowledged that they probably should take a more active role in verifying their water quality, they do not. This is most likely because after everything they had experienced, they want things to return to normal, and not to worry so much anymore. Nearly everyone I spoke to, whether in interview or just casual conversations about water, spoke about how they want to move on, to forget what had happened.

Walkerton residents no doubt felt vulnerable, even powerless, in the days following the *E. coli* contamination. Many described their experiences with the government in terms of frustration and anger, saying how the government was more interested in avoiding responsibility than in helping people. They said that any benefits the government provided the people affected by the *E. coli* contamination were given only reluctantly, because it had been pressured to do so. The Walkerton residents, however, were not powerless. They found power in numbers. Many

of them organized a class action lawsuit. One of the advantages of a class action lawsuit, where victims can submit the lawsuit as a group instead of individually, is that it enables them to compete in the court system where they might not be able to individually (Burke 2001).

Residents also organized into the CWC and collectively armed themselves with more powerful allies, including the Canadian Environmental Law Association (CELA) and minority party leaders, to increase the leverage against the Premier when demanding answers. They were able to raise the funds necessary to hire lawyers and expert witnesses to represent the town in the Inquiry.

As mentioned earlier, the media can fragment and devalue local experiences because it is a more powerful, cohesive explanation of events, especially when grounded in the language of science and empirical data (Peters 1997). News stories, depending on what they focus on and how the facts are presented can shape the audience's interpretation of events. Driedger (2007) explores the way the Walkerton contamination was represented in the news, finding that televised news tended to focus on acute, emotional story themes, whereas the print media covered both acute and chronic issues. Because of this, the televised news coverage of the Walkerton *E. coli* contamination focused on the people, assumptions or speculations on blame, political decisions such as the new water act, and emotional experiences like distrust or anger. The print media had broader coverage, including more in-depth coverage on the Inquiry itself and the political debates revolving around Walkerton. Therefore, where people got their news from influenced their perception of the news story and the issues involved, particularly their views on the reliability of the government and the effectiveness of the policy changes that followed. This includes me, as I relied heavily on news accounts while preparing to go into the field.

The residents of Walkerton, however, demonstrated that the role of the media in shaping the discourse does not go only one direction. Unlike the similar water contaminations on First Nations Reserves (Patrick 2011), white, English-speaking, rural Walkerton attracted a sympathetic news media. Walkerton not only benefitted from the media exposure of Walkerton's water problems, which gained them sympathy and support from all over Canada and beyond, but they effectively used the media to make their voices heard. This means that they helped shape the discourse surrounding the events in Walkerton rather than being passive victims. Because the CWC successfully contested the government's discourse on the events in Walkerton, they were able to pressure the provincial government for financial compensation for the residents. They were also able to convince the government to pay for a long-term health study of the *E. coli* victims in order to better understand and treat people who suffered from *E. coli*, though it was narrower in focus than the leaders of the CWC had wished (Perkel 2002; Burke 2001; interviews; personal communications).

Even 5 years later, Walkerton residents continue to have voice, influence, and the power of choice. While many of the CWC resumed their normal lives after their goals of the Inquiry, the reimbursement plan, and the five year health study were accomplished, others remain politically active. They not only continue to be actively involved in the discourse surrounding Ontario's new water policies, but they travel to other communities to give talks about what happened and what they have learned from it. Even for those who remain quietly at home, however, they still have the power of choice. They have the means to choose what to drink, whether it is tap water, tap water that is filtered by a private filter, bottled water, or the Mildmay Spring water. They can also choose through voting, both locally and at the provincial and national levels.

Walkerton residents, including ones who were involved with neither the lawsuit nor the CWC, also resist the government hegemony and the power of the authoritative knowledge of the medical community in more subtle ways; they resist the government's labels on their illness experiences, both in 2000 and since then. While Canada has publically funded health care, and so health care was and continues to be readily available for the people ill from contaminants in the water, a firm diagnosis of *E. coli* infection made a difference in terms of compensation in the settlement with the government later. The problem is that many people who were ill did not go to the doctor because they had been told that the hospitals were overwhelmed and only to come in if absolutely necessary.

One of the early things that was being used against people, was well you didn't go to the hospital, you don't have any proof that you had *E. coli*. So, therefore, you know, it won't carry the same in terms of the settlement... You basically had people being told "we're stressed at the hospital" and "don't come in." And that was one of the common things that you were told. But the problem came up in terms of compensation—well you should have gone. And it's like, if you're told by medical professionals not to come in, that you're not exhibiting these traits at this particular time, which basically meant this—If you're not showing bloody diarrhea, you may have the diarrhea at this point in time, you may have some of the other symptoms. But if you're not showing this, don't come. [Andrea, 46]

Therefore, early on, Walkerton residents found themselves trying to defend the fact that they even had *E. coli* since they had listened to professionals at the hospital and did not go in unless they were critically ill. A few residents argued that this also meant that the number of people reported ill—23 hundred—underestimated the actual number of people who contracted the *E. coli*. The same, they argued, was also true about the deaths resulting from the *E. coli*:

Because there were seven directly attributed to the water, there were other deaths that occurred that time as well. So it wasn't just hearing about seven deaths within the community, there were others. And the thing is, is that not all of them had direct linkages, so when the coroner did the testing they basically, you now, probably but, because it wasn't a directly linkage, you basically... Like if you had a previous health condition then it wasn't your death wasn't directly attributed to the water. But, you were

in a compromised health situation in a way that it reacts on the system. Anyone with a weakened immune system suffered greatly with death or illness. [Andrea, 46]

Walkerton residents continue to suffer complications that they attribute to the *E. coli* for years after the boiled water advisory ended, especially a wide range of gastrointestinal ailments. The most common problem among people interviewed is Irritable Bowel Syndrome (IBS), something that they share with roughly 1/3 of all Walkerton (TheSpec.com 2010), which is considerably higher than the national average (Fedorak et al. 2012). Like many Walkerton residents, it has become part of their everyday life, and one that does not promise to end any time soon, if ever.

Well, like I said we're still getting it... We won't get this out of our systems, at least they tell us at the hospital, you won't get it out of your system for seven years and your scars won't go away—like for having diarrhea and everything else. Those scars from that will not leave your body for seven years. [Claire, 47]

Basically it will never be cured, the irritable bowel, what it is, is controlled. What happens, a good example is, if I don't take the probiotics, one day I ran out and actually had to reorder in more and so it was four days before they got some into the system and the symptoms of irritable bowel began to reassert themselves. So what it does is manages the situation and controls it and the specialist basically indicated that you're going to be on this for life. [Andrea, 46]

The five-year health study agrees that Walkerton residents do have a number of long term health problems stemming from the *E. coli* and other contaminants in their drinking water in addition to IBS, including renal disease, diabetes, and reactive arthritis. This comes as no surprise to the people of Walkerton; what is a surprise is the finding that 5% of Walkerton residents suffer from kidney damage not caused by the *E. coli* in their drinking water, but from the fact that they are consuming too *much* water (Clark et al. 2008; interviews).

Serious kidney damage shown by more than 200 residents of Walkerton, Ont., is the result of drinking too much water, not *E. coli* poisoning, and it's a problem that could be afflicting thousands across the country, researchers told The Canadian Press. [Perkel 2005]

This information was making the headlines during my fieldwork in Canada, and residents were both shocked and angered by it. While the article does go on to discuss the other health problems the Walkerton Health study found that did result from the *E. coli*, that was not what was making the headlines. Instead, the headlines and televised news stories focused on the 5% of the Walkerton population that is drinking very large quantities of fluid—at least 4 liters a day—which is resulting in proteinuria. Proteinuria is defined as having an abnormal amount of protein in the urine, a condition that can lead to kidney damage. After asking them to restrict their water consumption, most of the proteinuria was reversed, leading the researchers to conclude that it is caused by the high level of fluid intake (Gazette 2008; Clark et al. 2008). While no doubt beneficial to the long term understanding of cases of accelerated loss of kidney function, as the researchers propose, the social consequence of the way the study was portrayed in the media was to dismiss Walkerton's health problems as caused by poor choices rather than the water contamination... an assumption the residents both resented and resisted.

I forget the percentage that said of the people that had the kidney issues. I know with a family member of mine they told them that they needed to stop drinking as much water they were drinking because they were causing their kidney problems. So I'm thinking if your body is requiring that much fluid, and it didn't before, how are you causing the problem yourself? It just turned everything around on those people and made them look like they were causing their own problems. So as far as that went I thought it was quite ridiculous. [Molly, 39]

Molly went on to argue that a number of illnesses in the community are directly linked with the *E. coli* contamination, even though at the time the health professionals and the health study denied it.

If you talked to people in town, and you probably have, I don't know—As far as other problems they've had: stomach issues. I bet you 90% of the people I've talked to that have stomach trouble did not have stomach trouble before. And their claim is that it had nothing to do with the water. The way I look at it when you drink water the first place that it touches is in your mouth, your throat and in your stomach before it's then moved through your intestines and your kidneys. So, I just have a real issue with the fact that it

had no bearing on the stomach what-so-ever. Or they haven't been able to prove that yet. [Molly, 39]

Molly was not the only one I spoke with that insisted that many of the illnesses, especially gastrointestinal, experienced in the town since 2000 are the indirect, if not direct, consequence of the *E. coli* contamination. Residents argue that *E. coli*, not to mention the other microbial contaminants, seriously undermined their immune systems' ability to ward off infections, leaving them vulnerable to a host of other ailments. A few of the people feel that they are healthier now, saying that they had had all sorts of health problems for years before 2000 which they now attribute to an on-going problem with water contamination.

I think about it [the quality of bottled water] less all the time because I haven't got sick, and I know the symptoms all are now and I haven't had any symptoms whatsoever. So I do think about it time to time, yeah. But I haven't had any six years... But all through the 90s I was getting diarrhea and I was getting infections like my nose, I was getting respiratory infections and stuff. And diarrhea and I haven't had any of since there, so I'm thinking, well, you know, if the diarrhea and all this stuff I haven't had any since 2000... Well, there's a message there. So I keep drinking bottled water. For now, don't drink anything else. [Jack, 52]

Everyone agrees, however, that there are a lot of people in the community who continue to suffer, often serious health problems, as a result of the *E. coli* contamination, even if they do not themselves.

The *E. coli* contamination took its health toll in other, less measurable ways as well. Nearly every person I spoke with talked about how stressful the events following that May 2000 were. Not only were many of them struggling to deal with sick family members without even having the aid of running water for drinking, cooking, bathing, and doing laundry, but many were sick themselves. In addition, though, the environment of the town itself was described as stressful, with reporters pouncing on them whenever they stepped outside, the constant bombardment of the news stories and hearing about family member, friends, and neighbors who

were ill, the deaths, and the constant sounds of the helicopters and wondering who it was that time.

And that was going on in every single household. Because there was almost that siege mentality, you know, when's it going to strike and what's it going to do and everything else. So there was that, and I think took the initial intimidation/ frustration, when you're dealing with constant bombardment of media and government of different levels and just how to deal with that and, I can really remember one of the sounds that really kinds of not only the helicopter, certain news story theme songs just before the news that night, and you would hear that, clear in another room and it would basically send a chill up your back, who are they talking about now. [Andrea, 46]

Some attribute their continuing health problems to that stress. For Andrea, the mental toll is something more. She argues that the *E. coli* contamination resulted in Post-Traumatic Stress Disorder (PTSD) in many people, and compares their experiences in some ways to 9-11, which she remembers seeing in the news.

And why? Because an emergency that basically has catastrophic proportions that overwhelm the population, you begin to have an empathy for what they're going through. And right away we were beginning to see, oh well this is happening there, remember when that happened here. [Andrea, 46]

Andrea is not alone in that assessment that Walkerton residents suffer from PTSD. In the class action lawsuit, that followed the water contamination, it stated that the members of the lawsuit are prone to PTSD in addition to suffering from economic hardship, health problems, and the inconvenience of the extended boiled water advisory (Burke 2001).

While it is important to remember that Walkerton residents—farmers, small business owners, school teachers, and blue collar workers—are not playing on a level playing field in their relationship with the institutions that manage, test, and regulate their drinking water, they still are proactive agents who make choices and act strategically. While they did not have access to the kind of resources available to the provincial government, after the *E. coli* contamination they were able to use what resources they had effectively in the public sphere. Some of them

continue to be active in the public sphere through traveling lectures. In the private sphere, they have a range of water sources available to them, which gives them the freedom and power of choice that a poorer, less visible community might not have.

Of the many potential factors that influence water consumption patterns, including cost, convenience, taste, and safety, the two biggest issues for the Walkerton residents are taste and safety. For those who trust their drinking water's quality, taste is the dominant factor in determining water choice, but for those who do not trust in their tap water and the institutions that manage, test, and regulate it, safety is the largest concern.

CHAPTER 6

CONCLUSIONS AND IMPLICATIONS

Whether a person chooses to drink tap water, bottled water, or water acquired directly from a natural source, water consumption choices are deeply embedded in relationships. Humans belong to complex social systems where people have to depend on each other for vital resources and services, including the regulation, extraction, treatment, testing, and distribution of drinking water. In situations where this dependency places people in uncertain situations that expose them to potential risk, trust plays an important role in helping them to make decisions in their own best interests. If people trust the other person or institution in a situation that puts them at potential risk, they can implement strategies of trust—these are strategies that reinforce trust relationships and therefore reduce uncertainty. If they feel that person or institution is not trustworthy, they can rely on strategies of distrust, which are strategies that aim to reduce an individual's vulnerability to risk (Heimer 2001). Knowing who a person can trust, what other options are available, and when to act are important skills in society (Hardin 2001).

While it is certainly true that people may have to have to depend on—and be at risk from—others they cannot trust, I argue that most of human relationships are still founded in some kind of trust relationship. Even strategies of distrust, which allow people to minimize their vulnerability, are still affected by trust, only instead of trusting their primary relationship partner, people are trusting in alternative people, institutions, and systems to reduce their vulnerability. For example, if a person signs a contract to protect their rights, that person is trusting in either their lawyer or the legal system to be able to do so. Because people rarely have personal relationships with the people in charge of institutions such as the government and corporations,

their trust relationships are filtered through knowledge gained from second hand sources, such as advice from neighbors and family and what they hear about in the news.

Instances such as the *E. coli* contamination in Walkerton remind people of how vulnerable humans are when the systems that protect their water quality fail. Their trust is shaken, forcing people to reevaluate the risks involved and their trust in the various institutions that provide, monitor, and regulate their drinking water. Once they become aware of a potential threat in their drinking water, they must decide whom they trust to provide drinking water and to monitor and regulate the water quality. People might trust government agencies, private enterprises, and NGOs to protect them, believing that these institutions have both the willingness and ability to defend their health. If people do not trust these institutions, and yet perceive that their decisions can make a difference in their health, they can take action to take care of themselves. They can have their water tested independently, research comparative water quality and the reputations of the institutions that provide it, or become involved in political activism in order to see that changes are made.

The Walkerton *E. coli* contamination not only resulted in changes in infrastructure and regulation, but also changed the relationship between residents and the local and provincial government. The water contamination exposed the residents' vulnerability while proving their government fallible. Long after their water was declared safe again, many Walkerton residents continued to drink only bottled water, and I wanted to know the reasons behind this trend. I wanted to know how their experiences have influenced their trust in the private and public institutions that processed, distributed, and regulated drinking water, and whether or not the changes the government has made have been effective at reestablishing trust in the community.

In order to do this, I developed a political ecology of trust framework that combines the trust literature with political ecology and interpretative medical anthropology.

The political ecology of trust is a research paradigm that analyzes how power and trust influence the relationships between individuals, institutions, and the environment. Every time a resident of Walkerton turns on the tap, he or she is interacting with a large number of institutions: the private company who manages the local water infrastructure, the municipal government who contracted said company, the private company who regularly tests the water quality, provincial government agencies such as the Ministry of the Environment (MOE) who enforce water related regulations, and the provincial government who sets the water standards. These all determine how water regulations are enforced and establish the budget for the agencies that do so. These relationships are fluid and ever changing. These relationships are also embedded in and shaped by layers of shared, conflicting, and constructed discourses, such as concepts of risk, nature, private enterprise, the government, and the meanings of their illness experiences, both at the time of the *E. coli* contamination and present. These meanings inform trust relationships by providing the ideological lens through which they make sense out of their knowledge, experiences, desires, and fears. Just as the institutional relationships are fluctuating and evolving, so too are the constructed meanings.

Trust is a complex concept and it is possible to trust an entity in some ways but not in others, which is why I find Hall et al.'s (2002) model a useful starting point for my political ecology of trust analysis. Their concept of separate measures of trust allows scholars to critically examine different aspects of trust in a given relationship. In order to be able to measure trust in a wider set of relationships, including those of environmental health, I have modified their model in significant ways. I have altered Hall et al.'s (2002) measures of trust to create my own, which

are fidelity, competence, honesty and transparency, accountability, and global trust. In particular, I have added transparency to honesty, replaced confidentiality with accountability and redefined global trust to refer to trust in certain roles or systems. In addition, I have developed measures of distrust, called infidelity, incompetence, dishonesty and opacity, immunity, and global distrust, to discuss those factors that detract from trust relationships. Trust and distrust are on a continuum, with measures of trust reinforcing trust while the measures of distrust erode it. While Hall et al. (2002) do not do this, I analyze not only how these measures affect trust but also how they interact with each other to reinforce or undermine trust.

Using my five measures of trust and distrust, I examine in Chapter 5 the way the residents view bottled water, tap water, the water from the Mildmay Spring, and the various institutions who manage, test, and regulate their drinking water quality. Trust is not a simple, fixed concept, but rather a fluid constellation of related concepts that combine to shape the trust relationship. A person can place a high measure of trust in one area but not in another—for example, they may believe that the government is well meaning (fidelity) but lacks the resources to effectively manage and regulate drinking water (incompetent). It is only by understanding *all* these elements and how they interact within the context of unequal power relations that researchers can understand how trust relationships play out in real life.

Trust is not the only factor that influences the individual's choices, which is one of the reasons for evaluating trust within the larger political ecology and interpretative medical anthropology frameworks. Many factors—including personal desires, values and preferences, time constraints, other available options, and cost limitations—can ultimately factor in an individual's choices. Trust, however, is a fundamental component of human interactions that has been underutilized by anthropologists, and the purpose of this model is to provide a framework

for analyzing trust from a distinctly anthropological perspective. This model not only makes it possible to better understand the experiences and choices of people in Walkerton today, but also can be used to understand environmental health issues in other communities and to facilitate communication between the government and the community about their concerns. It can be used in future studies to better understand how and why people make choices in situations of uncertainty and potential risk, such as decisions that can affect their health.

Walkerton, Water, and Trust

Many people living in countries like Canada take their water for granted, but this is still part of the larger trust relations because this assumption is based on their trust that the institutions and the system in general—whether political or economic—will ensure that they are getting safe and good quality drinking water. For Walkerton residents, however, this is no longer a comforting assumption. They know that government is not omnipotent, that humans are fallible, and what can happen if the water becomes contaminated. As they told me repeatedly during my time in Walkerton, while as they want to move on with their lives and live normally, they do not want anything like that to ever happen again. Therefore, the choice to drink water—bottled, tap, or natural spring water—is not based on unconscious assumptions but rather on a combination of conscious assessment of trust, evaluation of their options, and deliberate choice.

After the *E. coli* contamination, Ontario invested heavily in repairing and upgrading the water infrastructure in Walkerton as well as implementing major water policy reforms and changing the way water managers are licensed and trained. Despite these changes, only 27% of the people interviewed drink the regular tap water routinely and 60% trust it at all. Most residents prefer to drink either commercially bottled water or water they bottle themselves at the Mildmay Spring. Nearly everyone I spoke to predominantly drinks water from some other

source than unfiltered tap water, though their reasons for doing so are varied. Some strongly believe that the water system is still flawed and unsafe and that they risk their health if they drink water from the tap. Others believe intellectually that the water is safe and said repeatedly that they probably have the best water in Canada, but they cannot bring themselves to drink it because of the memories that go with it. Those who still believe that the tap water is safe might drink from it periodically, like if they wake up in the middle of the night thirsty, but prefer to drink water out of their cooler in the kitchen, from the reverse osmosis tap, or from a filtered pitcher in the refrigerator because they like the way it tastes better. None of the people like the taste of the tap water, the most common complaint being that it is too highly chlorinated. Of those who prefer to drink something other than the tap water, roughly half of them base their choice on the non-tap water tasting better. While taste is a matter of personal preference, many choose other water sources because of a lingering distrust in their publicly provided water and do not believe that the tap water is safe. Many of them distrust commercially bottled water because they have heard that it is not adequately regulated. The people who strongly distrust tap water also have the most distrust in bottled water and are more likely to consume water from the Mildmay Spring instead. Few of the residents research their drinking water or get it tested, choosing to rely on trust rather than investing in strategies of distrust (interviews).

While both private and public institutions are responsible for Walkerton's drinking water, the bulk of the distrust expressed is toward the government because residents blamed the government—both municipal and provincial at the time—for what happened in May 2000. During the months following the *E. coli* contamination, they saw the government resisting giving straight answers and deflecting blame instead of finding answers and real help for the people in the town. While they have elected new people to office and the provincial government has

initiated a number of water policy changes intended to address the concerns brought up in the Inquiry, many of the people remain skeptical.

Despite this lingering distrust, a common theme that came up repeatedly in the interviews is that most of the residents view the government as the institution that should be ultimately responsible for municipal water. While they disagree about whether or not private management of municipal water supplies is acceptable, only one person feels that private companies are better motivated to provide quality service to the public. This is particularly interesting considering that the Walkerton Inquiry found that the government—both local and provincial—was responsible for the *E. coli* contamination in Walkerton, whereas private businesses had not only done the job that they were expected to do, but some went above and beyond that. The Biesthenals had established better environmental protection strategies on their farm than required by law, and private companies had been faster than the government to deliver real, tangible aid to the community in the months following. Despite this, nearly every person I spoke to has concerns about private companies being responsible for Canadian drinking water because the companies are motivated by profit, which to Walkerton residents makes their motives questionable. Even though most of the people have lingering concerns about the fidelity, honesty and transparency, and accountability of government, they nonetheless feel that ultimately the responsibility for guaranteeing that their drinking water is safe—bottled or tap water—is the government's. Residents feel that water is a human right and should be available to everyone, not just those with the ability to pay for it, and as such it belongs in the providence of the government, not private enterprise.

Bottled water is viewed quite differently from municipal water supplies; it is seen as less of a right and more of a luxury, and as such they are less concerned about issues of cost and

access. While some trust bottled water in general, they are the minority; most are as wary of the bottled water companies' motivation as they are of the private municipal water managers. Instead, they ground their trust in their particular bottled water supplier based predominantly on personal interactions with the provider. They trust in their bottled water companies because either the company itself or the local distributor is a local. Like the municipal tap water, they believe that government oversight is necessary because the companies as a whole cannot be trusted to act responsibly without it.

Probably the most surprising discovery, however, considering how ill many of the residents had been in 2000 as a result of drinking essentially untreated water, is that 40% of the Walkerton residents trust the Mildmay Spring water and many prefer it to both bottled and tap water. Access to the Mildmay Spring changes the equation because it gives Walkerton residents the opportunity to cut out the middle man; rather than having to trust others to safely maintain the municipal water infrastructure or to bottle safe and high quality water, they can purchase their own 19L containers, such as fit on a water cooler, disinfect them between uses, and drive to Mildmay to fill the containers themselves. If residents want to, they can even sample the water and send it in themselves for testing, though no one does.

The two most common reasons given for drinking the Mildmay Spring water are that the water is safer than other water sources and that they prefer the way it tastes. Many of the people who favor the Mildmay Spring expressed deep distrust in both the public and private institutions that extract, manage, and regulate their drinking water. In comparison, they described the Mildmay Spring as safer and better because it is natural and untouched. A number of people described the Mildmay Spring as "good water" and better than other sources because the water is "natural" and untreated, particularly by chemicals. Most do not know if the water is tested,

though one said he hopes it is. Despite Mildmay's close proximity to Walkerton, only one resident mentioned a reason why he views the spring as safer than the source that had provided Walkerton's contaminated water. Despite this, many of the Mildmay water consumers do not trust commercially bottled water any more than they do their tap water, and feel that the Mildmay Spring is the only safe source of water available to them.

It was informative to talk to Walkerton residents and the residents of neighboring communities struggling with the changes brought about by the water policies, in particular the new chlorination guidelines. Rather than embracing the government changes and feeling safer because the chlorination of their drinking water is more strictly regulated, many residents continue to resist these changes. They do not see the need for chlorine if their water was "good" to begin with; many went so far as to say that they do not want chemicals in their drinking water (interviews; personal communications). Given that the deaths and illnesses in Walkerton in 2000 could have been avoided if the water had been properly chlorinated and monitored, this surprised me.

The reason for this is that trust in water, whether natural or treated, is not based exclusively on past experiences and the actions of the people and institutions responsible for their drinking water, but also multiple overlapping and sometimes conflicting social discourses and constructed meanings. In the trust literature, past experiences and actions, not just during the *E. coli* contamination but in the years following, would have provided a baseline for predicting the future behaviors of the people, institution, and natural sources of water. While this is definitely part of the explanation for the residents' decisions today, it is only part of the picture. Shared, constructed, and often contested discourses on the proper role of government, on the importance of prioritizing the collective good over individualistic gains, local identities, and the

healthy qualities of natural, untreated water all contribute to the residents' perceptions of their trust relationships, priorities, risks, and values.

While issues of cost and power are less salient in the Walkerton narratives than the ideological discourses, residents are nonetheless aware of the political and economic ramifications as well. In particular, their dependence on an agricultural economy and their awareness of both the relative power of the government and their own visibility in the media also influenced their opinions about the new water policies and their perceptions of Walkerton's municipal tap water. While all the residents agree on the importance of protecting drinking water sources and in regulating drinking water, they are also concerned that the costs for these policies are not shared equally. Farmers, many feel, are unfairly being held responsible for protecting surface water sources while municipalities can discharge human waste with minimal repercussions. Small municipalities and small organizations that serve the public, such as churches, I was told, are also unfairly struggling with the financial costs of the new policies, especially outside of Walkerton itself where they did not receive financial support from the province to make the necessary infrastructure upgrades. A number of residents are cynical about the government, questioning both the motives and priorities for politicians and government employees, who they see as primarily self-serving. They are aware of how the government used the weight of its legal authority and institutional resources to try to deflect blame, discredit protesting Walkerton residents, and dispute their requests for compensation. At the same time, they are also aware that they are not powerless in the face of this. Despite the government resistance, Walkerton had won its Inquiry, the five-year health study, and economic reimbursements—including, eventually, the resolution of the class action suit. They are also

aware that they are still the focus of the media when it comes to water issues and that this visibility is an extra safeguard for their drinking water.

The *E. coli* contamination and the events that followed has led people in Walkerton to turn to other water sources instead of their tap water, but these choices can have hidden costs and consequences. Some people drank mostly from cooler-sized containers that they filled themselves from the Mildmay Spring. Because the spring water costs whatever the user is willing and able to pay, expense does not limit access. Lack of transportation may be a limitation, as consumers sometimes travel many miles to fetch water from the spring. Physical ability can also be a limiting factor, especially for the elderly, as the 19L containers of water are heavy (interviews). Consumers are also responsible for providing their own containers to transport and store the water, and for insuring that these containers are kept clean. The Mildmay Rotary club monitors the quality of the spring water, but because the water is untreated, it is vulnerable to contamination.

Even though some of the people are wary of the quality of the bottled water, many still consider it a safer alternative to their tap water, and they do not have it tested independently. Bottled water may not actually be any safer, however, and can have hidden economic and social costs. “Bottled water has the highest markup of any item on a menu; or in a gas station mini-mart, for that matter” (Royte 2008:40). It is more profitable than gasoline (Royte 2008), and that is not taking into account the hidden costs—the strain the extraction puts on local water systems, the fuel costs of transportation, and the environmental costs of disposing of the bottles themselves (Gleick 2010). Despite the increasing number of concerns being raised about bottled water, bottled water sales have increased exponentially around the world (Royte 2008), including in Canada (Rahman 2007).

Lessons Learned From Walkerton

The *E. coli* contamination of the drinking water in Walkerton, Ontario was particularly devastating, but it was not a unique incident in North America. Walkerton's water contamination raised an awareness of weaknesses in Ontario's water policies, such as the failure to enforce its regulations, which re-opened the discourse on neoliberal reforms (Prudham 2007; Snider 2004) and resulted in a number of water policy reforms (Johns and Sproule-Jones 2009; Johns 2008). It also provides an example for understanding how changing trust relationships affect the decisions people make, especially when it comes to drinking water choices, and the ramifications of these decisions. The experiences of the people in Walkerton teach some valuable lessons for communities, governments, and scholars to better understand and cope better with future environmental health problems.

People and institutions need to invest in trust relationships in order for those relationships to be strong ones (Hardin 2006). While people and institutions, particularly ones that are more powerful than their trust partners, may choose to shift the responsibility and cost of the relationship onto their trust partners rather than investing in the relationship (Heimer 2001), this only works to the extent that their trust partners are willing to accept this situation. If people have other options, they can choose to opt out of the relationship entirely, as many Walkerton residents do when they choose to consume bottled or Mildmay Spring water instead of their tap water.

Ontario's intensive investment in Walkerton's water infrastructure and the water reforms that followed was certainly in part to fulfill its responsibility to the people of both Walkerton in particular and Ontario in general. It also served as a demonstration of their good will and evidence of their fidelity. For the majority of the Walkerton residents, this attempt was too little

and too late. In the months following the *E. coli* contamination, the lies, the evasions, and the attempts to deflect blame backfired. Not only did these attempts to avoid responsibility fail for both the local and provincial political leaders, who were replaced in the elections following the contamination, but it seriously undermined the perception of fidelity of the government in general, both locally and provincially. Many residents feel that the politicians and government employees, both local and provincial, had been more interested in protecting themselves than in looking after the public good during the months of the boiled water advisory, and this tarnishes the reforms and improvements made since the contamination. While some residents are reassured by these changes, as well as the electoral changes, others continue to be leery of the motives of the people in the government, concerned that they will continue to prioritize their own self-interests over the public good. From a trust perspective, the government should have been forthright and cooperative from the very beginning, rather than trying to deflect blame. The attempts to avoid being held accountable were not only unsuccessful; they also did more damage to the already strained trust relationships. This damage could not be undone by passing new regulations and investing in the water infrastructure as these changes do not address the perception that the public is vulnerable because, ultimately, the people in the government care more about their own interests than they do the public good.

Another important lesson learned from Walkerton is that accurate, reliable, and accessible information is essential in a trust relationship. Information is vital for not only accurately evaluating and predicting future actions, which is important in trust relationships, but it also reinforces fidelity and is crucial for accountability to properly function. Not only did the lack of information in Walkerton during and immediately following the *E. coli* contamination seriously increase people's stress, but it also resulted in long term erosion in trust. In addition to

the lack of information being a problem during the *E. coli* contamination itself and the months immediately following, the confusion and the shortage of information about bottled water regulations, the more recent boiled water advisories, and even the water loss from the municipal system all resulted in increased fear and distrust during the time of my fieldwork. Clarifying and facilitating lines of communication and presenting information in a manner that is readily accessible to the public can reduce both insecurity and uncertainty and strengthen trust relationships between the public and the people and institutions responsible for their drinking water.

Similarly, the experience of Walkerton demonstrates the importance of having accountability mechanisms be both effective *and* transparent to the public. A good example of this is the lack of awareness in Walkerton about Canadian bottled water regulations. All Canadian bottled water is regulated by the Canadian government (Johns et al. 2008). While the relative quality of bottled water to the local tap water is dependent on both how they compare to the provincially established water standards (Valiante 2002) and the effectiveness of these regulations, this is still an improvement over the American bottled water regulations, where some bottled water falls through cracks in the regulations entirely (Gleick 2010). Many Walkerton residents, however, are completely unaware of these regulations and have read critiques of bottled water in the news that suggest that bottled water is not regulated at all, causing them to distrust it entirely. For accountability mechanisms to support trust in relationships, the people involved have to be aware of them, understand how they work, and know that they are effective.

This is not intended as a guideline for governments to manipulate the population by appearing trustworthy; these strategies are only beneficial if they encourage people to trust in

people and institutions that are actually trustworthy. Hardin (2001) points out that trust is not in and of itself inherently good. It does not make sense to worry about the decline in trust if the people not being trusted are not trustworthy. Loss of trust is only an issue when it results in the loss of a valuable opportunity when the trust partner is truly trustworthy. In situations where the government or another institution invests heavily in addressing problems in the water system, it is beneficial for the community to trust these changes in order to benefit from them. The challenge is to know, despite limited interactions with others, when the other is trustworthy in order to build on those relationships that are trustworthy.

The narratives of the Walkerton residents also highlight the importance of understanding the construction of trust in the context of local and non-local discourses. These layers of dialogue not only shape local views of the measures of trust, such as the fidelity of the people and institutions they are interacting with, but also local priorities, perceptions of risk, and the knowledge and meanings that they use to make sense out of the information available to them. Walkerton residents' perceptions of the water policies are filtered both through their experiences of the *E. coli* contamination and their experiences and needs as a community highly dependent on agriculture. The narratives also demonstrated that even small rural communities are diverse. Despite the fact that Walkerton is relatively homogeneous ethnically and linguistically compared to other communities, such as cities like Toronto, differences in experience, knowledge, and opinion resulted in strong disagreements during and following the contamination, and continue to divide the community today when it comes to the new water policies and the continued advocacy of the Concerned Walkerton Citizens (CWC). Religion, gender, and age all have the potential to split the community as these can shape their values, their experiences, and their needs. For Walkerton residents, their occupation, such as in agriculture, health, education,

business, or industry, affects their relative trust in the natural Mildmay Spring water as well as their perceptions of the benefits and costs of the new water policies. Therefore, not only should water decisions and trust relationships be embedded in local discourses, but researchers need to be sensitive to how these discourses are both constructed and contested within the local context.

Culture needs to be taken into consideration when addressing the water related health concerns in a community, but researchers and policy makers need to engage the concept of culture in a critical fashion. This critical engagement is currently missing in much of the literature on water issues, especially in the literature analyzing the water problems on the First Nations reserves. Smith et al. argue that “it is apparent that many First Nations people would prefer to keep the water clean in the first place, rather than having to ‘engineer safe water’” (2006:S15). They attribute this to the culture of the First Nations, which is a problematic argument when it fails to take into consideration the political, economic, and environmental conditions facing First Nations reserves. According to Walkem (2007), First Nations reserves often do not include water rights, nor do they have any control over practices on land near the reserves that affect the water quality on the reserve. It is not surprising in this context that First Nations people want to see stronger watershed protection programs, especially in the light of their experiences with the long history of the failure of water treatment systems (e.g. Patrick 2011). Instead of situating this in the context of power and control over water resources, a history of water problems from water contamination, and the economic and political struggles of the First Nations, Smith et al. continue their argument by claiming:

Education of water quality importance and training of First Nations operators should be tied to cultural value systems so that operations personnel appreciate their responsibility and role as caretaker of this aspect of public health in the context of our collective scientific knowledge and engineering practices. [2006:S15]

While the first half of this statement suggests respecting and working with the values and cultural practices of the First Nations people, the second half undermines this by valuing the authority of Western science and engineering over local experiences and practices.

Cultural issues were not part of the discourse surrounding the Walkerton water contamination and solutions. Instead, the discourse surrounding the Walkerton issues focused on the biomedical health implications, the technical problems, and political policies that left Walkerton vulnerable (e.g. Perkel 2002; Burke 2001; Prudham 2007; Snider 2004). Mackey (2002) argues that the political ideology of multiculturalism in Canada resulted in the dominant Canadian culture being obscured while reinforcing the hegemony of white, English-speaking Canada. One of the results of this trend is that while water choices and priorities on First Nations reserves are attributed to cultural preferences, the cultural influences in Walkerton are rendered invisible. Walkerton is not, however, a cultureless community, and their narratives are grounded in numerous culturally constructed—and contested—discourses that shape their decisions in real and important ways.

Theoretical Implications of the Political Ecology of Trust

Combining political ecology, interpretive medical anthropology, and the trust literature together strengthens all three paradigms. Merging interpretive medical anthropology and political ecology, while not new, has been underutilized so far and has strong potential for future research. The trust literature, in turn, adds another dimension to understanding how actors make decisions within both the limitations placed on them by the political economy and their environment, and the meanings that inform their lives.

Political ecology is a framework traditionally used to understand how power shapes the relationships between the individual and the political, economic, social, and environmental

factions. It is a multilevel analysis that enables researchers to examine how interactions between different actors, both local and non-local, shape environmental issues, including environmental health concerns. In this framework, different political and economic agents act according to their own desires, needs, and values, influencing each other in the process. Power in this context enables some entities in this system while limiting the options of others. The addition of interpretative medical anthropology to political ecology helps scholars better understand these complex, multilayered relationships by giving them both a framework for understanding how decisions can be shaped by politics, economics, social relationships, and the environment and for understanding the ways people construct meanings and knowledge that informs those decisions. Interpretative medical anthropology analyzes narratives to understand how meanings and knowledge are both constructed and contested. It helps researchers comprehend both the ideological frameworks and the ideologies that shape decisions and policies that affect the way the environment is used.

The existing scholarship examining the environmental health issues, especially environmental health issues in the context of discursive and evolving ideologies, benefits from this combination of political ecology and interpretative medical anthropology. Though the political ecology framework is still underutilized in regards to environmental health, let alone situating a political ecology analysis in the contexts of meanings, there have been some valuable studies done in this area. Ennis-McMillan's research in Mexico demonstrates how the concept of "suffering from water" (2001:368) is the physical expression of distress stemming from the social, political, and economic conditions that residents in the shanty town face that prevent them from having reliable, affordable access to safe drinking water. While he situates the illness experience and the meanings of pure, safe, and clean water in a political economy framework

rather than political ecology, water pollution and water scarcity are environmental as well as political and economic concerns facing the community. Harper's (2004) work with asthma gives insight into why people resisted blaming industries and the government for the air pollution that was harming their health, even when they are disproportionately suffering as a result.

What I have added to this framework is the concept of trust. Political ecology focuses on relationships between both local and non-local actors and the decisions they make affect the environment and environmental health issues. Just as culturally constructed, shared, and contested meanings and knowledge inform decisions, so does trust. Trust is an essential component of human interactions in situations of vulnerability and uncertainty because it enables people to act strategically, within the limits of their power. Like power, trust, lies in the connections between these entities; it is not in itself an action but it is an orientation to the other, whether the other is the government, a business, or the local environment, that influences these interactions. Power enables or limits actions; trust informs them.

From a political ecology perspective, water choices would be situated in political and economic relationships with a focus on power. Using this framework, the analysis of Walkerton residents' water consumption choices would focus primarily on issues such as access, cost, and the power to control political policies. Perhaps because the Mildmay Spring is free and not far away, not a single person interviewed expressed a concern about their own access to safe drinking water. Instead, when asked about their water choices and their concerns in regards to drinking water, the intentions, capability, and accountability of the humans who manage, test, and regulate drinking water were the most common responses—concerns that are rooted in issues of trust rather than politics or economics. Many people feel that politicians and the people managing their drinking water are motivated to protect their own interests first and the interests

of the public second. Recent boiled water advisories in Walkerton and neighboring communities and news about water being lost from the distribution system resulted in some people questioning the ability of the people who are managing the systems. Those who said that the tap water is safe based their arguments mostly in terms of increased awareness by all the parties involved. The biggest reason Walkerton residents said for trusting in their tap water is that, because of Walkerton's visibility now, no company or politician is going to survive the fallout if anything goes wrong in their water supply again. Ideologies of what it means to be safe, healthy, and natural also shape the discourse on what residents wanted from their drinking water, as does the construction of knowledge and perceptions of risk. A political ecology approach that does not consider the role of trust and the construction of meanings in these relationships will have missed an important part of how Walkerton residents make their decisions regarding water consumption.

My combining of the political ecology and interpretative medical anthropology literature contributes to the trust literature as well. Political ecology is a powerful framework for analyzing environmental issues because it is a multiscalar analysis of environmental issues situated within larger political and economic relationships with a critical examination of the role power plays in these relationships (Robbins 2006; B. King 2010). Despite the fact that many trust scholars argue that trust is essential in a democracy (e.g. Sztompka 1999), most do not explore the interactions between political and economic institutions and the effects of remote decisions on local contexts. These are central questions in political ecology that can inform on the study of trust relationships, particularly in the context of participating in democratic or free market relationships.

The biggest contribution of political ecology to the study of trust is its emphasis on power. Power is a concept that most trust theorists do not critically examine and yet it influences trust relationships. This limits the use of trust in understanding complex human interactions. Lack of power makes individuals more vulnerable in trust relationships. Unequal power in the relationship limits the weaker partner's ability to negotiate, particularly with institutions such as businesses or the government, over the relative degree of uncertainty and vulnerability in the relationship (Heimer 2001; Weber and Carter 2003). Heimer (2001) argues that the widening discrepancy in power relations has resulted in individuals increasingly relying on strategies to reduce their own vulnerability—strategies of distrust—because this is the only means available to them to reduce their risk. Depending on the degree of power imbalance, however, even these strategies can be of limited use.

Another contribution I drew from political ecology is that I included the environment within the political ecology of trust framework. Trust scholars view trust as belonging to only human social relationships (for example, see Sztompka 1999), but while this separation of environment from the human sphere is a common assumption in Western thought (T. King 2005; Cronon 1996), many people do not share this perspective. Instead, they incorporate the environment into the human and spiritual worlds that the people live in (Escobar 1999). When people have a relationship with their environment, that relationship can be informed by trust.

Interpretive medical anthropology brings to the study of trust the study of the construction of meanings and how they influence trust relationships. Trust scholars talk extensively about risk, for example, but they do not question the cultural context of risk, and yet medical anthropologists know that not all risks are viewed in the same way. In addition, while the trust literature does not critically engage the process by which perception of the

trustworthiness of another is established and how certain groups come to be viewed as collectively trustworthy, interpretative medical anthropology gives scholars the tools to understand how these concepts are constructed, shared, discursive, and disputed. Many of the concepts trust theorists use in their cognitive models for assessing trust relationships, such as risks, motives, and desired goals, are also individually and culturally constructed. As a result, they are also discursive and, often, contested. Trust scholars write from a predominantly Western perspective, and make a number of assumptions, about society, democracy, and humans' relationships with their environment, for example, that are embedded in that perspective. Anthropology has a long history of deconstructing these assumptions and thinking critically about the construction of knowledge and meanings that are often very different from the Western viewpoint.

My model further helps scholars to understand these multifaceted trust relationships. Unlike most models of trust, it breaks trust down in separate measures that can be understood both independently and in interaction with each other. Trust relationships are rarely one dimensional, but are shaped by multiple priorities, concerns, and perceptions of motive, which would be lost in the more uniform notions of trust and distrust. This is a particularly powerful tool for looking at trust in the context of multiscale, multifocal relationships such as the role of trust in capitalistic or democratic systems.

Beyond Walkerton: Areas for Further Research

The experiences in Walkerton raise important questions about the role of government and private enterprise in providing, testing, and regulating tap water, including the larger discourses about neoliberalism and privatization. In addition, understanding the role trust plays in water consumption patterns, and how perceptions of accountability and responsibility are shaped by

social, political, economic, and ecological contexts, contributes to understanding the trend toward the commodification of water and how it affects people. It also can help open up a discourse between policy makers and the local community to address local concerns, such as coping with the costs of the new regulations and continuing concerns about the potential for water contamination. This also has the potential for contributing to the discourse on watershed management, the trend toward privatizing water and other services, and environmental health.

As informative as my research in Walkerton has been, there is still room for further research. Living in the community for as long as I had, I talked to a lot of people informally as well as in interview. Many people who did not want to be interviewed still have strong beliefs about the water situation and were more than willing to tell me their opinions. My study, however, is a qualitative study with a limited sample base; illuminating as it is, it is too small of a sample to be representative of Walkerton as a whole, let alone the region. A broader, survey based study would be needed to see how prevalent the trends I saw are, both inside of Walkerton and beyond.

My political ecology of trust model, combining trust, political ecology, and the construction of meanings, can be applied in other research contexts as well. The First Nations in Canada who live on reserves have faced serious, chronic drinking water issues. According to Doyle (2009), even though the Canadian government has been addressing the problems with the water systems on the reserves, only 63% of the population drinks the tap water and many are convinced that their water is still not safe. According to Patrick, distrust of the tap water on First Nation reserves has resulted in a dependency on either bottled water, which is expensive for the already economically impoverished communities, or in cola-based soft drinks, which increases their risk of other health issues:

The response to these advisories may potentially lead to public complacency, where officially unsafe drinking water becomes the ‘new norm’ in many First Nation communities. It has been shown that lack of trust for tap water has created dependency on expensive bottled water, or worse, encouraged consumption of cola-based beverages with associated health impacts. [2011:387]

Considering that First Nations people who live on the reserves earn on average \$17,000 CA a year (Ministry of Aboriginal Affairs 2012), significantly less than the Ontario average of \$38,000 CA a year (Statistics Canada 2006), the cost of alternative water supplies would be much more of a burden for the people on the reserves than it would be for the residents of Walkerton.

Because First Nations have a different experience with these institutions than English-speaking white Canadians, their relationships of trust and distrust are going to be different as well. In contrast to the white, English-speaking Canadian population, who see their government as a benevolent institution that aids their survival (Lipset 1990; Adams 1998, 2003; Mackey 2002), the people of the First Nations tend to regard the Canadian government as a colonial institution designed to represent the settlers’ interests over the interests of the indigenous population (Walkem 2007).

Many indigenous peoples have argued that Canadian courts have argued that Canadian courts are colonial institutions that represent Canadian society and interests. They argue that these institutions cannot be relied upon to protect indigenous peoples or the territories necessary to sustain indigenous cultures and traditions in the future. Canadian court decisions largely protect the Canadian government jurisdiction and law-making power, and, conversely, only protect indigenous practices or activities, but not indigenous jurisdiction or law-making power. [Walkem 2007:308-309]

This is a very different starting point than the one described by the Walkerton residents, and understanding how the First Nations’ past experiences with the federal government have affected their trust relationships is important to understanding their current experiences with water contamination.

In 2005, *E. coli* was found in the tap water on the Kashechewan Reserve, a First Nations reserve in Ontario. The province declared a state of emergency, arranged for nearly one thousand people to be airlifted from the remote community for medical treatment, and provided seven hundred bottles of water a day for those who remained behind (CTA.ca 2005b). How did their experiences compare with those in Walkerton? The Kashechewan Reserve contamination happened after Walkerton's contamination; how was it handled differently? How did the fact that water on First Nations reserves is under the jurisdiction of the federal government instead of the municipality and province affect the way it was handled? Had the government learned anything from the experience of Walkerton? How does being a First Nation, with its own cultural heritage and special relationship with the provincial and federal government, change the relationships of trust and distrust? How does this change the way the First Nations people respond to the government interventions and the strategies that they use to protect their health? Understanding the role trust plays in these relationships and why First Nations peoples make the decisions that they do can help scholars to better address water related health issues in First Nations communities.

Another recent situation that has considerable potential for further research is the chemical spill in West Virginia. Earlier this year, a tank belonging to Freedom Industries leaked chemicals used for the coal mining industry into the drinking water for 300 thousand people. This resulted in numerous health problems, particularly gastrointestinal distress (Gibson 2014). Much of the discourse surrounding this industrial accident argues that this is not a single, isolated incident, but part of a history of industrial pollution, ineffective enforcement of environmental policies, government deregulation, and privatization (Davenport and Southall 2014; Wasson 2014; Plumer 2014). These experiences and the lack of accurate, reliable information have

caused many residents in the region to distrust their tap water provider and to view their tap water as unsafe.

I live in WV and everyone states that the MCHM is within an acceptable limit, yet there is very little information on the long term health risks from exposure. We are being treated like lab rats, to see what will happen next. I am out of money for bottled drinking water, while WV-American Water Co. says the water is safe, with them wanting you to pay your water bill. No one here trusts them, so no one is drinking it. I now wonder if I am going to have to be out of big money to replace all the water lines in my home, replace any appliance which uses water such as washer, hot water tank, dishwasher, fridge, etc. because all have been exposed to this chemical. People here are very angry because every few days we hear something new: first it was 5,000 gallons of MCHM released, then it was 7,500, now the DEP says it was 10,000; first it was one chemical released, then we were told its 2 chemical; now we are being told that when MCHM makes contact with chlorine used by the water company, it creates more chemicals; we were also told that when the water is heated, it causes the MCHM to become air borne, so open a window in your laundry room, when you wash clothes. The list and nightmare goes on. [annebeth66, commenting on on-line news story by Griffin et al. 2014]

Many of the issues being discussed as a result of the water contamination would be familiar to the residents in Walkerton.

The political ecology of trust model is not limited to water issues, or even environmental health concerns. Because people rely on so many other people and institutions for things they need, putting them in situations of uncertainty and vulnerability to risk, there are many potential avenues for future research. Bray (2003) demonstrates how views on Genetically Modified Organisms (GMOs) are modified by political and economic relationships, influencing policies; the trust literature provides a framework for understanding how trust in GMOs is built, manipulated, and undermined, which furthers the scholarly understanding of the GMO discourse. Similarly, bottled water has increasingly come to mean safer, more pure water than what consumers can get from the tap, as well as become embedded in a host of meanings (Gleick 2010; Chapelle 2005; Royte 2008; Kaplan 2011). Bottled water marks a change in not only in the way people relate with their natural environment, but with each other (Kaplan 2011; Royte

2008). How people have come to trust bottled water over tap water is rooted in changing relationships with the environment, political institutions, private companies, and a complex, contested discourse of meanings.

Trust and the media is another avenue that has the potential to be enlightening; does a person trust information read on-line? Seen or heard in the news? Where in this internet age can people find accurate, reliable information—and how do they know? While the internet falls clearly into the ideological and epistemological discourses, it also has social, political, economic, environmental, and health consequences. Social media such as Facebook, LiveJournal, and Twitter are intriguing environments for the construction of meanings and solidifying and changing relationships, such as through the role of memes—a concentrated cultural concept or symbol that is easily shared on the internet, often in the form of a quote or image. These memes are often a source of inactive activism, with people giving a show of support for causes, religions, and political or economic philosophies without having to exert much effort. While many of these memes are simplified or even inaccurate, they get shared as truth, and are embedded in the political economic and ecologic discourses that affect health. The United State's Affordable Health Care act is another good example. Do Americans believe the Obama administration, the insurance companies, the Republicans, or the news media? Who is responsible for the problems that have occurred with the roll out of their new health care system? This highly contested discourse is not only deeply rooted in political and economic relationships and fiercely contested meanings, but is also a battlefield of trust.

Walkerton provides a starting point for exploring the intricacies of trust relationships, but the issues that it raises are not limited to the situation in Walkerton. The narratives in Walkerton demonstrate how trust is multilayered, with not only different aspects of the trust relationship

affecting trust in different ways, but it is shaped by the political, economic, and ideological contexts surrounding it. It not only influenced many of the residents' preference for untreated, natural water from the local spring, but it shapes the understandings of the motives and expected roles of the various people and institutions who manage, regulate, and test their drinking water in important ways. This framework is a useful one for understanding how people make decisions in situations of uncertainty and vulnerability. While I have focused on how trust influences decisions in the context of environmental health issues, it is useful for understanding how and why people make decisions in a wide variety of contexts, from deciding whether or not to purchase bottled water to voting patterns, because the political ecology, the construction of meanings and knowledge, and trust are the cornerstones to navigating a risky, complicated world.

APPENDICES

APPENDIX A
Walkerton Timeline

1978 Well 5 drilled and eventually approved by Ministry of the Environment

1987 Grandfathering clause signed for Municipal water operators

1992-1996 Ministry of the Environment budget cut by 30% by the New Democratic Party

1995 Premier Harris became the Premier of Ontario

1996 Water testing laboratories privatized

1996-1997 Ministry of the Environment budget cut by 40% by the Conservative Party

1997-1998 Ministry of the Environment budget cut by another 20% by the Conservative Party

1999 Amalgamation creating Brockton established

Late April

2000 Biesthenals spread manure on the farm

May 1, 2000 Public Utility Commission switched testing laboratories

May 8-May 12

2000 The storm hit that washed the *E. coli* into the well

May 12, 2000 Approximately when the *E. coli* contamination entered Walkerton's tap water system

May 15, 2000 Public Utilities Commission submitted water for testing, but did not send sufficient water for the tests

May 17, 2000 Walkerton's tap water failed the *E. coli* test

May 18, 2000 First incidence of *E. coli* occurred in Walkerton

May 21, 2000 Boiled water advisory announced

May 23, 2000 The first person died from the *E. coli*

May 23, 2000 Dave Patterson and Dr. Murray McGuigge of the Public Health Unit tested Walkerton's water independently, confirming the presence of *E. coli*

May 26, 2000 Premier Harris visited Walkerton

May 28 2000 The Concerned Walkerton Citizens established

June 20, 2000 The Walkerton Inquiry began

July 25, 2000 Seventh person died from *E. coli* in Walkerton

October 2000 Public Utilities Commission's class action lawsuit against the Biesthenals instigated

December 5, 2000 Boiled water advisory ended; Walkerton's water declared safe

December 2000 The first financial reimbursements (for those who opted out of the class action lawsuit) received from the government

March 2001 Class Action lawsuit against the government initiated

2002 Report of the Walkerton Inquiry, Parts One and Two, published

2002 The Safe Drinking Water Act signed

2002 The Nutrient Management signed

2002-2008 Walkerton health study conducted

2004 Stan and Frank Koebel sentenced

2004 The Walkerton Clean Water Center opened in Walkerton

2005-2006 I conducted my fieldwork

2006 The Clean Water Act signed

2010 Class Action lawsuit against the Public Utilities Commission, the municipality, Stan Koebel, the health unit, and the provincial government resolved

APPENDIX B

Photographs



Figure 17: Walkerton welcome sign. *This sign at the southern border of Walkerton greets visitors to Walkerton, and is surrounded by flowers in the summer.*



Figure 18: Well 5 after it was sealed. *Well 5 in Walkerton was sealed after the E.coli contamination and a plaque placed there commemorating the event. The Biesenthal cattle farm is just beyond the trees. In the spring, this area floods, turning it into a pond where ducks swim (interviews).*



Figure 19: The Walkerton water tower in 2006. After the municipality of Walkerton was absorbed officially into the larger amalgamation of Brockton, the local water tower continued to bear the name Walkerton. The tower became the media icon representing the E. coli contamination in the news. After the contamination, the province tried to repaint the tower, but the town people successfully resisted (Perkel 2002).



Figure 20: The Mildmay Spring. *The Mildmay Spring, an untreated, artesian well, is located under the gazebo. Visitors can fill water bottles here for a donation.*



Figure 21: Collection of various bottled water labels. *This collection of commercial bottled water containers demonstrates a variety of labels, styles, and sizes.*



Figure 22: Crystal Geyser label. *Crystal Geyser Natural Alpine Spring Water, bottled in Tennessee, has beautiful mountains on label, and says that it is from a Cherokee National Forest spring source. The 8 ounce bottle I have also appeals to environmental leanings by claiming to be a “Proud sponsor of American Forests.”*



Figure 23: Ice Mountain label. Ice Mountain water is a subsidiary of Nestle that is labeled as “Natural Spring Water,” with images of icy mountain tops. It comes from two springs in Michigan—neither of them associated with icy mountaintops (Gleick 2010; Chapelle 2005), and yet those icy mountains on the label suggest ice cold, pure, natural, mountain springs—remote from human contamination and interference.



Figure 24: Deer Park label. Deer Park, which is bottled in Florida, shows hills, pine forests, and an antlered deer on its label.



Figure 25: Absopure label. *Absopure—which calls itself “the Hydration Drink”—shows a lovely, unsettled river on its label but is bottled in Plymouth, Michigan, one of the suburbs of Detroit (Gleick 2010).*



Figure 26: Aquafina label. *Aquafina is a processed, purified tap water, bottled from a variety of municipal sources and treated to always taste the same, no matter its source water (Gleick 2010), but the label shows mountains in the background. They are not just marketing water; they are marketing nature in a bottle.*

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