

**EXPLORING THE MEANING OF ENVIRONMENTAL  
RISK AND UNCERTAINTY IN AN  
ENVIRONMENTALLY SENSITIZED COMMUNITY**

**BY**

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## ABSTRACT

Community opposition to environmental hazards is often high despite expert assessment that the risk (probability of negative impacts) is quite low. This thesis addresses this problem through an inductive, qualitative case study of a community that was sensitized to a single environmental issue by being the preferred site for a regional municipal solid waste landfill for five years. There are three research objectives: i) explore the meanings of risk and uncertainty for residents; ii) investigate the effect of context on risk perceptions/constructions and; iii) develop a conceptual framework for understanding risk in context. Forty-four in-depth interviews were conducted mainly with residents (n=40) and some experts (n=4) to explore opinions on: risk, safety, general environmental concerns, valued aspects of the community, concerns about the landfill, trusted sources of information, and views of experts.

While the residents were concerned about the potential impacts to health, property values and agriculture the landfill also threatened their ways of life (e.g., rural farming) as expressed through core values (e.g., slow growth) and worldviews (e.g., trust in neighbours). That is, the landfill and siting process threatened the things that residents had worked hard to obtain and maintain in their community. Threats to core values, worldviews and ways of life were mediated by contextual issues including: extremely negative images of waste/garbage, knowledge of contamination from other landfills, perceptions of an unfair siting process, lack of trust in experts, and widespread community support for opposition.

A conceptual framework for understanding risk at Caledon is compared to a wide variety of literatures on risk (e.g. geographic, economic, psychologic, sociologic). Several concepts from these literatures are reconceptualized for understanding the social construction of risk at Caledon including: risk, safety, dread, uncertainty, trust, costs weighed against benefits, and psychosocial impacts. Further, an argument is made for increasing the prominence of social/cultural values within existing conceptual frameworks when they are used to understand risk in the context of everyday life. This local-level study provides empirical support for Beck's risk society theory which was developed originally to explain social change in relation to high-consequence global-level technological hazards. One of the main methodological contributions of the thesis is the explicit use and explanation of specific practices for enhancing qualitative rigour including: source and investigator triangulation, member checking, prolonged engagement, low inference descriptors and autobiography. Future research may include explorations of the relative importance of core values and the ability to protect those values (e.g., financially, politically) in a variety of different contexts involving technological environmental hazards.

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# Chapter 1:

## Introduction

### 1.1 Research context

Public concern about the risk of negative impacts from environmental contamination is increasing as more conflicts over environmental hazards emerge. The Club of Rome predictions in the early 1970s about the dire consequences of imbalances between population growth and food production, have given way to more recent attention on similarly dire consequences of the imbalance between our use of technologies and our (in)ability to control the environmental harms associated with them (Mol and Spaargaren, 1993). Pollution, contamination, and cancer clusters are becoming the buzzwords of the late 20th century. Environmental harms are not only by-products of the production of consumer goods they also result from problems within the complex systems which deliver the necessities of modern life such as water, electricity, and waste disposal. Dependence on such systems has increased over time, but so too has recognition that they are prone to failure by the very nature of their complexity and uncertainty (Starr et al., 1976). Systems that were once highly invisible to the general public are being made more visible as people find it harder to ignore threats from system malfunctions (Vyner, 1988; Perrow, 1984).

One of the main symptoms of conflicts over technological environmental hazards is that assessments of risk vary from group to group, especially between laypeople and

scientific and government experts (Fischhoff et al., 1981). The science of risk assessment is becoming increasingly sophisticated in how it predicts the probability and magnitude of harm from technological hazards. However, there is consensus that predicting probability and magnitude of risk will lead to only partial solutions for the management (minimization) of risk (Cutter, 1993). Risks concern more than the just the nature of the offending hazard, the focus of quantitative, scientific risk assessment, they are also intimately connected to the social contexts in which they happen (Johnson and Covello, 1987; Kasperson, 1992). In situations where assessments of risk vary and conflict is high, risk is appropriately considered as being socially and culturally constructed (Douglas and Wildavsky, 1982; Johnson and Covello, 1987; Wynn, 1992).

Wandersman and Edelstein (1987) demonstrate that some individuals and communities experience *environmental turbulence* characterized by disruption of everyday life, stigma, institutional structures working at cross purposes, and an overall scarcity of resources to cope with environmental problems. While environmental turbulence is typically associated with actual (or perceived) contamination “events” it may also pertain to those who face potential/future environmental threats which may lead to increased community sensitization to environmental issues. For example, the uncertainties associated with so-called noxious facilities such as landfills may result in similar forms of community or individual environmental turbulence (Vyner, 1988). It is through shared understandings of issues/events that people (try to) make sense of uncertain situations like the potential for a new local landfill. This study will investigate how meaning(s) of risk

and uncertainty are constructed in a community surrounding a preferred regional landfill site.

## **1.2 Research problem, theoretical and methodological orientations of the thesis**

This research addresses one of the main research problems in the area of environmental risk - to explain why assessments of risk vary between groups. In particular, an understanding will be developed of why concern about particular environmental hazards is often high despite expert opinion that the risks are (sufficiently) low (see Krinsky and Golding, 1992).

Some of the key explanations for discrepancies in views about risks are based in the following approaches: economic cost-benefit analysis, decision research, psychometric analysis of risk perception, natural hazards research, risk policy analysis, cultural analysis and the sociology of risk. The focus of much research has been within the first three approaches which were among the first developed in the literature, while considerably less work (but much debate) has been carried out within the latter two approaches. General criticisms of some of the earlier approaches are that they tend to focus on: distinctions between objective (actual) and subjective (perceived) risk, financial and mortality outcomes rather than morbidity and social outcomes, studies of general populations rather than people who face particular hazards in everyday life, hazards rather than the people who face them as the object of study and, large scales rather than local scales of analysis.

The theoretical orientation of this thesis is based on the goal of addressing some of

these limitations in past research by studying lay views of risk in the context in which it is experienced. The research is informed mainly by cultural and sociological theories of risk which treat the meaning of risk as constructed within the context of everyday life.

Therefore, particular attention is paid in the research to values, to expectations about how the world works, and generally to the local context. While these theories are used to guide the research (e.g., topics for interviews), the research is inductive so it does not involve formal testing of theoretical concepts.

The methodological orientation is interpretive and qualitative. The main method is in-depth, face-to-face interviews, set within a broader methodology informed by several frameworks. A number of related frameworks for understanding meaning in everyday life, primarily from sociology, are woven together to inform a study which involves the interpretation of meaning from semi-structured conversations. Interpretation is critical for placing explicit and implicit (inferred) meanings into theoretical contexts. Thus, the research is used as the instrument for bridging the gap from largely informal conversations to theory. The conversations themselves were structured partially by interview guides, but the participants were also allowed the freedom to express ideas that are important to them and might not otherwise have emerged in a more structured enquiry. This flexibility is essential in accounting for the contextual influences on the meaning of risk.

### **1.3 Research objectives**

This thesis is organized around three main research objectives:

i) to explore the **meanings** of risk and uncertainty for residents in an environmentally sensitized community;

ii) to investigate the effect of **context** on risk perceptions/constructions; i.e. how stakeholder groups (e.g., government, scientists, community opposition groups) interact to influence meanings of risk for individuals and the community and;

iii) to develop a **conceptual framework** for understanding risk at Caledon and compare this to existing frameworks for understanding environmental risk.

These objectives are addressed through a case study of Caledon, Ontario a community which was the preferred site for a regional (region of Peel) municipal solid waste landfill between November 1993 and June 1995 that has never been approved.

This research is part of a larger project concerned with psychosocial impacts of environmental contamination and the language and meaning of risk and involves studies of communities surrounding municipal waste sites (landfill, incinerators) at various stages of development (proposed, approved, operating). There are at least four major contributions of previous studies which inform the objectives of this thesis (Baxter, 1992, Baxter et al., 1992; Elliott et al., in press; Elliott and Baxter, 1994; Elliott et al., 1993; Eyles et al., 1993a; Eyles et al., 1993b; Taylor et al., 1992). First, residents faced with unknown risks/hazards may experience psychosocial impacts in the form of concern, worry, and disruption of daily life . Second, contextual factors like (mis)trust in the institutions/personalities responsible for managing or abating the risks from environmental hazards play a prominent role in residents' perceptions of risk. Third, beliefs, values and attachment to particular ways of life (e.g., rural farming) have the *potential* to greatly shape views on the meaning of risk. Fourth, single concerns expressed about

environmental threats (e.g., water quality) may be symbolic of constellations of interrelated concerns (e.g., drinking water + property values + livelihood from farming) which are likely linked to values. However, since the focus of these previous studies was on psychosocial impacts they involved only an implicit role for risk perception and the social construction of risk. This study seeks to address these issues directly, to determine how assessments of unacceptable risk are constructed and interpreted and with what effects.

There are at least three potential contributions of this work. First, it will advance understanding of how risk perceptions are constructed by putting them in the context of the daily experiences and values of the respondents rather than have them react to the abstract scenarios used in much existing risk research. Second, it will strengthen links between the environmental risk and psychosocial impacts of environmental contamination literatures by exploring how the meaning of risk is connected to the impacts of the landfill and the siting process. Third, it will provide insights into lay/expert interactions in a landfill siting process which may inform policy on siting similar noxious facilities.

#### **1.4 Chapter summaries**

This thesis contains nine chapters. Chapter two contains a review of the literature on risk which highlights some of the central concepts and theoretical frameworks for understanding why opinion on risks varies between groups. The review starts with the geographic literature on hazards, the origin of much of the current research on risk,



followed by discussions of econometric, psychometric, cultural and social approaches. A central theme of the chapter is that there has been somewhat of an evolution of theories over time, which roughly corresponds to the order in the above list. An argument is made for conducting qualitative case studies which explore the social and cultural construction of risk in the context of everyday life. The summary at the end of the chapter indicates topics which were used for the development of an interview guide which is discussed in chapter three.

Chapter three describes the research design for the case study. Contained in the chapter is a discussion of the rationale for an inductive qualitative research design based on 44 in-depth interviews including mainly residents (including opposition group leaders) interviewed in two rounds, and some experts who were involved in the siting process. An argument is made for interviewee selection based on maximum variation in participants rather than representativeness explicitly. The siting process itself is reviewed in order to set the context within which conflict over the preferred site for the landfill was situated. This is followed by a detailed discussion of the methodology which is based on a variety of frameworks used for interpreting the meaning of phenomena in everyday life and which links meaning to broader social structures and institutional change. Included are examinations of the relevance of Ricoeur's and Habermas' views of hermeneutics; interpretive sociology including the work of Schutz, Garfinkel, Winch and Giddens; Blumer's symbolic interactionism; and Giddens' notion of structuration. The chapter ends with a description of how data were managed, using qualitative software called

NUDoIST, and interpreted. The chapter closes with indicating measures taken to enhance the trustworthiness of the findings.

Chapters four, five and six describe the findings of the study by presenting three types of data from the interpretive analysis: themes from the NUDoIST database, frequencies of themes, and a conceptual framework for understanding risk at Caledon. Chapter four considers what exactly the residents dreaded about the landfill and how this relates to images of landfill and garbage, as well as expressed concerns about the preferred site. All are set in the context of existing general (background) concerns and specific risk and safety concerns in the community. In chapter five the main argument from the analysis is developed - that the landfill threatened intangible aspects of the community which are highly valued. This provides a backdrop for discussions of the emotional and social (psychosocial) impacts of the landfill and siting process, the relevance of framing residents' understandings of risk as costs weighed against benefits, and the role of uncertainty for complicating threats and impacts. Chapter six describes how the context of siting influenced the residents' constructions of risk. Lay and expert opinions of the risks of landfill, the siting process and each other are contrasted to demonstrate how conflict developed early and endured throughout the siting process. Differences of opinion on equity, the role of science and scientists, and community participation in decision-making are described in terms of an environment distinguished by a distinct lack of trust between experts and residents. This lack of trust is also linked to a legislated siting process which strictly limited the scientific experts' roles. The chapter concludes by

summarizing the main findings in the conceptual framework for understanding risk at Caledon.

Chapter seven is the discussion chapter which relates the findings for the case study back to the literatures on risk reviewed in chapter two. The concepts from existing frameworks which best describe what happened at Caledon are re-visited and re-defined where appropriate. The risk society theory is argued to be the single most appropriate theory for understanding both the meanings of risk for individuals at Caledon and how these meanings are connected to broader social processes. Thus, the chapter is organized mainly in terms of this theory.

Chapter eight outlines the main conclusion from the case study. Four substantive/theoretical, two policy, and two methodological conclusions are examined. The chapter concludes with a discussion of directions for future research.

# Chapter 2:

## A Review of Approaches to Studying Technological Environmental Risk

### 2.1 Introduction

This chapter reviews the risk literature to highlight concepts and frameworks which may be useful for understanding the findings in the presented case study. The case study itself is not exploratory in the *tabula rasa* sense of the term. Rather, it lays the groundwork for an explication of literature consulted both prior to and during the field research<sup>1</sup>. The review starts with a treatment of the geographic approach, one of the bases of much of the current risk literature. Following that is a critical review of some of the major areas of environmental risk research including the econometric, psychometric, and anthropologic and sociologic approaches. One of the general themes is the formation and evolution of concepts over time and across disciplines towards the development of integrative frameworks for studying risk. An argument is made throughout the chapter for the use of social and cultural theories of risk in particular, for guiding case studies of risk in context. Before embarking on the review itself, definitions of the terms *risk* and *hazard* will be discussed.

Risk is characterized in a number of ways, including the following:

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<sup>1</sup> This is discussed further regarding the interview checklist, section 3.2.

- i) The likelihood that something unpleasant will happen (British Medical Association, 1990)
- ii) The quantification of a hazard in terms of the probability that harm or undesirable results will be realized (Baker, 1990) and;
- iii) The probability of harm times the magnitude of impacts (Starr et al., 1976).

The range of definitions for hazard includes:

- i) An act or phenomenon posing potential harm to some person(s) or thing(s) (National Research Council, 1989);
- ii) A range of natural events, manufactured systems, and people that threaten our lives and life-support systems, our emotional security, our property, and the functioning of our societies (Mitchell, 1989, 410);
- iii) We may consider the environment as hazard only when some aspect of the environment threatens the well-being of individuals or society (Palm, 1990, 3).

There are three aspects to note within these definitions. First, while hazards are negative environmental phenomena which threaten individuals, groups, and societies; risks generally involve the probability and magnitude of such threats. For example, Kates and Kasperson (1983, 7027) provide a definition which distinguishes hazards from risks, "Hazards are *threats* to people and what they value and risks are *measures* of hazards" (*emphasis added*). Second, because risk and hazard are conceptually linked there is a considerable temptation to use the two interchangeably (Drottz-Sjoberg, 1991). For example, psychometric researchers ask people to rate various *activities and technologies* (i.e., hazards) according to characteristics such as voluntariness rather than just the perceived *probabilities* (i.e., risks) of adverse outcomes. Thus, within the psychometric approach, the separate components of risk perception and hazard perception have been reified into the single concept: "risk perception". The same is true for concepts like the *social and cultural construction of "risk"*, as opposed to risk *and* hazard. Third, the

confounding of *risk* and *hazard* is understandable, since, as will be demonstrated in this review, probability and magnitude are but two of a wide range of considerations for people making decisions about the threats from hazards. In this thesis Mitchell's broad definition of hazard is adopted since it includes threats to individuals, groups *and* society.

Palm's notion of threats to *well-being* is added to re-frame hazards as:

A range of natural events, manufactured systems, and people that threaten well-being including: life-support systems, emotional security, property, and the functioning of society.

As a prelude to the rest of this chapter the definition for environmental risk for this thesis, which incorporates some of the above issues as well as ones which will be covered further in the chapter, is as follows:

In situations of uncertainty and conflict, risk is a social and cultural construction. It involves the cognitive reasoning, logic and meaning employed by individuals and groups to assess the threat of a perceived environmental hazard. Perceived threat is influenced by technical issues as well as the social, political, economic and cultural contexts in which the hazard is situated.

## **2.1 The geographic approach**

There is a relatively long tradition within geography which deals with environmental hazards and risks. These geographical approaches to risk and hazards overlap most other literatures on these issues, so much of what is touched on here is taken up in more detail in later sections.

One of the first geographers to conduct research on hazards was Gilbert White (1974) who headed a study of human adjustment to natural hazards (e.g. floods). The

work is summarized in the book entitled Natural Hazards: Local, National, Global and is firmly rooted in the ecological approach with a focus on the concept of human *adaptation*. This grew from earlier work which sought to explain why people choose to live on floodplains in the U. S. at a time when floodplain disasters were on the increase (White, 1958). While this work deals directly with a core interest in geography - the relationship between humans and their natural, physical environments - it is important to note two other characteristics of this work. First, the work was largely quantitative emphasising survey research to elicit reactions to the hazards at the expense of more intensive methods<sup>2</sup>. Second, it is firmly rooted in the economic decision-research tradition for studying risk. This work focuses on the notion of *bounded rationality* advocated by Slovic et al. (1974) in the following passage:

Research, in both natural and laboratory settings, strongly supports the view of decision processes as boundedly rational. Given this awareness of our cognitive limitations, how are we to maximize our capability for making intelligent decisions about natural hazards? Two answers to this question are considered here. The first is primarily non-analytic in character and works within the framework of bounded rationality. The second is an analytic approach that accepts the notion that *human beings are fallible in processing information, but strives to help them come as close as possible to an ideal conception of rational decision making.*" (199)

This is explained further:

How might we apply knowledge of bounded rationality to improving adjustment to natural hazards? Consider two key aspects of the problem - the need to make the

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<sup>2</sup> The use of the survey research to the exclusion of other methods and the lack of social theory in this work is the subject of numerous reviews including Torry (1979) and Watts (1983).

decision maker's perceptions of the hazard more accurate and the need to make him aware of a more complete set of alternative courses of action (200)

These authors assert that laypeople, and more importantly, decision making experts have traditionally been overconfident in their decisions regarding the risks of hazards. The underlying theme is that, while the true risk (probability) of any natural disaster is uncertain, experts can make more satisfactory decisions if they are made more aware of the simplifying assumptions and biases that they (perhaps unknowingly) use. This framework is discussed more thoroughly in section 2.2.2 . It is important to note, however, that these early geographers helped shape economic approaches to risk management which tended to dominate the risk policy literature from the 1970s to the early 1990s.

This work is called by some the "Burton-Kates-White paradigm" (see Watts, 1983; Burton et al., 1978) and has been criticised for the absence of a role for social theory<sup>3</sup>. For example, Watts is critical of the "historically specific" structural-functionalist view of the nature-society relationship in this approach. Specifically, he is concerned with the inordinate focus on the concepts of *adaptation* and *homeostasis* which are seen to be blocked by *behavioural irrationality* (due to such things as inadequate knowledge). Watts recognizes that while responses (either cognitive or behavioural) to the same hazards vary, this is not necessarily due to inadequate knowledge on the part of individuals

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<sup>3</sup> This issue will be taken up again in the section 2.4 concerning cultural and sociologic theories of risk.



and that "social context and political economy mediate individual perception" (Watts, 1983, 240). Similarly, O'Riordan (1986) grapples with the delineation of a "universal" theory of response to natural hazards by reviewing the *transition thesis* (Burton, et al., 1978); and the *vulnerability thesis* (Wisner et al., 1977). While these were developed specifically to understand natural as opposed to technological risks, they both have relevance for understanding technological environmental risks. O'Riordan recognizes that group values are important for adapting to hazards and that certain groups are more prone (vulnerable) to be concerned and take action against certain hazards on the basis of such value commitments.

Palm (1990) contributes to social theories of hazards and risk by reviewing several approaches to the study of human-nature relationships in geography, including determinism, humanism, structuralism and engagement with the structure-agency debate, to propose her own integrative approach. Palm (79) summarizes that:

Research perspectives on the relationships between people in societies and their environments have ignored the linkages between individual-environment interactions and society-environment interactions, how individual responses can modify the system, and how awareness of the constraints of the system affects the selection of micro-level behaviours.

This work resonates with *structuration theory* (Giddens, 1993), particularly the notion of reflexivity (see also Beck, 1992a) in that all concern how individuals are influenced by, but can also influence in considerable ways, social structures within society. Palm advocates a framework (Figure 2.1) which is reflexive, whereby social structures influence individuals and individuals affect social structures and both are reflexively connected to the

environment. She also recognizes the importance of cultural values, her five *value realms*, for the determination of behaviour:

- iv) the nature and safety of the environment as well as the place of environmental "accidents";
- v) the "purpose' of the physical environment with respect to human beings;
- vi) the degree to which human activity can affect the nature of the environment;
- vii) individual as opposed to collective responsibility for well-being; and
- viii) the interaction of racial, ethnic, or gender divisions of labour and the use of the environment.

Similarly, O'Riordan (1986, 273) comments on the nature of strategies people use to cope with hazards:

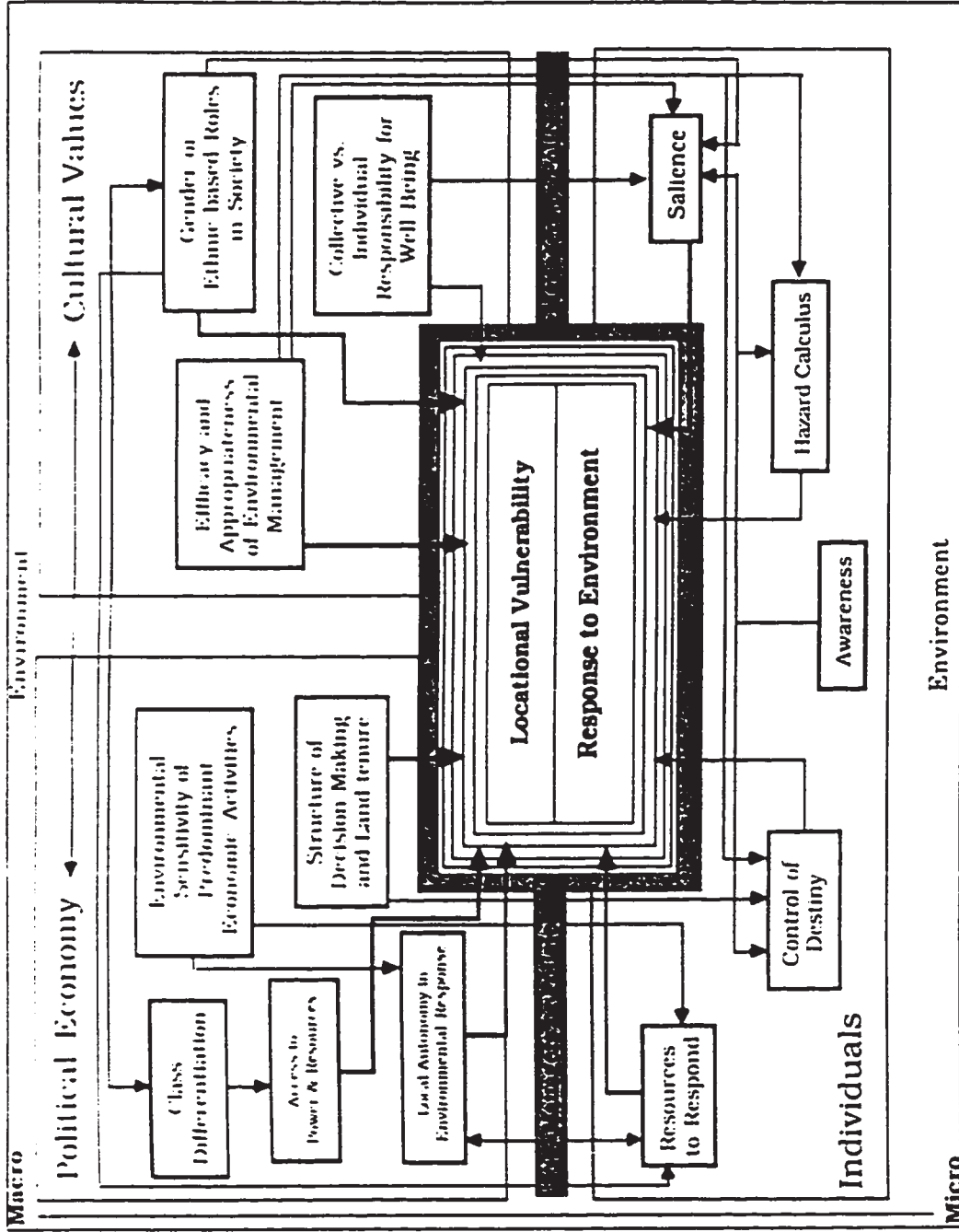
We shall see that these strategies are not just a function of the characteristics of the hazard; they are also a reflection of the way groups in a society judge government, science, technology, and indeed, authority in general.

This thesis centres on the connection between the values outlined by Palm and O'Riordan's concern with coping and what Palm refers to as the "hazard calculus" in Figure 2.1. These issues will be re-visited in chapter eight, the discussion of the findings.

White's early work was eventually expanded in the geographic literature to incorporate human-made *technological hazards*. Susan Cutter's book Living with Risk (1993) is likely the most prominent work by a geographer which deal with technological risk. Cutter (1993, 1) comments on why geography is important for understanding technological risks and hazards:

There is an implicit assumption that geography matters, for it is the geography of technological hazards that permits us to understand the interaction between technology and society, the impacts of technology on society and the environment, and how society adjusts to or adapts to life under these hazardous conditions.

**FIGURE 2.1: PALM'S INTEGRATED FRAMEWORK FOR UNDERSTANDING NATURAL HAZARDS**



Source: Palm, 1990.

There are at least three major contributions of Cutter's work for informing case studies of risk. First, Cutter recognizes that to understand hazards we must understand how they threaten people in the context of their everyday lives, a focus for the research in this thesis. Context is key since those who experience hazards, and the risks associated with them, do so against the backdrop of home life, community life, work, and the threat of other local hazards. Second, she focuses on the views/assessments of risk of laypeople who face hazards directly rather than the *general population* who may or may not face the hazards directly (Cutter, 1984; Cutter and Barnes, 1982). The following passage reinforces how social context, not just characteristics of the hazard itself, influenced the decisions about the risk from the Three Mile Island nuclear accident:

The decision to evacuate may also be influenced by social or situational factors, such as the actions of friends and neighbours rather than the cognition of risk. The evidence to date suggests that the behavioural effects of risk estimation or evaluation are secondary to contextual or situational factors (Cutter, 1993, 255).

Work like this highlights the need for case studies which address the role of situational factors on risk perception.

A third contribution of Cutter's work is to contribute heavily to discussion of *environmental justice*, following a strong tradition of concern with justice generally in geography (e.g., Harvey, 1973). Rayner and Cantor (1987) claim that the focus of risk and hazard policy initiatives should be less concerned with the question, "How safe is safe enough?", and focus more on, "How *fair* is safe enough?". Environmental justice refers

to the need for some sort of remedial *action* to redress an environmental hazard which is imposed on a particular group (usually based on race or income). *Environmental equity* is a broader term referring to the equal sharing of environmental risk burdens without reference to reduction (Cutter, 1995). Some argue that risks are so pervasive that we are all at risk:

Western democracies are continually in a state of flux as to how power is exercised and social justice determined. The distribution of risk has never been fair (i.e. it normally falls disproportionately on the powerless and the poor) but recently certain features of environmental risk seem so ubiquitous...that even the wealthy and the powerful are becoming anxious (O'Riordan, 1983, 347) (see also Beck, 1992b).

Others contend that spatial injustice based on race remain despite the peculiar character of technological risks suggested by O'Riordan (Chavis, 1994)<sup>4</sup>. Controversy also surrounds the research on the spatial distribution of hazards in relation to the distribution of racial and economic minorities. Some argue that evidence is equivocal and depends on scale and type of hazard, with some studies that show higher income people are more likely to be exposed to hazards than low income people (e.g., Bowen et al., 1995; Cutter, 1995; Jerrett et al., forthcoming). Others show injustices at both the local and national levels, particularly in terms of race (United Church of Christ, 1987; Bullard, R., 1990a). However, these studies inadequately address the possible mechanisms of injustice by exploring how assessments of risk and siting policy, for example, are connected to social processes. This case study explores such issues. It is also important to note that much of

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<sup>4</sup> See also, United Church of Christ (1987) and Bullard, R. (1990a, 1990b).

this literature presumes that laypeople adhere to the same sense of environmental justice espoused in the literature. Justice may be defined differently at the local level, for those who face hazards on a day-to-day basis. This too, is investigated at Caledon.

Geographers have also borrowed from psychology to develop concepts which explain why technological risks are so threatening. For example, Wolpert (1980) borrows Edgerton and Bercovici's (1976) notion of the *cloak of competence* traditionally used to describe how mental health patients cope with everyday life. It involves a persistent state of denial held by all people, who when faced with minor challenges to their cloak will make every effort to appear to be knowledgeable in order to fit in. Wolpert also argues that this state of denial is connected to an increasing reliance on complex technical systems in societies which are largely run by experts who have considerably more "competence", but paradoxically each only has expertise in their specialized areas. As such, when something goes seriously wrong with these systems the cloak is shed and people feel extremely vulnerable to threats. These ideas are echoed in Giddens' (1991) notion of the *protective cocoon* and Beck's concern with *security* and *anthropologic shocks* which will be discussed in section 2.4.5.

In an effort to better understand the impact of natural and technological hazards empirical and theoretical work in geography has grown substantially over the last two decades. The claimed dearth of theory early on in hazards research has led to considerable theoretical development in this area and substantial, animated debate (Cutter, 1993). Similar lively debates, are occurring in the area of technological risks from within

perspectives rooted in economics, psychology, anthropology, and sociology which overlap issues taken on by geographers. These issues and debates that will be discussed in more detail next.

## **2.2 The econometric approach**

One of the major differences between hazards research within geography and the econometric approach has to do with methodology. Much of the hazards work concerns documenting individual and group reactions to hazards and their associated risks in the contexts in which they occur. However, much of the risk work within economics involves experimental laboratory work or survey work based on general populations which may or may not face hazards on a day-to-day basis. The following reviews some of the major areas of risk research which are heavily influenced by economics and the related field of decision research. It is argued that these approaches are useful for understanding some of the simplifying assumptions (heuristics) and biases people use when making decisions about risks under uncertainty and that these approaches have considerable appeal to policy makers and legal cases involving risk. Nevertheless, the extent to which these approaches advance understanding of how laypeople actually view risks in day-to-day life is limited.

### **2.2.1 Costs weighed against benefits?**

The work by Starr (1969) laid much of the groundwork for understanding how people understand choices involving risk. Starr's goal was to determine, "How safe is safe

enough?", and one of his main arguments is that, at an aggregate level, society arrives at a balance between risks and benefits by trial and error. He devised what is now called the *revealed preference* approach for determining the costs (accidental deaths/hour of activity) relative to the benefits (amount people pay for voluntary activities, or income generated in involuntary) for various technologically-related hazards (e.g. driving a car or plane, working in a mine, using electrical power) in the U.S.. Some of the major findings, or hypotheses, from this work include:

- i) on the whole people are willing to accept risks to the third power of their benefits;
- ii) people are willing to accept voluntary risks which are roughly 1000 times greater than involuntary ones;
- iii) social acceptability of risks is directly influenced by public awareness of the benefits as determined by media campaigns.

Starr is also the first to admit some of the limitations of this work as the following excerpts demonstrate,

This assumption of a roughly constant relationship between benefits and monies, for each class of activities, is clearly an approximation (1234).

The social benefit derived from each activity was converted into a dollar equivalent, as a measure of integrated value to the individual. This is perhaps the most uncertain aspect of the correlations because it reduced the "quality of life benefits" of an activity to an overly simplistic measure (1234).

The latter quotation actually suggests an *underestimation* of benefits in this research, implying that the gap between risks and costs is actually narrower than it appears. This runs contrary to more recent case studies of people who live near technological hazards/risks which suggest that many such residents focus on costs and discount benefits



(e.g., Cutter, 1995). While Starr's work is criticised methodologically, (e.g., see Gardener and Gould, 1989) case studies of risk in context should explore the following issues::

- i) The extent to which people think of risks from hazards in terms of weighing costs against benefits.
- ii) The degree to which the costs of hazards are framed in terms of fatalities and the benefits as money.
- iii) Lay assessments of risk at sub-national scales?

Starr's ground-breaking work has been a major impetus for the development of the *contingent valuation method* (CVM) which involves a more detailed determination of the economic benefit of various non-market technological and environmental public goods (e.g., Gregory et al., 1993; Harrison, 1992; Savage, 1993b; Kahneman and Knetsch, 1992). This builds on the revealed preference method for phenomena that are not subject to the supply and demand market forces the usual parameters for understanding economic goods. In general the CVM asks people how much they would be willing to pay (WTP) to have an environmental hazard removed or how much they would be willing to accept (WTA) to be exposed to a certain activity/hazard. However, this research raises questions about the *reasons* for preferring to reduce certain risks more than others. This is reflected in the conclusions of one study:

Survey responses also reflect subjects' concerns about government effectiveness in risk reduction, environmental effects associated with the various hazards, *and other as-yet-unspecified elements of the risks*; however, these concerns appear to occur in addition to, not in lieu of, the preference to reduce higher risks (Horowitz and Carsons, 1993, 461) (*emphasis added*).

Statements like this are symbolic of a central debate in CVM, WTP, and WTA studies:

for what exactly are people paying in their choices to commit dollars (either directly or

indirectly) to reduce risk? Specifically, it may be that the "other as-yet-unspecified elements of risk" are among the *most* important for explaining such choices, not economic value of the hazard specifically.

Kahneman and Knetsch (1992) argue that rather than paying for the economic value of the good people are paying for *moral satisfaction*, or what they call the "warm glow of giving". This is demonstrated through the problem of *embedding* whereby people are willing to pay more for an environmental good on its own than if it is included as part of larger group of related environmental goods (e.g. *improved disaster preparedness* as part of a broader range of *environmental services*). This violates the implicit assumption that WTP values are relatively stable despite how WTP problems are framed. Some argue that the main problem is technical, that not enough information is given to respondents about each choice and sampling needs to be more robust (e.g., Harrison, 1992; Kerry Smith, 1992). Nevertheless, these same authors agree that framing is important and this is one indication that people may not think of environmental phenomena in terms of their economic value per se.

Context seems to be a strong determinant of WTP values. Criticisms of CVM studies on this basis include that: the scenarios are hypothetical and thus measure intentions rather than behaviour (Ajzen and Peterson, 1988); the scenarios are usually not comprehensive enough to ensure that people are paying for what the researchers intend (Fischhoff and Furby, 1988); and preferences for the same good changes depending on

how the scenario is constructed. These problems provoke Irwin et al. (1993, 16) to conclude that:

If values are constructed during the elicitation process in a way that is *strongly determined by context*, neither traditional WTP methods nor choice-based methods can be relied upon because each method evokes its own idiosyncratic form of information processing (*emphasis added*).

Since context is such a strong determinant of WTP and the risks from environmental hazards generally, it is appropriate to investigate context thoroughly in order to understand lay assessments of risk. This has been done in the case study of Caledon.

More recent approaches to CVM have tried to account for these contextual influences. For example, Multi-Attribute Utility Theory Contingent Valuation (MAUT-CV) attempts to overcome the problems of context on WTP by constructing values through a series of elicitation steps which is used to assign a utility value between 0-100 (subsequently converted to dollars), rather than assigning dollar values in one single question (Gregory et al., 1993). Two problems remain. First, people generally find it difficult to put numbers to their values and some particularly abhor putting dollar values to very deeply held beliefs (MacGregor and Slovic, 1986). Second, the MAUT procedure may make a somewhat artificial separation between facts and values which has symbolic importance. The following passage demonstrates the problematic assumption that *facts* are the domain of experts and *values* the domain of laypeople:

Conducting a multi-attribute CV study requires extensive knowledge about the facts of a problem and detailed elicitations of people's values. But the method allows the analyst to distinguish facts from values; stakeholders are asked to determine the components of value; experts then make the factual contributions to

understand impact pathways and magnitudes. Thus, the people whose values are sought do not need to understand scientific complexities in order to express their values (Gregory et al., 1993).

Thus, experts are implicitly seen as neutral in the process whereas lay people are subdivided into stakeholder groups. It is perhaps more appropriate, especially given the authors' own recognition that politics and context play a role in values elicitation, to think of experts as another one of the major stakeholders in any situation involving an environmental good (see Shrader Frechette, 1991; Sabatier and Jenkins-Smith, 1993). This is further complicated by the growing trend whereby each stakeholder group in a conflict over an environmental hazards/risks will hire their *own* experts. Similarly, facts are difficult to distinguish from values when scientific assessments of a hazard conflict. Many have demonstrated how technological hazard "facts" can be disputed among experts such that "values" may influence (consciously or otherwise) how probability estimations are constructed (e.g., Jamieson, 1996; Shrader-Frechette, 1991). The problems with separating facts from values in conflicts over environmental risks is discussed further in section 6.3 as it applies to the case study.

### **2.2.2 Decision Research**

Contingent valuation is closely linked to two theories of economic decision-making: expected utility theory and prospect theory. Expected utility theory (e.g., Friedman and Savage, 1948; von Neumann and Morgenstern, 1944) is based on Bernoulli's theory of declining marginal utility which explains that the value (utility) of

money decreases with the amount already won or existing wealth. In gambles involving changes in wealth people should take fewer chances as their existing wealth increases.

Expected utility theory is thus a normative model for making rational decisions regarding changes in wealth and is comprised of a set of axioms for maximizing utility and wealth.

This work is based largely on experimental gambles of the sort described by Plous (1993, 85):

Choose one of the following alternatives:

Alternative A: \$1,000,000 for sure

Alternative B: A 10% chance of getting \$2,500,000, an 89% chance of getting \$1,000,000, and a 1% chance of getting \$0.

Plous (1993) outlines six axioms for maximizing utility:

- |                                  |  |
|----------------------------------|--|
| i) ordering of alternatives      | • rational decision makers should be able to compare alternatives and decide which one they prefer or be indifferent to them;  |
| ii) dominance                    | • the choice with the maximum utility should be chosen over all others even if only slightly superior;   |
| iii) cancellation (substitution) | • common factors among alternatives should cancel out;   |
| iv) transitivity                 | • if A is preferred over B and B over C, A should be preferred to C;   |
| v) continuity                    | • a gamble between the best and worst outcome should be chosen over an intermediate and sure outcome if the odds are good enough (e.g., in the example above alternative B should be preferred since the odds of getting \$0 are sufficiently slim); |
| vi) invariance                   | • decisions should not be affected by the way they are framed  |

Following expected utility theory environmental risk decisions are seen as gambles to ensure maximum utility for society. An example of an environmental gamble for a community deciding whether to voluntarily accept a landfill site might be framed as follows:

Alternative A: no landfill and no benefits.

Alternative B: a 0.000001% chance of contamination of the water supply with a 100% chance of a reduction in taxes and the addition of a new community centre.

There are a number of problems for using this theory for environmental risk decisions whether they are made by experts or laypeople. First, there is no a priori reason to assume that environmental goods are thought of by laypeople in terms of maximizing financial wealth. As indicated in the section on CVM, people have little experience in cognitively evaluating things environmental so they may not know how to apply the axioms. Perrow (1984, 317) summarizes why people are more likely to employ simplifying assumptions (heuristics) rather than using the "rational" axioms for utility *maximization*:

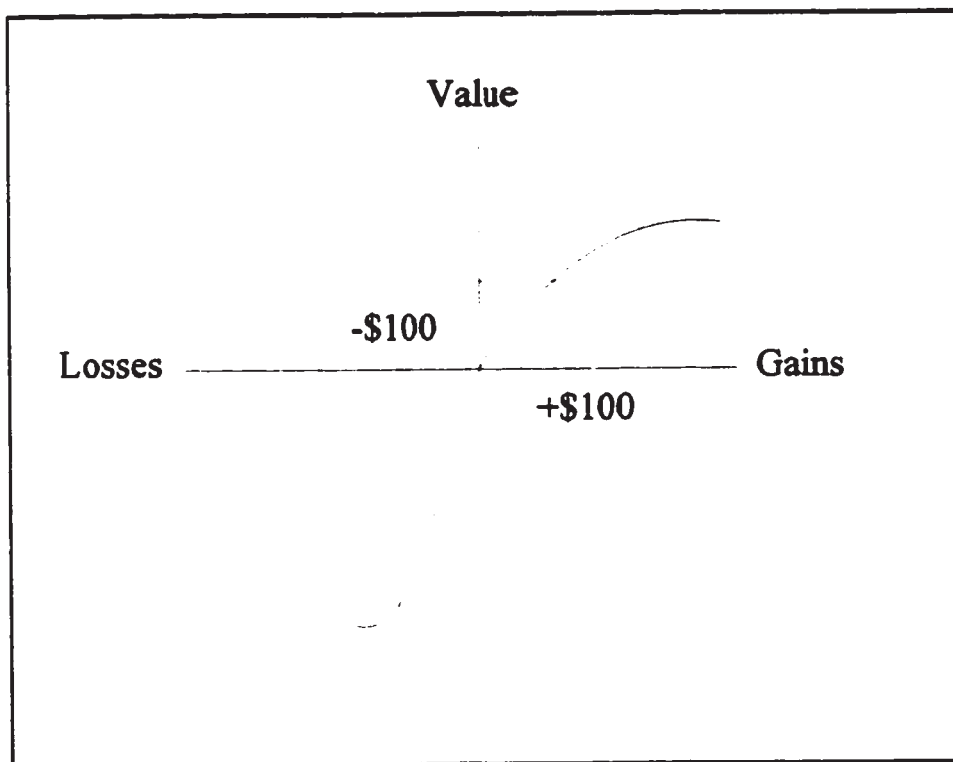
First, heuristics prevent a paralysis of decision making; they prevent agonizing over every possible contingency that might occur. Second, they drastically cut down on the "costs of search," the time and effort to examine all possible choices and then to try to rank them precisely in terms of their costs and benefits. Third, they undergo revision, perhaps slowly, as repeated trials lead to corrections of hunches and rules of thumb and do so without expensive conscious effort. Finally...they facilitate social life by giving others a good estimate of what we are likely to do, since we appear to share these heuristics widely. We may do something an expert would disagree with, but at least joint action...is possible, even if that action is not the one best line of action.

Second, real-life "alternatives" are not as clear cut as the experimental examples. For example, in the landfill choice described above the probability of contamination is very difficult to determine since this involves the interface of complex human-made and natural systems that are not understood with anything approaching the degree of certainty of prospects in lottery gambles. Thus, "subjective" estimates of probabilities are usually used instead of the "objective" ones on which expected utility theory depends. Third, although the goal of the axioms is to make the best decisions in terms of maximum utility, it begs the question of, "maximum utility for whom?". Environmental risk decisions usually involve numerous stakeholders which may have differing views on maximum utility. For example, are we talking about maximum benefit for politicians with strapped budgets, the people living near environmental threats, or society at large? Fourth, the axioms are often violated by experts and laypeople alike (Irwin et al., 1993; Kahneman and Tversky, 1979). There are numerous other violations of the axioms of expected utility theory including the *certainty effect* and the *reflection effect* (which violate the axiom of cancellation), as well as the *isolation effect* (which violates the axiom of transitivity) (see Kahneman and Tversky, 1979; Plous, 1993; and Tversky and Kahneman, 1974). Since laypeople *and* experts fail to adhere to the axioms consistently expected utility theory is truly a "normative" model rather than one which explains how decisions are actually made. This led to the development of prospect theory which was intended to be *descriptive* of real-world decisions rather than *prescriptive* of how decisions should be made.

Expected utility theory was developed to expose some of the simplifying assumptions (heuristics) and biases (violations of expected utility theory) that people use to make decisions about risk (e.g., Kahneman and Tversky, 1979; Tversky and Kahneman, 1974). *Prospect theory* involves asking people to place a *value* on choices relative to current wealth, rather than evaluate choices in terms of utility - changes in net wealth. While Kahneman and Tversky (1979) convincingly demonstrate how prospect theory overcomes common violations of expected utility theory, there are two aspects which are particularly relevant to technological environmental risks. First, prospect theory involves an S-shaped value function to account for framing effects such as preference reversals. The S-curve, depicted in Figure 2.2, shows that people value prospects differently depending on whether they are presented in terms of gains or losses. The steeper value function for losses relative to gains shows that people value (in the negative sense) losses considerably more than they do the same gains. Thus, in terms of gambles involving changes in wealth, losses "loom larger" than do gains. In other words people are "loss averse". Loss aversion is apparent in environmental risk and health choices whereby individuals/communities react against having noxious facilities located in their area (a potential "health" loss) by forming community groups whereas they may not be as proactive in organizing community health promotion activities (a potential "health" gain).



**FIGURE 2.2: S-SHAPED VALUE FUNCTION FOR GAINS AND LOSSES WITHIN PROSPECT THEORY**



Source: Kahneman and Tversky, 1979

The other major contribution of prospect theory is to demonstrate that people tend to overweigh small probabilities and underweigh medium to large probabilities. While this finding is usually used to explain our burgeoning lottery and insurance industries, it also has implications for environmental risk. The notion that people are overweighing low probability outcomes probably has explanatory appeal for those who feel that people overreact to technological environmental hazards like nuclear power sites, toxic waste sites, and particularly municipal waste landfills which are presumed (perhaps dubiously so) to be relatively low-risk.

Closer examination of this research casts some doubt on whether it adequately explains environmental risk decision-making. First, all of this work is based on hypothetical experimental laboratory work and there is little reasons to presume that these decision patterns will hold for people facing real-life risk decisions. People make choices within a context which may include the potentially profound influences of family, social and community networks, which include social and cultural constraints on decision-making. Second, like expected utility theory the decisions are restricted to gains or losses of money only. For example, there are many other less tangible losses which may be considered by individuals and communities who face environmental risks, including anxiety, stress, social support, community connectedness, dread, ways of life, and future health (e.g., Edelstein, 1988). Expanding risk theory by considering non-financial inputs

to decision-making is the focus of the next two sections on psychometric as well as sociologic and anthropologic understandings of environmental risk.

### 2.3 The psychometric approach

The psychometric approach is also called the *expressed preference*<sup>5</sup> approach since, in contradistinction to the revealed preference approach of economists like Starr, people are asked directly how they feel about risks and hazards rather than imputing them from secondary data. While the econometric approaches effectively show that rationality is bounded by the fact that we all use simplifying heuristics and biases in our decision-making, what is largely absent from this literature is any explanation for why these "simplifications" exist in the first place. Wildavsky (1979, 32) succinctly outlines how econometric approaches do not address a core concern for risk analysis:

Today, there are risks from numerous small dams far exceeding those from nuclear reactors. Why is one feared and not the other?

One of the early and important contributions to this literature is the study by Slovic and his colleagues at Decision Research which asked experts and laypeople to evaluate numerous technologies and activities in terms of 15 characteristics of these hazards and expected mortality (Fischhoff et al., 1978; Lichtenstein et al., 1978; Slovic et al., 1982; Slovic, 1987). Factor analysis of these characteristics for three groups of laypeople

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<sup>5</sup> Fischhoff et al. (1978) are actually credited with originating the expressed preference approach, however, the work of Slovic et al. seems to be cited more in the literature in this regard.

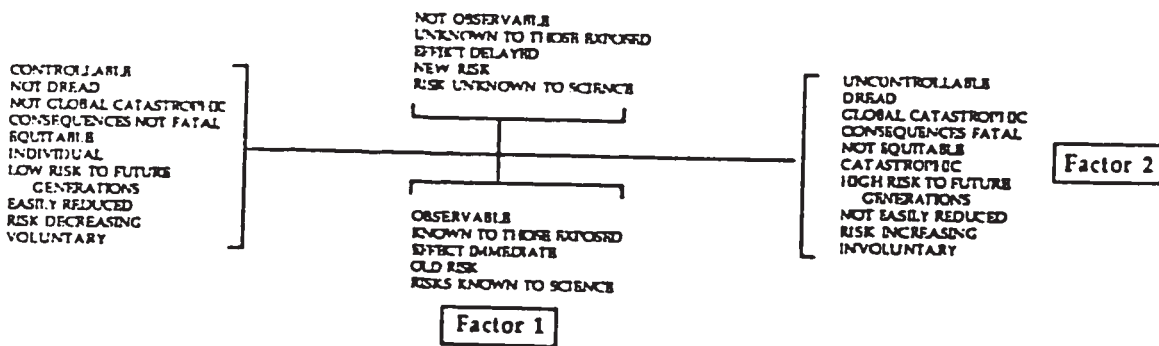
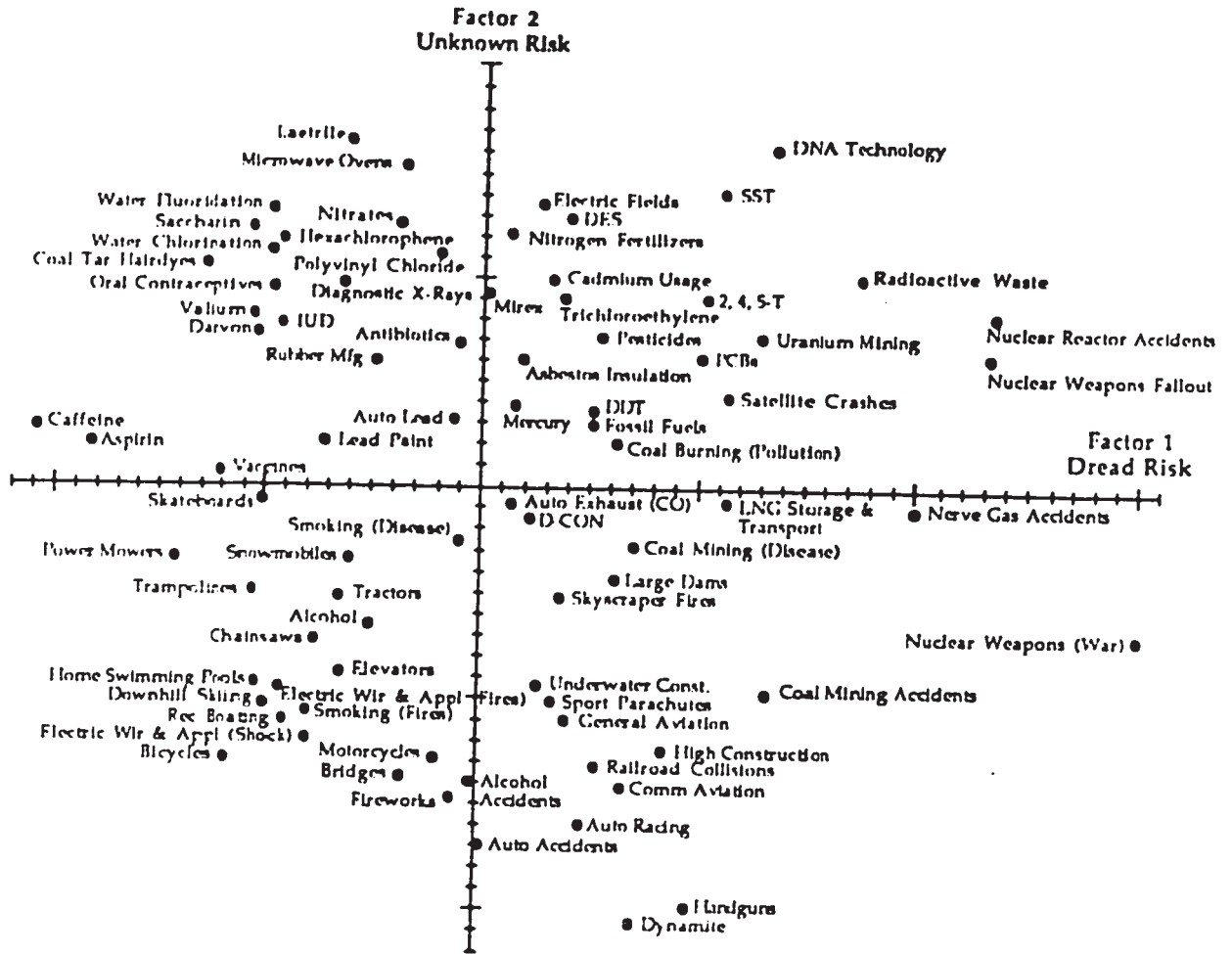
(students, members of the League of Women Voters, and members of clubs) reveals that these people think of risk in terms of two main factors<sup>6</sup>, *dread* (including the potential for catastrophe, controllability, and voluntariness) and *unknown* (including the extent to which the risk is new, has delayed effects, is known to science, and is visible). *Dread* and *unknown* create the factor space depicted in Figure 2.3 whereby the closer to the top and, more importantly, the farther to the right an activity is located on the graph the more likely people are to perceive the activity as risky and want the risk reduced through regulation.

Unlike the three groups of laypeople, the factor analysis for experts' responses revealed no statistically significant relationships for the 15 criteria, but it does for expected mortality. The idea that laypeople and experts seem to be rating the same risks in very different ways adds another piece to the puzzle of why there are "biases and heuristics", but only for the laypeople. Thus, to use the language of economics, laypeople generally choose not to be maximizers when faced with choices involving particularly dreaded or unknown hazards like nuclear power, chemical pesticides and chemical herbicides. But is it not possible that what people actually dread is death, such that laypeople are really thinking about death, but in a less direct way than the experts? There are two counter-arguments against this. First, laypeople are actually quite good at estimating the mortality associated with various activities. For instance, they seem to

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<sup>6</sup> A third factor is reported - *exposure* (including the number of people exposed and personal exposure) - but this has a considerably weaker correlation with perceived risk and desirability for regulation than do the other two factors.

**FIGURE 2.3: LOCATION OF 81 HAZARDS WITHIN THE "UNKNOWN" (FACTOR 1) AND "DREAD" (FACTOR 2) FACTOR SPACE**



Source: Slovic, 1992

know that automobiles cause more known deaths than does nuclear power, but they still rate the latter higher than the former in terms of perceived risk (Slovic et al., 1982).

Second, Gregory and Mendelsohn (1993), who compute linear regressions of *dread* and *perceived risk* (of dying) against six of the original 15 criteria tested by the Slovic group, find

that *expected mortality* is a statistically significant, but weak contributor (coefficient = 0.05) to the model for *dread* but a strong contributor to the model for *perceived risk* (0.37). Thus, dread does not seem to be a surrogate for dread of death.

Gregory and Mendelsohn's work teases out some of the factors which contribute to perceptions of risk as opposed to dread, under the presumption that the two are not interchangeable. The most powerful predictors of dread involve hazards which: pose risks to *future generations*, are associated with perceived *immediate* mortality, and are believed to have the catastrophic potential to kill large numbers of people at once. *Expected mortality* is one variable which distinguishes *dread* and *perceived risk* as is *catastrophe* which is actually negatively associated with the latter since they tend to be personal risks (e.g., smoking and drinking alcohol).

Thus, perceived risk and dread have different correlates. What is more interesting is that most of the variables considered in research of this type link the hazard to *fatalities*. This focus may be too narrow. While Gregory and Mendelsohn's models are parsimonious, with a seemingly large proportion of the variance in both dread and

perceived risk explained, there may be significant influences on these perceptions which lie outside the limited number of categories included in this research. That is, there may be other phenomena (confounders) which also explain how people think about risks. The case study of Caledon addresses this issue by inductively studying views on risks rather than deductively testing existing constructs.

The original Slovic, Lichtenstein, and Fischhoff work has been expanded in a number of other ways to address both methodological and substantive issues. For example, some studies have focused on: obtaining more representative samples (e.g., Gardener and Gould, 1989), detailed psychometric studies of specific hazards (e.g., Kraus and Slovic, 1987), the role of sociodemographic variables (Savage, 1993b), and linking the perception of risk with willingness to pay (McDaniels et al., 1992). While each of these studies makes valuable contributions, the main findings of the original studies with the original focus on dread and unknown for explaining variation in risk perceptions remain intact.

Another key contribution of the psychometric paradigm is that it addresses Starr's notion of tradeoffs between costs and benefits directly. The psychometric, expressed preference approach, focuses on costs measured in terms of perceived risk as opposed to just fatalities and has generally down-played the role of benefits. The results of investigations which *do* include benefits are mixed. In their original study Slovic et al. (1982, 87) find that perceived *benefit* does play a role,

In agreement with hypotheses originally put forth by Starr people's tolerance for risk appears related to their perception of benefit. All other things being equal, the greater the perceived benefit, the greater the tolerance for risk.

Nonetheless they qualify this by saying that acceptability is also mediated by numerous factors like *familiarity*, *control*, *catastrophic potential*, and *uncertainty* where Starr only considered *voluntariness*. However, in the later paper by Slovic (1987, 283) there is a seemingly contradictory claim,

Across the domain of hazards, there seems to be little systematic relationship between perceptions of current risks and benefits,

which is qualified by the fact that it is only for those activities that are seen as highly beneficial (e.g. automobiles) that benefits plays any appreciable role (and these also tend to be voluntary). What is most informative perhaps is the absence of *benefits* in many of the subsequent studies/papers which tend to include many of original 15 variables (e.g. Kraus and Slovic, 1988).

There are contradictory findings in those perception studies which do include benefits as a variable. Flynn et al. (1992) find that the perception of *economic benefits* does not play a significant role in predicting either support or opposition to the Yucca Mountain nuclear waste repository, while Gregory and Mendelsohn (1993), show that *economic gains* and *personal gains* are negatively associated with perceived risk of 90 different potentially hazardous activities, technologies, and products. Gardener and Gould (1989), dissatisfied with the notion that benefits are usually measured in economic terms, unpack benefits into four characteristics: *economic benefits*, *basic needs*, *safety*



*and security, and pleasure. While economic benefits* did consistently account for the largest variation in overall benefits across six hazards, the remaining three benefit measures also accounted for considerable variation, with the exact ranking depending on the type of hazard considered. Nevertheless, benefit generally accounts for very little of the variance in desire for regulation (perceived risk) in the study. These psychometric studies involving benefits suggest that people may not think of the risks from environmental hazards exclusively in terms of weighing the costs/risks against the benefits.

There are a number of potential limitations in the psychometric paradigm which provide windows for expanding such work in order to develop richer understandings of the ways people think about risks and hazards. First, many of the studies have centred on representative samples of the American public and have paid less attention to studies of those who are known to face particular hazards/risks on a day-to-day basis. People who face risks directly (either temporally or spatially) tend to evaluate them differently than those distanced from them (e.g., Elliott et al, in press; Taylor et al., 1992). Second, while *dread* seems an important predictor of the perception of risk, there has been little attempt to disentangle this potentially multidimensional concept. For example, in some studies *dread* is rather nebulously defined as the respondent's "gut reaction", yet it retains high explanatory power (e.g., McDaniels et al., 1992). What exactly makes up this "gut reaction" to hazards: fear of death, fear of other physical harm, loss of income, or loss of something else entirely? Third, while quantitative statistical techniques are useful for eliciting perceptions from a wide range of people, the questionnaires on which they

depend are (necessarily) restricting. For example, the initial factor analysis only considered 15 different characteristics and later studies focus on much fewer. These characteristics may not entirely capture people's views on risks from hazards. Thus, there is a need for more intensive studies which consider the perceived risks of hazards in the context of everyday life to ensure that all the multiple shapers of perceptions are considered. Fourth, the only variables considered are characteristics of the hazards with little consideration of the people who evaluate them (beyond sociodemographics). Characteristics of the hazards provide indications of peoples' potential reactions, however, there are social, political, and economic influences on risk perception which may be of equal importance. These issues are considered in the case study and are elaborated in the next sections.

#### **2.4 The anthropologic and sociologic approaches**

It may seem problematic to join sociologic and anthropologic approaches since they are built on very different foundations, the former largely on the links between social structures/relationships and risk and the latter mainly on the cultural dimensions of risk constructions. Nevertheless, they are similar in at least the following respects: they both focus on the role of context on risk assessments/perceptions; they concern risk at the group as well as the individual level; each recognizes that risk is value-laden not value-free; both involve the notion that risk is often contested and is concerned with conflict between groups; and they assume that risk perceptions are socially and culturally

constructed. The parallels with some geographical approaches is also evident, especially the roles for conflict and structure.

In contradistinction to the econometric and psychometric approaches, there is emphasis on theoretical development in both the anthropologic and sociologic approaches. However, this is often at the expense of substantial empirical support (Rayner, 1992). This study provides empirical support for some of these theories. Whereas the econometric and psychometric approaches focus on characteristics of the hazards themselves the anthropologic and sociologic approaches shift attention to the social, political, and cultural contexts within which images of hazards and their associated risks are formed. While there are a number of theories that have developed, particularly in sociology, which may inform studies of risk including: organizational theory, social mobilization theory, and systems theory (Renn, 1992), the following is a discussion of five of the more frequently cited and debated approaches<sup>7</sup>: cultural theory's grid/group analysis, the social amplification of risk, social arenas of risk, risk and social learning, and the risk society.

#### **2.4.1 Cultural theory**

Cultural theories of risk may be traced to Mary Douglas' (1966) Purity and Danger which concerns body defilement and group rituals at various times throughout history.

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<sup>7</sup> Most of these approaches are examined in Krimsky and Golding (1992).

She claims that groups consciously select rituals like dietary restrictions (e.g., the Jewish aversion to pork) not out of economic or medical necessity mainly (although these may be important side-effects), rather as a way to maintain a group identity which is distinguishable within wider society. As Rayner (1992, 87) summarizes:

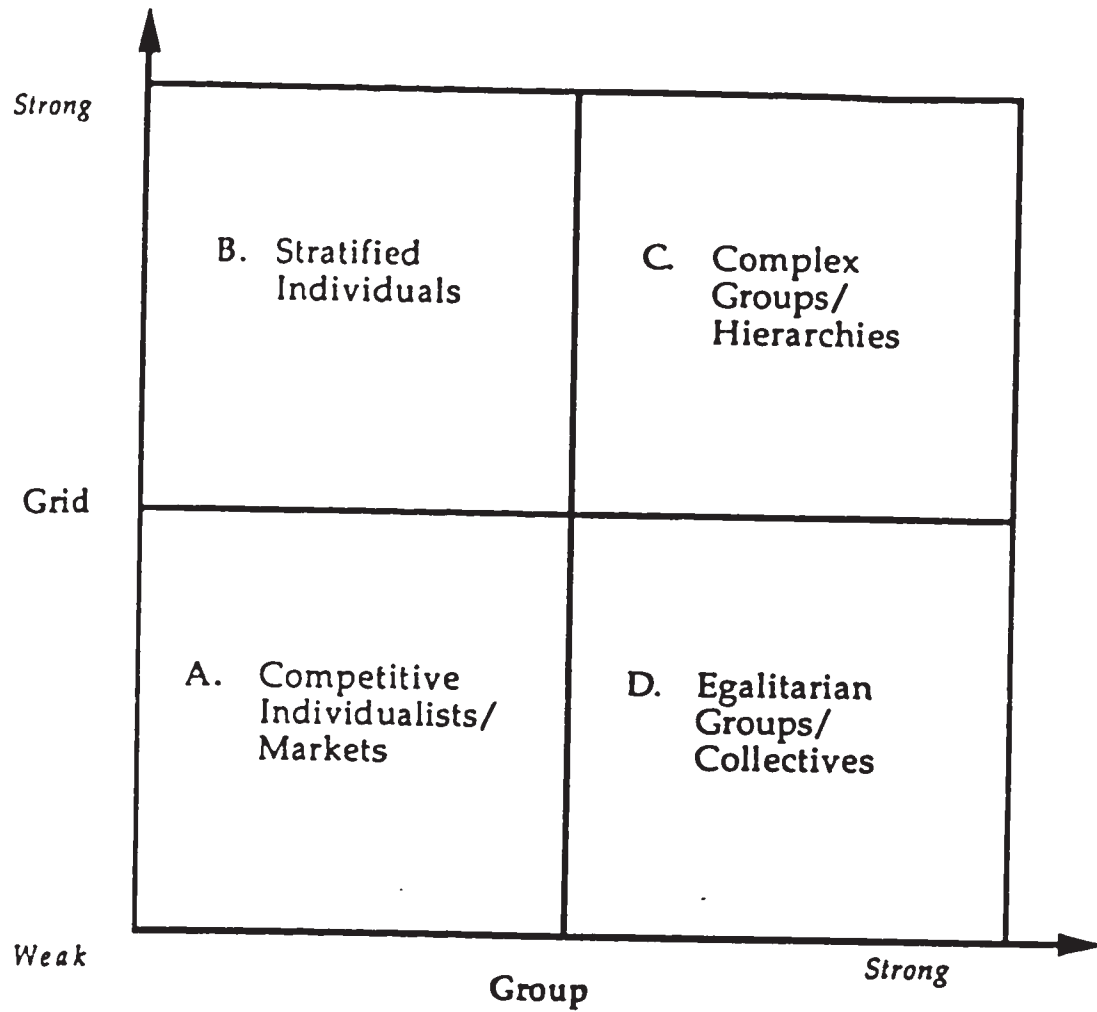
Whatever objective dangers may exist in the world, social organizations will emphasize those that reinforce the moral, political, or religious order that holds the group together.

When misfortune falls upon an individual within or even outside the group (e.g., illness) *moral blame* is attributed to the individual if they have transgressed the ritual observances or the values of the group.

The concept of *group solidarity* or maintenance is explored further in the book Natural Symbols (Douglas, 1970) which involves an effort to define the dimensions or *cultural biases* which typify various groups in society. These cultural biases are comprised of a group's *worldview* or ideology which entails deeply held beliefs and values (Wildavsky and Dake, 1990). Douglas (in Short, 1984, 720) explains how worldview plays a role in risk perception:

Human perceptions rest more upon social construction and consensus...A distinctive program for human cognitive psychology would take special interest in *how the classifications of the world are formed*, how they threaten to disintegrate and how certain social processes shore them up (*emphasis added*).

The process of unearthing worldviews now commonly involves grid/group analysis and is depicted in Figure 2.4. *Grid* refers to the role constraints which influence individuals within the group including age, gender, race, kinship and social hierarchy. When grid is

**FIGURE 2.4: CULTURAL THEORY'S GRID/GROUP TYPOLOGY**

Source: Rayner, 1992

weak there are few role constraints and the group is largely egalitarian, conversely when it is strong, individual roles and achievements are largely based on the characteristics like age and gender which may be imposed from within the group, from outside the group, or even by the individual. The *group* dimension concerns the degree to which individuals are incorporated into the social unit and the degree of regular social interaction. Weak group represents competitiveness whereby individuals interact with a wide range of others outside the social unit and infrequently with the same people. Strong group represents individuals who interact with each other on a regular basis and hence depend on each other heavily. Thus, those groups who engage in the ritual means of maintaining solidarity suggested by Douglas are most likely to be in the upper-right quadrant of Figure 2.4 as opposed to the bottom-left.

Perhaps the best known and most extensive application of grid/group analysis and the associated concept of group solidarity is found in Douglas and Wildavsky's (1982) study of the American environmental movements of the late 1970s in Risk and Culture. Their main thesis is that these grass-roots national environmental groups have consciously selected certain environmental hazards for attention for the implicit purpose of reinforcing the social cohesion of their organizations. The grid/group quadrants are essentially reduced in this analysis to a dichotomy: the *centre* - representing both markets and hierarchies oriented towards individuals (quadrants A and C) and the *border* comprised of

egalitarian collectives (quadrant D) called *sectarians*<sup>8</sup>. Thus, in terms of environmental risks those groups towards the centre are comprised largely of scientific and government experts who are characterized as making rational tradeoffs between costs and benefits. In contrast, the environmental groups are depicted as sectarian and implicitly irrational. That is, they focus on the cancer risks of uncertain technologies/substances/activities mainly to ensure the survival of these organizations whose popularity began to wane in the 1970s. The moral transgressors are big business who have unnecessarily exposed society to the health risks posed by the technologies they support. Douglas and Wildavsky argue that the environmental groups forward such a position more to justify their own existence than to *act* to reduce technological cancer risks explicitly.

This example of the group solidarity thesis in Risk and Culture proved to be highly controversial, and this controversy has to some extent undermined the potentially valuable contributions of Douglas and Wildavsky's work. One comment by Nelkin (1982) is that there is a diversity of environmental groups rather than the narrowly defined radical, grassroots, egalitarian groups depicted by Douglas and Wildavsky. Two counter examples are the Sierra Club which is comprised of high status people connected largely by a mail network (towards the *centre* - quadrant C in Figure 2.4) rather than face-to-face contact and the so-called NIMBY groups who form only because they face/have a noxious

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<sup>8</sup> Wildavsky and Dake (1990) similarly identify a three-fold classification of social relations (patterns of interpersonal relationships), which are highly connected to cultural biases (worldviews or ideologies involving deeply held beliefs and values): individualists, hierarchists, and egalitarians.

facility located nearby (quadrant B in Figure 2.4). Since in the former case little direct contact occurs and in the latter group contact is only fleeting (until a decision is made) these organizations do not fit the strong group/weak grid characteristics of egalitarian groups (see also Rayner, 1992). The logic of the group solidarity hypothesis breaks down in the latter case especially since the environmental group forms *because of* the environmental threat and is not *maintained* only as consequence of it. Although maintenance may continue once the group is formed it may not be because of commitments solely to sectarian or centrist values but other sets of values entirely. The case study of Caledon corroborates that the hazard did not reinforce/maintain existing group solidarity according to the grid/group categories, rather it brought very different groups together seemingly for the purposes opposition to the hazard alone<sup>9</sup> (sections 5.1, 6.4, and 7.1). Thus, the grid and group dimensions may not be the most appropriate means of defining social/cultural groups who oppose hazards viewed to be high risk.

Rayner (1992) elaborates on six other criticisms of cultural theories of risk, and while some of these are refutable, others cast further doubt on the applicability of grid/group studies to certain environmental risk situations. The criticisms are that cultural theories tend to: lead to cultural relativism, stereotype, cannot accommodate differences in scale, are deterministic, ignore the role of self-interest, and are inherently conservative. Cultural relativism is the extreme position that since each group has its own

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<sup>9</sup> It is argued in chapter seven that opposition merely a consequence of the need to protect shared core values which do not align entirely with the grid and group dimensions.



set rules for evaluating risk/hazards all have equal claims to the "truth" (see Burger, 1988; Whipple, 1988). Rayner contradicts this by claiming that most cultural theorists do not deny that all knowledges should be validated against nature, but of equal importance is to recognize that science (or only particular forms thereof) does not have the *only* claim to such validation. Perhaps more importantly, groups must learn to respect that under conditions of considerable scientific uncertainty (which defines most conflicts over technological risks) all positions must, to a certain extent, be respected (see also Funtowicz and Ravetz, 1985). The claim of stereotyping is that grid/group analysis takes certain characteristics of individuals to represent collections of characteristics and behaviours. Rayner (1992, 102) views the stereotyping criticism as a "gut level reaction to categorizing people", which he acknowledges as an uncomfortable but necessary aspect of social science. The argument here is that all social theorists categorize people in one way or another, but many do so only implicitly. Douglas and Wildavsky's theory, however, is explicit and well defined so it is open for scrutiny rather than being implicit, vague and banal.

Criticisms involving scale and determinism are interrelated. The scale criticism centres on the fact that the level of observation in grid/group analysis is often the individual while the level of analysis is the group - and their cultural value constraints. Thus, some argue that grid/group analysis is ill-equipped for addressing questions at larger or smaller scales. Rayner accepts this as a limit of the common methodologies for grid/group studies, but also turns the scale argument on those who would claim that

cultural theory is deterministic. One cannot make predictions about individuals on the basis of the group(s) to which they belong since each person may experience a variety of different group cultural biases (e.g., simultaneously being part of a family, community, and industry). The goal of cultural theory is to define the collection of value-constraints of various groups, and not necessarily to show how each set of constraints impinges on each and every member of the group. The problem which remains, however, is that the value constraints have been rather narrowly defined in terms of the grid and group dimensions rather than constructing them inductively to see if other value constraint apply.

While self-interest is the most common concept used to explain social behaviour (e.g. Laswell, 1958) cultural theorists seem to reject any role for self-interest. Rayner accepts that self-interest plays a role, but that this is likely defined more by the group-culture than most behavioural scientists might be willing to admit. He invokes the example of the *precautionary principle*, as opposed to proof-first principle, in environmental regulation to show how the grid/group dimensions are linked to whether a collective is protectionist and prudent or pro economic development and proof-oriented. However, such a characterization does not account for why both these groups often join together to oppose certain hazards.

Claims of conservatism have been levelled directly against Douglas and Wildavsky who boldly claim that their own bias is towards the *centre* which favours market oriented and hierarchical groups as opposed to the egalitarian/sectarian environmentalists. At a time in social science when researchers are being encouraged to acknowledge their own

partialities, such a declaration need not be a threat to their work on its own. However, Nelkin (1982, 776) is not convinced that there is much evidence to support some of their claims:

The authors develop their model of the sectarian society less from evidence than from their own opinion of the radical wing of the environmental movement.

For example, Risk and Culture was written prior to, or at the genesis of major environmental disasters like Love Canal, Three Mile Island and Chernobyl, to that point considered by experts as "unlikely" tragedies these environmental groups were "irrationally" fearing. Nevertheless, Nelkin (1982) sees the potential in cultural theories of risk if they focus on the vulnerability of particular groups to hazards, and are more to do with people who face risks on a day-to-day basis. As such, she poses the following question:

Why not ask how factors at work and in daily life influence people's risk perceptions (776)?

This is the type of question Irwin et al. (1996) are addressing in their studies of the social and cultural influences on the formation of knowledges regarding potential environmental threats in Manchester, U.K.. This question also guides the research at Caledon.

Kempton et al. (1995) address some of the problems of the Douglas and Wildavsky research by engaging diverse groups within the American public using semi-structured interviews followed by surveys to explain the rise in environmentalism. Being anthropologists they too focus on the roles of culture, values and beliefs but environmentalism is not said to arise solely from egalitarian anti-industry values which

maintain group solidarity. On the contrary, they find that while maintenance group solidarity is at issue, environmentalism is connected more to values about nature rather than industry including parental responsibility, obligation to descendants, traditional religious teachings, and even valuing nature for its own sake (biocentrism).

#### **2.4.2 Social amplification of risk**

The social amplification of risk seems to be the only conceptual framework which attempts to integrate several, apparently disparate, theories of risk (Kasperson, 1992; Kasperson et al., 1988; Renn, 1992). The main thesis/assumption associated with this framework is that, "hazards interact with psychological, social, institutional, and cultural processes in ways that may amplify or attenuate public responses to the risk or risk event" (Kasperson et al., 1988, 177). This was developed to help explain how seemingly "minor" risks gain prominence in the public eye in some instances, but not in others. This work was articulated at a time when many began to recognize the potentially serious impacts of amplification and attenuation. The implications of amplification are highlighted by Burger (1988, 309) in the following passage:

To the extent that a disparity exists between perception and true risk, we are in danger of embracing, in a wholesale fashion, inappropriate, expensive or unproductive public policy choices.

Kasperson is clear, however, that the social amplification framework is not intended to make any claims about the relationship between true (objective) and perceived (subjective) risk. First, Kasperson (1992) and most others who study technological hazards/risks have

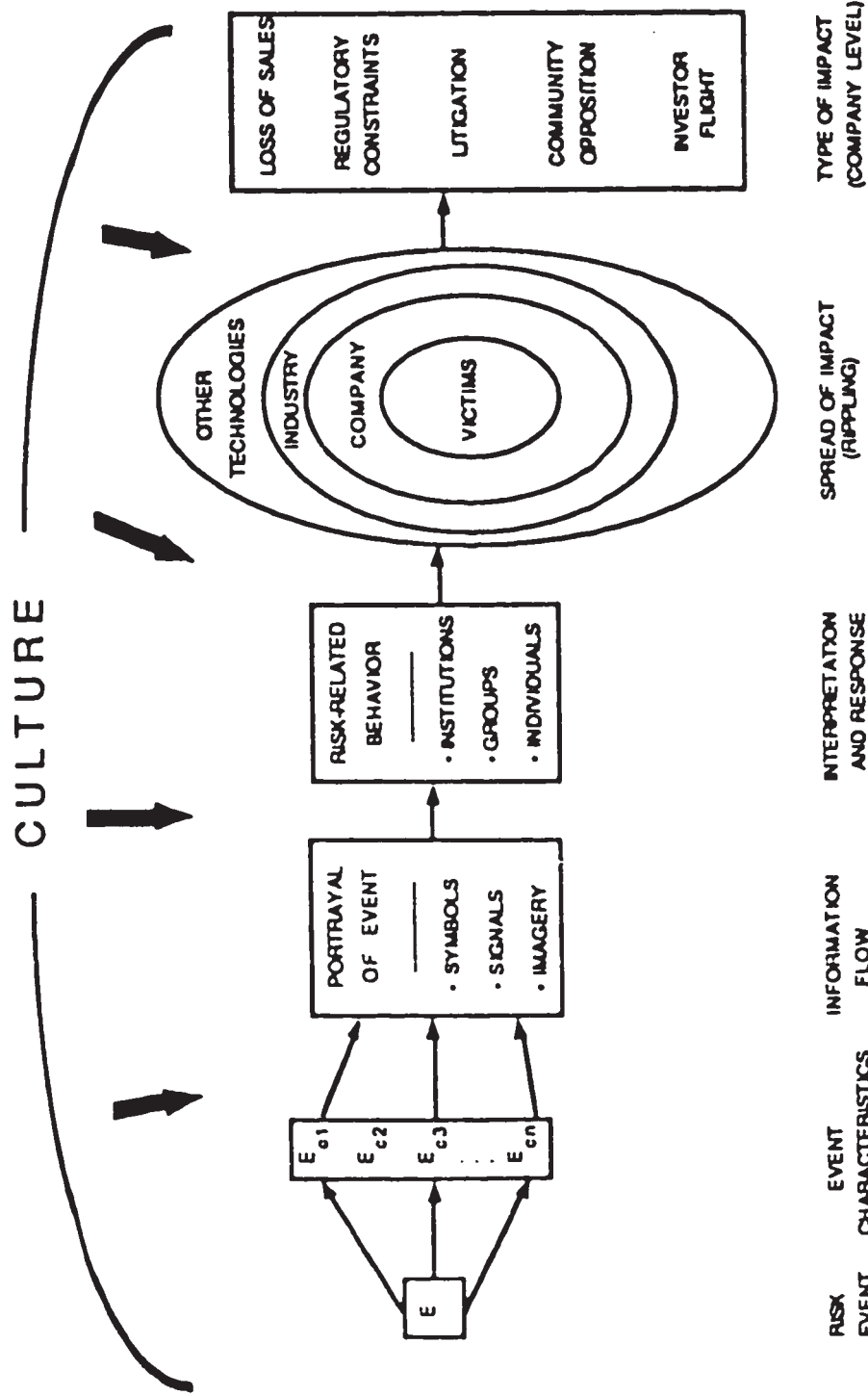
long recognized the degree of expert disagreement about "true" risk that can accompany scientifically uncertain hazardous situations. Second, risks are only meaningful when people choose them to be, even when experts or the media say otherwise. Thus, social amplification is the process by which hazardous events are perceived by groups through various social, economic and community phenomena, and in the process have impacts on these same phenomena and groups (see Figure 2.5).

The social amplification process generally starts with an *environmental event* (e.g., a radiation leak from a nuclear facility) which has certain characteristics all, some, or none of which various groups may choose to select for attention. These events are then *portrayed* in particular ways through individuals and institutions (e.g., the media). However, as Kasperson (1992, 159) explains, what is key is how such messages are *interpreted*,

Role-related considerations and membership in social groups shape the selection of information that the individual regards as significant. Interpretations or signals that are inconsistent with previous beliefs or that contradict the person's values are often ignored or attenuated. They are intensified if the opposite is true.

This is complicated, however, by the fact that individuals also have to adhere to a set of cultural values associated with the *institutions* to which they belong (e.g. the company for which one works), which may or may not be consistent with *individual* values/beliefs. For example, after a radiation leak in the Ginna, New York nuclear plant in 1982, locals were far less perturbed than various national anti-nuclear groups partially because the residents either worked in the plant or recognized the importance of the industry for the local

FIGURE 2.5: THE SOCIAL AMPLIFICATION OF RISK FRAMEWORK



Source: Kasperson, 1992

economy (Kasperson, 1992). Thus, individual and institutional values were linked at the local level for this event, but not at the national level. The variation in responses to seemingly similar hazards (e.g. the Ginna radioactive leak as opposed to the Three Mile Island leak) highlights the fact that group values, beliefs and commitments to certain structural arrangements which support these play key roles in the social amplification process.

These perceptions, as filtered through sets of cultural biases, result in various responses to the hazard. Among the most extreme negative reactions are psychosocial stress, alienation, or anomie which may result from tensions between personal values/beliefs and wider obligations (e.g. to family, community or job). For example, those involved in community activism against a facility may find difficulty balancing protest endeavours and home-life obligations. There are also *secondary impacts* which may result, usually from amplification as opposed to attenuation, including: enduring negative images of technologies/institutions, impacts on the local economy, changes in the political climate, social disorder (e.g., protesting or sabotage), and erosion of public trust in public and private institutions. Perception of these secondary impacts may also cause *ripple effects* to impact on new groups (e.g., regional and national institutions), people in more distant locations and also future generations (e.g., through changes in local safety regulations). Thus, hazardous events involve more than just the perception of events or the cultural interpretation on the part of people involved, rather it involves a complex

interplay of these phenomena which can have any number of (unpredictable) impacts (see also Edelman, 1988; Edelman and Wandersman, 1987; Vyner, 1988).

The framework is useful for at least three reasons: it ties together technical, psychological, sociological, and anthropological work on risk; it illuminates higher order impacts not accounted for in technical cost/benefit analyses; and it adequately portrays that risk responses are unique to each new context no matter how similar each risk/hazard situation is to any other. However, the framework has been the source of much debate, the most notable concerns coming from the sociologists and cultural theorists rather than the economists and psychologists. First, Rip (1988) is concerned that the model will be used largely as a tool for risk managers to deal with "exaggerated/irrational" fears rather than a framework for understanding. Thus, managers may come to premature conclusions/policies in contexts which, by their nature described in the model, are dynamic. Second, Rayner (1988) claims that the framework is too "passive" in the sense that individuals/group are reactive to risks only after they "happen", whereas many people actively *seek out* risks in order to demonstrate perceived injustices - which may be linked to other political realms. This is not so much a threat to the overall model as it is a necessary corrective. That is, these exposers of risk/hazard would be defined in the model as those who initiate "*event portrayal*" (see Figure 2.5) (Kasperson, 1992). Third, there is not a well-developed treatment of the social processes and interactions alluded to in the framework (Svenson, 1988). For example, there is little discussion of how to determine cultural biases, how people/groups resolve tensions between various sets of cultural



biases, or even how they are translated into various groups or individual behaviours.

Fourth, since stakeholders are seen as *amplification stations* or receivers of information, and there is an apparently significant role for the media, justice may not be served in those contexts which involve direct negotiation between such groups. This is particularly relevant now that many risk communicators are acting on the information in the recent risk literature that negotiation is a key strategy for developing trust between stakeholders.

Fifth, empirical studies which use the risk amplification framework tend to focus on economic impacts and pay less attention to social impacts on particular subgroups and individuals (e.g., Kasperson, et al., 1990). There is a danger that this framework may be used to focus attention on how communities amplify risk at the expense of considering the potentially far-reaching impacts environmental hazards (perceived or actual) have on individuals and communities. This case study shifts the focus onto the latter, but also considers how these are connected to social/institutional structural changes.

#### **2.4.3 Social arenas and risk**

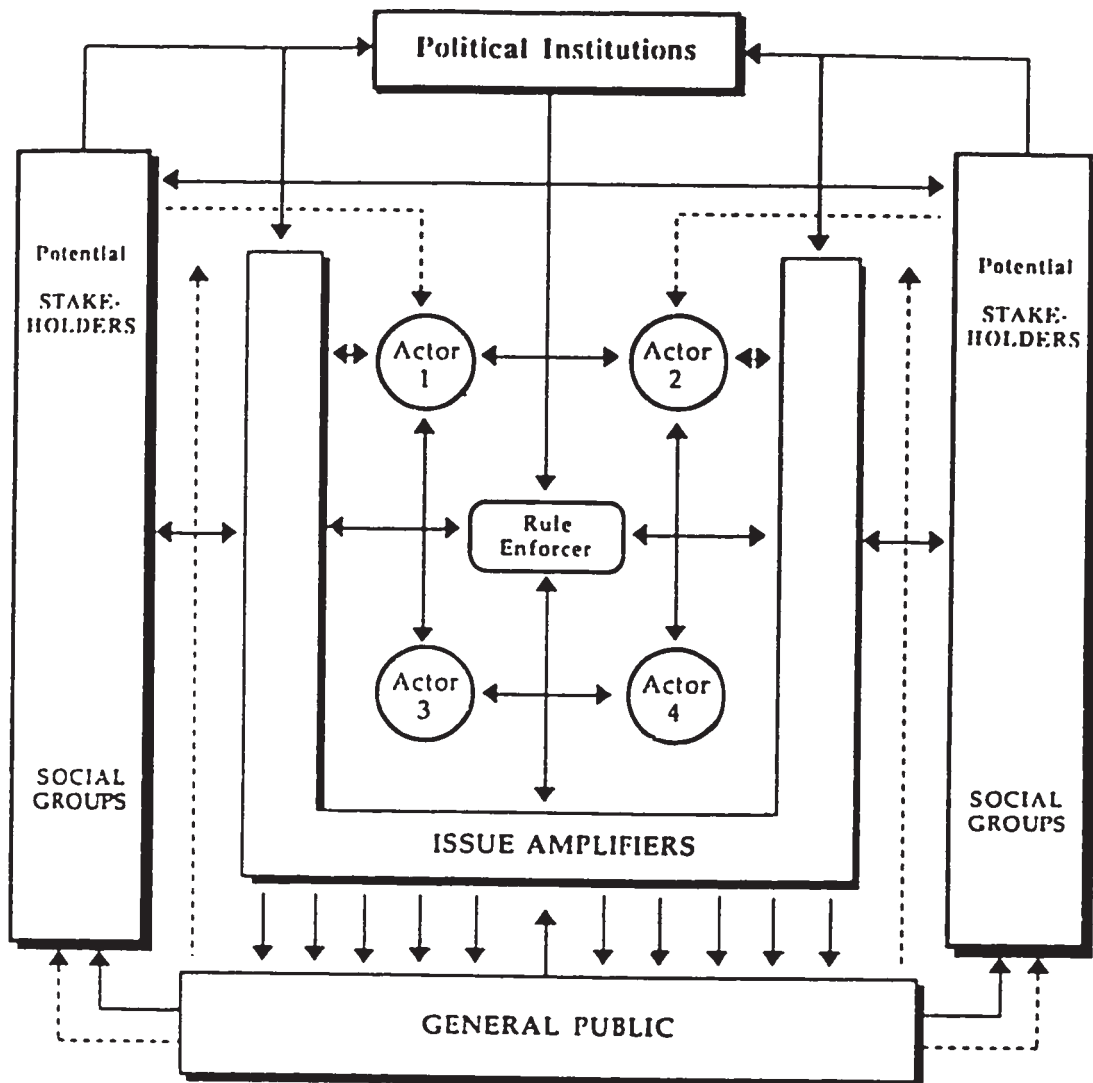
Renn (1992) developed the social arena concept in order to address a perceived lack of attention to the structural factors that shape group interactions involving environmental risks, in particular, the outcomes of environmental risk disputes. While Renn considers *social mobilization theory*, *critical theory* and the *cultural theory* as possible approaches for understanding structural forces, the first and third do not pay much attention to the "outcomes" of conflict, and the second focuses too much on *power*

at the expense of attention to *values*. Despite a growing list of inductive empirical studies on conflict (e.g., Dietz et al., 1989; von Witterfeldt and Edwards, 1984; Wynn et al., 1993) Renn claims to be among the first to provide a (preliminary) framework for understanding the role of social structure.

The arena itself is metaphor for the "symbolic location of political actions" (Renn, 1992, 181) that comprise a policy debate (see Figure 2.6). That is, it is the total of all interactions between groups involved in the same environmental risk issue/conflict. The main assumption of the framework is that *stakeholders* interact with each other, through their representatives (*actors*), to influence a policy outcome. The actors are constrained by a *rule enforcement* agency, often governmental or judicial, which decides the *formal rules* of interaction, and there are *informal social rules* which are learned as the process develops. There is a role for *issue amplification*, very similar to the Kaspersen et al. (1988) model, whereby various observers - particularly the media - report on what goes on between the stakeholders. The *general public* is seen as individuals or new stakeholder groups who may potentially become involved in the social arena depending on the influence of issue amplification. Outcomes are thus inherently non-deterministic since the number and type of stakeholders and the amount and types of resources may change over time within the arena in largely unpredictable ways.

The main argument of the social arena concept is familiar. Various social groups interact in a political arena attempting to maximize their opportunities to influence the outcome by mobilizing social resources. However, the group which has and utilizes the

**FIGURE 2.6: THE SOCIAL ARENA OF RISK**



Note: Solid arrows show communication flow; dotted arrows the direction of social mobilization.

Source: Renn, 1992

most resources does not necessarily obtain their favoured outcome since they are often structurally constrained not only by the rules of the social arena, but also by the influence of competing groups. That is, the rules may favour certain types of resources such that one group may effectively reduce the influence of another's use of resources. Within this framework Renn identifies five of the most important social resources for influencing policy decisions in environmental risk arenas: *money*, *power*, *social influence*, *value commitment*, and *evidence*. Renn argues that it is these resources themselves and how they are used, and not the people or organizations that use them, that ultimately persuade policy makers in debates over risks/hazards. He asserts that *money* cannot buy decisions explicitly, rather it is used to garner support from others in the form of things like wages when industry is involved.

*Social influence* is exercised through reputation and social reward and is used to garner social trust in specific policy positions. People trust stakeholders or their actors if these stakeholders are sincere, are accepted as role models, or are recognized as believable experts in the policy area. However, Renn does not directly acknowledge that shared beliefs and values may be among the most important criteria for apparently uncritically accepting these qualities in stakeholders. Social influence is not as unproblematic as Renn seems to indicate since it is connected to shared value commitments. Likewise it is difficult to disentangle *value commitment* from social values, since they both involve roles for values, beliefs, and shared meanings. Value commitment involves stakeholders convincing the *general audience* and policy decision-makers that the stakeholder's

position is consistent with a worldview which they all share. People are thus encouraged to join the stakeholder position in order to affirm a sense of community in shared meanings. Social influence and value commitments are particularly plausible when conflict over assessments of risk (particularly scientific ones) is high since evidence is often much less certain in people's minds than the values to which they are committed.

*Evidence* involves claims to truth, rather than truth itself. While Renn argues that truth is actually formed through specific methodological rules and accepted theoretical knowledge and hence may be compared against reality, he warns against the *evidence trap*. The latter is a function of the nature of environmental risk whereby there is often no firm reality against which to compare evidence. The trap occurs when stakeholder groups try to acquire support through the use of evidence which is easily refuted. Such was the case in Caledon involving arguments for and against the environmental suitability of a preferred landfill site.

The social arena framework is appealing since it explains at least three important risk issues: inappropriate/ineffective mobilization schemes, the effectiveness and power of so-called interest groups, and political stalemates. The ineffectiveness of risk managers to wield power and money, and even control over rules, is a longstanding conundrum of risk communication and management (e.g., Lawrence, 1996). However, this highlights Renn's point that all resources are not created equal, or at least, are not used in equally effective ways. In such cases social influence and value commitment are likely the most important, such that no amount of evidence will convince people if it is not from a trusted source

who shares common meanings for the phenomena of interest (e.g., Farago et al., 1989; Fischhoff, 1996; Flynn et al., 1992; Johnson and Chen, 1995). Stalemates are claimed to result when no one stakeholder is able to dominate the policy arena.

There are, however, limits to the social arena theory. Perhaps the most serious limitation of this framework is that only groups who enter the arena and mobilize their resources are considered. There is an implicit assumption that those who are not involved have no stake in risk policy outcomes. This may seriously misrepresent certain sets of values and beliefs which may not be mobilized because of contextual factors within or outside the arena. For example, Bailey et al. (1992) report that in a study of Sumpter County Alabama, containing a hazardous waste landfill, the general public were less convinced than community leaders of the assurances by company operators that it was being run safely. Nevertheless, the leaders were apt to be more vocal than other residents because the "mill town" values of the area discourage candid opposition on such issues (especially since it is a major industry for the area). Similarly, individuals or stakeholder groups may resist entrance into the arena until a time when they view the hazard to be a serious enough threat (e.g., after the announcement of a contamination event) at which point it may be too late to learn the *rules* and effectively *mobilize resources*. There are parallels in the Caledon case study.

#### 2.4.4 Risk and social learning

While Renn alludes that the social arena framework may be used for equitably resolving risk policy debates and assist in risk policy formation, Wynn (1992, 1991) more directly addresses how experts and laypeople may together reach risk policy compromises. He introduces the notion of *social learning* to risk policy debates for at least two reasons: to expose why conflicts occur, and to show how they may be resolved. The concern in this thesis is mainly with the former which provides important clues to the latter

One of Wynn's main concerns is that lay risk perceptions are treated as incompetent or unreasonable in relation to those of experts and this tends to cloud the more relevant underlying issue of the *social relations of technology*. Like Renn, Wynn asserts that neither laypeople nor experts have any claims to knowledge of true risk rather, as Wynn claims, they may just have different values, beliefs, and interests to maintain. The social relations of technology refers to the growing literature which claims that scientific knowledge, like lay knowledge is comprised largely of interests (e.g. Wolgar, 1981; Shrader-Frechette, 1991) and this condition is particularly relevant within uncertain or indeterminate technology issues like environmental risk controversies (Nelkin, 1979).

Wynn claims that all knowledge, not just lay knowledge, is conditional within risk debates. That is, all new knowledge is conditioned to fit pre-existing, tacit models of the way the world works (e.g. rational scientific, democratic). Tacit models parallel the worldviews discussed by cultural theorists and social theorists like Renn. Wynn (1992,

274) says that new information is implicitly used by individuals and groups to confirm exiting identities:

Communication between social actors is intrinsically limited by the primary process of self-confirmation by which individuals or communities try to maintain (and develop) their identities. We reconstruct the meanings offered to us by others into forms that correspond with our fundamental identities. In the process, the original meanings are transformed, or perhaps we should say violated. Kierkegaard (1985) wrote with great power about the tragedy, not just that we are confined to distorting each others' meanings, but more that we are confined to pretending that it is otherwise.

Thus, debates over knowledge become understood as ways of generating and maintaining authority in order to preserve the tacit models on which individual and group identities are based. Opposing groups may have entirely different frames of reference for understanding risks from hazards, and without common ground, have difficulty resolving disputes. This is true in situations like one in Caledon in which entrenchment of views happened very early in the conflict. *Social learning* occurs when there is a,

reflexive unearthing and negotiation of the precommitments shaping knowledge frameworks. It is reflexive in the sense that it critically examines and enlarges the self-knowledge of the social actors involved (Wynn, 1992, 278).

Social learning exposes how each group thinks about risk (i.e. the "precommitments" or tacit models) in order to develop a better appreciation of how all views are constructed and connected.

Like other theorists (e.g., Renn, 1992), Wynn highlights the role of *trust*. A lack of trust in institutions is a common feature of current lay identities. This is evidenced in Laird's (1989) notion of the *declined of deference* whereby lay publics are becoming



alienated and less willing to defer important environmental risk decisions to institutional elites. This is said to explain why many are moved to join or form voluntary organizations (stakeholder groups) in order to consolidate their positions in conflicts over risk. Wynn takes credit for being among the first to bring the concept of trust into the risk literature, a phenomenon long recognized by sociologists such as Garfinkel (1963) as a key element in the maintenance of positive social interaction and institutional preservation. Nevertheless, trust is often absent since expert rationality tends to frame most risk debates which angers and frustrates lay groups. Entrenchment usually ensues and discourages social learning (Wynn, 1992).

Further, Wynn describes potential influences on lay tacit models of risks from technology to demonstrate that they are (unconventional) rational. He draws on Daly's (1970) notion of *technological spectres* to typify how people frame their impressions of technology. People tend to condense complex technologies into images involving simplified symbols. Since people recognize the importance of these technologies in their lives they accept them as powerful, but at the same time the technologies are impenetrable since they are run by distant and elite groups of experts. These symbols are hence negative, ominous and have led to "mass neuroses" within mainstream culture. The technological institutions themselves uphold these symbols by portraying these technologies as "magic black boxes" that need not concern the average person. These issues resonate with the risk society theory described in the next section. However, as has been argued against psychometric risk research, focusing on the nature of technology

(i.e. the hazards), expert technological support systems, and so-called mass neuroses alone does not account for the potential contextual influences on constructions of risk.

Wynn's approach has been accused of being antiscience and impractical for policy formation. As far as being antiscience, Wynn argues that he is only redressing an imbalance in the risk literature which focuses mainly on exposing *lay* models of risk whereas he concentrates mainly on *expert* models. Wynn (1992, 289) reinforces that he is not against science itself, rather the obstruction of social learning. Examples of practical applications of social learning for informing policy are few (Wynn, 1991). However, Wynn demonstrates through examples of his empirical work how he has proactively used his own research findings to help groups (particularly the expert policy makers) recognize their own assumptions, particularly the faith that technical issues are context-free (e.g., Laurence and Wynn, 1989). One recommendation involves the notion of *institutional flexibility* for social learning, that those within institutions should take the first steps towards reflexive self-understanding which may initiate trust-building between them and the public. This is argued to initiate a process of reforming both individual and institutional identities with a view to making compromises. Institutional *inflexibility* as a contributor to distrust and entrenchment of positions is re-visited in chapter eight concerning the implications of the research in this thesis.

### 2.4.5 The risk society

The risk society theory is concerned with explaining the tacit models (to use Wynn's term) of laypeople as conditioned by being members of *late modern society*. In particular, theorists like Beck (1992a, 1992b) and Giddens (1990, 1991) attempt to explain how technological environmental risk is increasingly dominating social life which can lead to profound individual and societal anxieties. The risk society concept is unique as a social theory in the sense that, while it builds on historical social processes, to explain both current and potential future conditions. That is, it traces the contours of social change, how change is influenced by technological risk, and how the connection between individuals and social structures is a pre-condition for change. This broadens issues the implications of risk *from How safe is safe enough?* or even, *How fair is safe enough?*, to, "How do we wish to live?" (Beck, 1992b, 119).

The risk society theory was developed by Beck (1986). The risk society itself describes one of a number of possible societal outcomes as we move from *simple modernity* (industrialized society) towards *reflexive modernity* which is emerging, but whose social characteristics remain uncertain. The shift towards reflexive modernity is characterized by the following at least four characteristics:

- i) the presence of global technological hazards (or mega-hazards) with the potential to do large-scale irreparable damage to vast numbers of people;
- ii) science and technology play a central role in the diagnosis and control of these hazards - which they continually assess as low risk;
- iii) laypeople are increasingly recognizing the uncertainty associated with scientific assessments of these hazards and the lack of available data upon which to make

- such assessments - paradoxically accidents have to happen (the more the better) before the probabilities can be calculated;
- iv) public deference to expert decisions regarding technological risks is decreasing.

These characteristics are linked to two concepts which Beck uses to describe the shift towards the risk society,

- i) *security*: which has been an organizing principle for modern society which is undermined because of the first four characteristics.
- ii) *reflexivity*: individuals and social institutional structures are so intimately linked that when individual security is threatened, so too are the institutions in which they are embedded. However, the impacts of individual actions on social structures is often unintended.

Thus, the risk society is distinguished by high levels of anxiety and considerable conflict over technological hazards. Conflict in the transition to the risk society differs from that of modernity. The latter is characterized largely by disputes between labour and capital over the distribution of wealth. In the risk society capital comes up against capital and labour against labour as all groups forward claims about the threat posed by complex hazards. Thus, the risk society is predicated on the distribution of risks from hazards rather than wealth. Beck focuses on the catastrophic potential of global hazards like nuclear technology and implies an inevitability for future disasters. His arguments in this respect are bolstered by some who study the accident-prone nature of complex technological systems. For example, Perrow (1984) claims that the tightly coupled nature of complex systems predisposes them to inevitable failures (e.g. due to human error) which can have catastrophic potential. Thus, Perrow (1984, 4) suggests expert probability calculations are gross underestimates:

This suggests, for example, that the probability of a nuclear meltdown with dispersion of radio-active materials to the atmosphere is not one chance in a million a year, but more like one chance in the next decade.

Perrow uses this coupling argument to show why, for example, the Three Mile Island accident occurred and why such an accident is likely to happen again.

Despite the fact that Beck and Giddens seem to have developed their theories about the risk society in isolation from each other<sup>10</sup>, similarities are striking. For example, both: focus on high-consequence global hazards, have a similar time-line for the transition from modernity to late modernity and, share the idea that there is increasing public anxiety because of technological environmental threats, and the links between individual identity formation and institutional developments (i.e., reflexivity).

"Juggernaut" society is Giddens's equivalent of the risk society which encapsulates the idea that in late modernity we willingly allow our safety from dangerous hazards to be guarded by technical/scientific experts. The reason for this is that people have a fundamental desire to be 'at ease' in the world or what Goffman calls *umwelt* - a consciously created sense of normalcy with which people surround themselves. Giddens' (1991) related notion of the *protective cocoon* - which prevents profound anxiety in the face of potentially threatening events - highlights the defensive nature of this condition and is akin to Wolpert's *cloak of competence* referred to in section 2.1.. This cocoon is built on *basic trust* and the *ontological security* that interaction with others and the with the

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<sup>10</sup> e.g., there are no cross-references to each other's work in the earliest papers.

outside world itself will be consistent with the maintenance of the cocoon. All of these concepts correspond to Beck's (1992a) notion of *security*. Anxiety results when basic trust and the cocoon itself are shattered by events that are, by definition, outside local control (e.g., proposals to build a nuclear waste site one's neighbourhood). This culminates in a *fateful moment* when the individual has to choose a course of action to re-build (although likely in different form) the cocoon. In terms of technological hazards, courses of action include joining grass-roots community groups or actively acquiring new knowledge on the issue. Thus, reflexivity itself involves individuals and institutions attempting to re-create their own identities which are intricately linked to each other through the uncertainties surrounding risks.

The theories by Beck and Giddens have been criticised for paying undue attention to high-consequence global risks. Some claim that there are meso-level hazards which satisfy many of the characteristics outlined by Beck and Giddens, (e.g. expert dependence for safety), but which will not have the associated destabilizing consequences once the market sufficiently adjusts to account for environmental risks (Mol and Spaargaren, 1993; Mol et al., 1991; Huber, 1991). Nevertheless, since there are no studies which specifically incorporate the risk society theory for understanding views on and effects of risk at the meso/local-level, the issue warrants empirical investigation. The study at Caledon represents one example.

## **2.5 Summary: Placing risk in the context of everyday life**

The meaning of risk and hazard has changed over time for theorists who now acknowledge the limits of science for predicting "actual" risks in complex, uncertain, technological systems. Context, including social and cultural processes, significantly shapes conflicts over the definition of risks from hazards. Risk, including its constitution and distribution in time and space, may be a powerful signal of social change as individuals, groups, and the social institutions in which they are embedded, struggle to maintain identities and reduce anxiety.

This review surveys a broad array of theories and concepts concerning risks and hazards. While the psychometric and econometric literatures on risk contains considerable breadth they may lack some depth. The concepts and definitions of concepts come mainly from researchers, so the concepts and definitions may be inadequate for explaining how those who face risks on a daily basis understand and define local risks. Also, there are relatively few empirical studies that examine the relevance of some of the more recent sociological and anthropological concepts which are argued in the review to be among the most important for understanding the meaning of risk in everyday life. Some of the concepts which are investigated in the exploratory case study of Caledon include residents' views on: values, dread, uncertainty, benefits, trust, lay-expert differences regarding the meaning of risk, equity/fairness, and psychosocial impacts. Some concepts were included in the study because they emerged strongly from this literature review (e.g. values,

70

uncertainty), while others were included because they emerged strongly in what the residents said (e.g. equity/fairness, psychosocial impacts).



# **Chapter 3:**

## **Research Design**

### **3.1 Scope and objectives of the research**

This research has three broad, overlapping objectives:

- i) to explore the meanings of risk and uncertainty for residents in an environmentally sensitized community;
- ii) to investigate the effect of context on risk perceptions/constructions; i.e. how stakeholder groups (e.g., government, scientists, community opposition groups) interact to influence meanings of risk for individuals and the community and;
- iii) to develop a conceptual framework for understanding risk at Caledon and compare this to existing frameworks for understanding environmental risk.

This dissertation builds on two projects, one addressing the psychosocial impacts of exposure to a recently approved landfill (Baxter, 1992; Eyles et al., 1993a), another examining the psychosocial impacts of a tire fire (Baxter et al., 1992; Eyles et al., 1993b). Major findings of the former project are that the site threatened the residents' rural, agrarian way of life. In the latter study it was similarly found that contextual factors like mistrust of some government authorities heightened the perception of risk and psychosocial impacts among certain residents. Such mistrust and threats to way(s) of life and core values may result in feelings of uncertainty and insecurity which may affect emotional health (Giddens, 1991). This study is part of a larger project which seeks to examine risk and uncertainty in environmentally sensitive situations in more detail and to

understand the language and meaning of risk which underlies the psychosocial impacts observed in the previous case studies.

While qualitative research was used in these prior studies the depth of analysis was restricted in specific ways. In one, the qualitative face-to-face in-depth interviews and focus groups were used mainly to expand concepts/findings from a quantitative survey (Baxter, 1992; Eyles et al., 1993a); in the other, due to the status of emergency at the site, only one round of relatively brief in-depth interviews were used to explore concerns of a self-selected cross-section of residents. However, qualitative research which is not constrained by pre-existing frameworks and involves sustained contact as well as feedback from participants elicits more robust and trustworthy findings (Lincoln and Guba, 1985; Patton, 1990). This study seeks to provide more depth by conducting interviews with a wide array of stakeholders over a two year period of sustained contact and feedback. Two rounds of qualitative in-depth face-to-face interviews were used within an interpretive methodology.

## **3.2 The Caledon community**

### **3.2.1 Site selection**

The focus of this study is on community reaction to a potentially destabilizing environmental event(s) so this formed the basis of site selection<sup>11</sup>. That is, the community

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<sup>11</sup>For practical reasons the community also had to be within approximately an hour's driving distance for the purpose of face-to-face interviews.

had to be sensitized to the same event/situation so that they would have a common hazard about which to talk in the interviews. Contact with the Caledon community was made through community group leaders who invited researchers from the Environmental Health Program to give advice about research that they wanted to conduct. Subsequent meetings with other group leaders indicated that this community was highly "sensitized" and that, leaders at least, were willing to be interviewed as part of a study concerning environmental risks.

### **3.2.2 Community profile**

Caledon is the northern most municipality within the region of Peel, one of three regions which make up the Greater Toronto Area (GTA). Caledon contained the preferred site for Peel's garbage from 1993 to 1995. It has the smallest population in the region at 34,965 in 1991 (Table 3.1) up by 17.9 % from 1986. While Caledon is growing at a faster rate than the province (10.8%) it is not growing as fast as the region as a whole (23.8%). The area has the lowest population density in the region by far, at 51/km<sup>2</sup>, compared to an average density in the whole region of 598/km<sup>2</sup>. Notable features of the age structure are the slightly larger than regional and provincial proportion of people below age 14 (22.9% compared to 22.7% and 20.4 % respectively) and considerably smaller proportion of people over the age of 65 (7.2%) when compared to the province (11.7%). The large majority of these people live in single-detached dwellings (93.7%) which are occupied by their owners (86.4%) which far exceeds the regional and provincial

figures (57.6% and 63.7% for Ontario, 49.4% and 68.3% for Peel). The area has a comparatively large percentage of "traditional" households as there are 93.3% husband-wife families compared to 87.4% and 88.8% for the province and region respectively. The higher than average wealth of this community is evidenced by three characteristics: a median income (\$65,801) almost \$8,000 higher than the region and over \$20,000 higher than the province, a very low incidence of low income economic families at 2.6% compared to 8.7% and 10.9% for the

**Table 3.1: Selected Census Characteristics (1991)**

<b>Characteristic</b>	<b>Ontario</b>	<b>Peel</b>	<b>Caledon</b>
<b>Population Characteristics</b>			
Land area (km <sup>2</sup> )	916,734	1,225	686
Total Population (1991)	10,084,885	732,798	34,965
Population density (persons/km <sup>2</sup> )	11.0	598.0	51.0
Proportion < 14 years	20.4	22.7	22.9
Proportion > 65 years	11.7	6.4	7.2
Population percentage change 1986-1991	+10.8	+23.8	+17.9
<b>Dwelling Characteristics</b>			
Average dwelling value	\$197,967	\$247,937	\$334,119
Percentage of owner-occupied dwellings	63.7	68.3	86.4
Percentage of single-detached dwellings	57.6	49.4	93.7
<b>Household Characteristics</b>			
Percentage of husband-wife families	87.4	88.8	93.3
Median household income	\$44,432	\$57,856	\$65,801
Incidence of low income economic families	10.9	8.7	2.6

Source: Statistics Canada (1991)

region and the province respectively; and an average dwelling value comparable with the highest in the country, at \$334,119 (Ontario \$197,967; Peel \$247,937).

The predominantly rural character of the area, including the small town atmosphere of the largest built-up area Bolton (nearest the preferred site), has attracted a large number of wealthy people who can afford to commute to the city (Toronto). New young families seem to have chosen Caledon to raise their families and a small wealthy minority have selected it for retirement. These newer residents, along with the long-time residents, are looking for an alternative to the "hustle and bustle of the city" which, in the eyes of the participants in this study, is generally too crowded, polluted and contains too much crime. This is reflected in the development goals of the area as summarized in the three hills of the Town of Caledon symbol - the first representing conservation and recreation, the second agriculture, and third industry (see Figure 3.2). This indicates a commitment to modern progress while maintaining the natural environment.

### **3.2.3 Site history**

Table 3.2 provides a brief history of the landfill siting issue in Peel including key events. It indicates the context within which the conflict over preferred site C34B developed. The table also juxtaposes these events with the start and finish of each set of interviews. The site search began in 1990 with the New Democratic Party's (NDP) provincial government announcement of a waste management strategy for the three regions which make up the Greater Toronto Area (GTA). They formed a crown corporation called the Interim Waste Authority (IWA) whose mandate was to find a large municipal solid waste site (so-called "mega-dumps") for Peel, Metro/York, and Durham.

The IWA set up a process of systematic/rational site selection which included a component of considerable community involvement. Criteria were selected on the basis of potential adverse impacts (e.g. hydrogeology, social impact, heritage) and were ranked with the input of the community. The number of sites in Peel was reduced from a long list of 21 sites to five and eventually to the preferred site near Bolton (C34B) in November 1993. While it took three years to select the site, the process still required that the IWA face its community opponents in a set of quasi-legal hearings in front of the Joint Board (comprised of members appointed from the Ontario Municipal Board and the Environmental Assessment Board) which promised to be a lengthy process. This stage was never reached because the NDP were voted out in June, 1995 and the IWA was disbanded by the newly elected Conservative government. Despite community involvement in the process four community groups formed to oppose the site, one after the announcement of the long list of sites in June 1992 and the other three subsequent to the selection of C34B.

There are two things to note about the siting process. First, it was complex, systematic, and expert-controlled. It was one of the first siting processes to directly invite and partially finance community participation under a provincial regulation that allowed parties opposing the IWA to obtain "intervention funding" (a law which was revoked in March 1996). This formalized and legitimated those residents who choose to oppose the site and not defer to the IWA's choice of sites. However, this participation was only allowed under the conditions predetermined by the IWA and provincial legislation.

**FIGURE 3.1: TOWN SYMBOL FOR CALEDON**



**Table 3.2: A Brief Chronology of the Landfill Search in Peel**

<b>Date</b>	<b>Event</b>
Nov 1990	- province announces action plan for waste management in the GTA
April 1991	- government forms the Interim Waste Authority (IWA) - an agency responsible for finding 3 landfill sites in the GTA one of which is in the region of Peel
Aug 1991	- IWA releases document - Environmental Assessment (Draft Approach and Criteria) which outlines how the sites will be chosen - a rational process based on ranking the importance of various criteria and gathering data on each
April 1992	- revision of Aug. 1991 EA document based largely on public input on criteria rankings (community participation is lower than expected) - government passes the Waste Management Act (WMA) which continues the IWA as a Crown agency and is used to guide the IWA on legal matters related to site selection
June 1992	- IWA releases long list of 21 sites for Peel - formation of Don't Assault Rural Environments (DARE): community group to oppose the siting process
Nov 1992	- IWA releases short list of 5 sites
Nov 1993	- IWA announcement of preferred site (C34B)
Dec 1993	- formation of CLEAN, a group to represent business interests in Bolton and launch an attack on the process at the provincial political level
Feb 1994	- Protect and Respect Our Bolton Environment (PROBE) forms to better represent Bolton's interests - splintered from DARE - Envirohealth forms to better represent health issues - splintered from DARE
Oct 1994	- <b>start of interviews with group leaders</b>
Nov 1994	- municipal election (availability of up-to-date voters list for sampling)
April 1995	- <b>start of interviews with IWA personnel</b>
May 1995	- start of Peel's Joint Board Hearings: pits the IWA against the "community" in a quasi-legal process about the environmental viability of site C34B
June 1995	- <b>start of interviews with people from the community (non-group leaders)</b> - Provincial Election: Conservatives replace New Democrats - landslide victory especially in GTA areas facing mega-dumps - IWA dissolved by new government - waste once again falls under the mandate of the Regions
Aug 1995	- <b>end of first round of interviews</b>
July 1996	- <b>start of round 2 interviews</b>
Aug 1996	- <b>end of round 2 interviews</b>



Second, there are two types of uncertainty, one associated with the siting process itself and the other with the nature of the proposed site. The siting process employed at Caledon was inherently adversarial and hence uncertain since the community was literally placed against the IWA who had an unambiguous mandate, set out by the province, to site a landfill within a specified period of time. The other source of uncertainty is that the "exposure" in this conflict is not an entirely tangible one, given that the hazard is a *proposed* landfill site for the disposal of *non-hazardous* municipal waste. Uncertainty in this case may have been higher than might be anticipated in the case of an existing landfill (Elliott and Taylor, 1996). Uncertainty in such processes is associated with perceived risk (Slovic, 1987), high degrees of distrust of experts (Eyles et al., 1993a, Eyles et al., 1993b), community stigma (Edelstein, 1988), and conflict (Renn, 1992; Wynn, 1992), and potentially large roles played by values and beliefs (Douglas and Wildavsky, 1982; Shrader-Frechette, 1991). Thus, the community is appropriate for studying how risk and uncertainty are constructed.

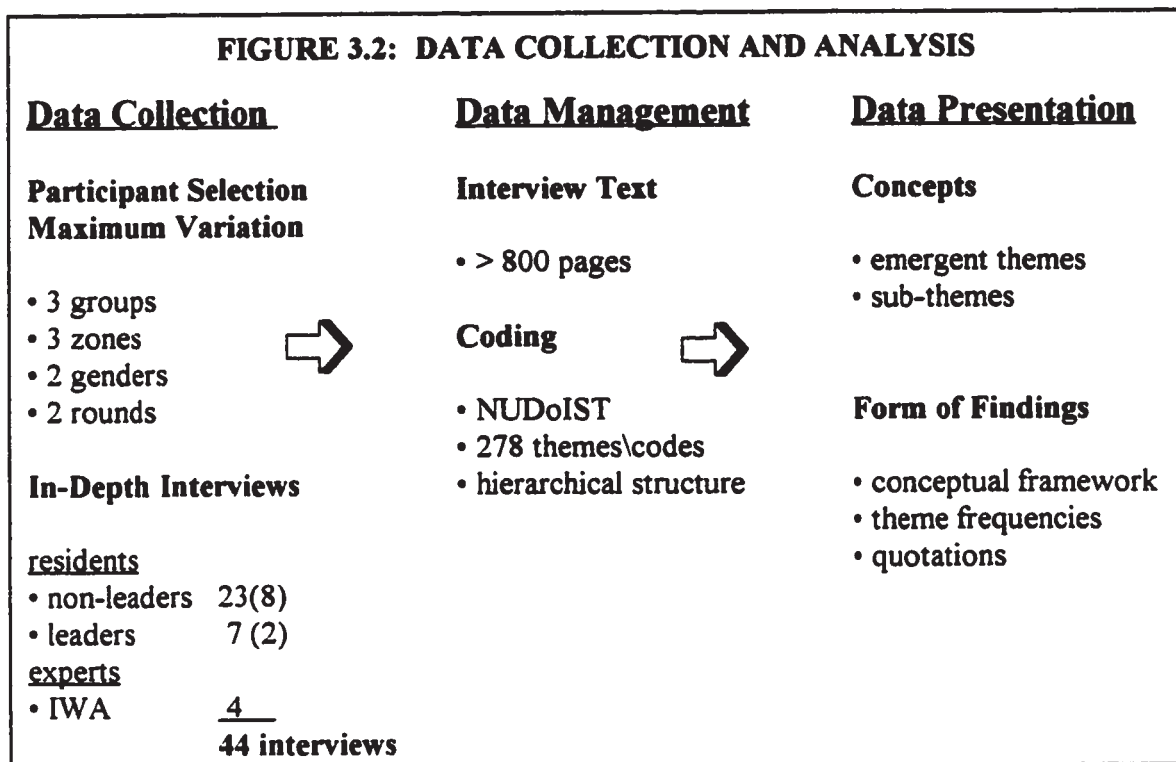
### **3.3 Participant selection**

The case study involves interviews with 44 participants from three distinct groups who were connected to the landfill site and/or siting process (see Figure 3.2 and Table 3.3). The rationale for participant selection was to allow for the exploration of diverse sets of opinion regarding the landfill and siting process in order to develop a robust conceptual framework. Maximum variation sampling was the general strategy used to select a wide

variety of participants who were willing to share their opinions. Participants varied on the basis of four characteristics known/expected to influence views on risk: group membership (e.g. Douglas and Wildavsky, 1982), distance from the site {zone} (e.g. Elliott et al., 1993); gender; and time{round}(Elliott et al., in press). Representativeness within the community was not as important as heterogeneity/variety, yet both may have been satisfied due to the variety of sampling strategies employed.

Within the maximum variation strategy separate selection strategies were used for three different groups known to be the most involved in the landfill siting process: leaders of the community opposition groups, non-leader residents, and proponent-experts. These are analogous to the risk stakeholders referred to by Renn (1992). Table 3.3 and Figure 3.2 indicates the three different participant selection strategies used within these groups: purposive sampling, stratified random sampling, and snowball sampling respectively. The reason for between group differences in participant selection is that no single strategy seemed appropriate for all groups. The following is a brief discussion of the rationale for each participant selection strategy.

Random selection was used in the non-leader community sample since, based on reports from community leaders, concern was expected to be high such that most people would be motivated to talk about the landfill. That is, convenience or snowball sampling which are often used in qualitative research to locate informative/talkative participants were not necessary since there appeared to be large pool of potentially willing participants



in the community from which to select randomly. While random community sampling in previous research was stratified on the basis of level of concern about the site (Baxter, 1992) no such tactic was used in this study since the concern is the one of the main motivations for talking about risks. That is, unconcerned residents were not sought explicitly, but were included in the study by chance. The 1994 municipal electoral rolls were used as the sampling frame for the non-leader residents.

From conversations with the community group leaders it was apparent, however, that opinion likely did vary on the basis of location within the community. This is also supported by recent studies which show a distance decay in awareness and concern with increasing distance from landfills (Elliott et al., 1993, Furuseth, 1990). Thus, non-leader

residents were stratified based on distance away from C34B. These are not linear point distances but three zones which are comprised of groupings of electoral polling areas from which the residents were selected. Residents were randomly selected from within **town** (n = 9), **rural** (n = 7), and **site** (n = 7) zones (see Figure 3.3).

**Table 3.3: Participant Selection Strategies**

	Sampling Strategy	First Round	Second Round	
<b>Group Leaders</b>	purposeful	7	2	
<b>Community</b>	stratified random -quota	23	8	
<b>Experts</b>	snowball	4	*	
<b>totals</b>		34	10	<b>44</b>

\*Since the focus of the research is on lay rather than expert constructions of risk experts were not part of the follow-up round of interviewing.

Letters were sent to 60 people and telephone calls were used to screen out those unwilling to talk openly, and to ensure equal numbers of men and women. Refusals were recorded and while slightly more men (n=17) than women (n=13) were excluded from the sample there is no other systematic variation among those not interviewed, so this increases the likelihood that the sample of 24 reflects a broad array of people in Caledon (see Appendix A).

Community group leaders were selected purposefully. Contact was made with leaders at the outset of the study and only those who were highly involved in the opposition efforts were sought for interviews since these people were presumed to be the opinion leaders in both the groups and the larger community. Seven leaders agreed to be interviewed.

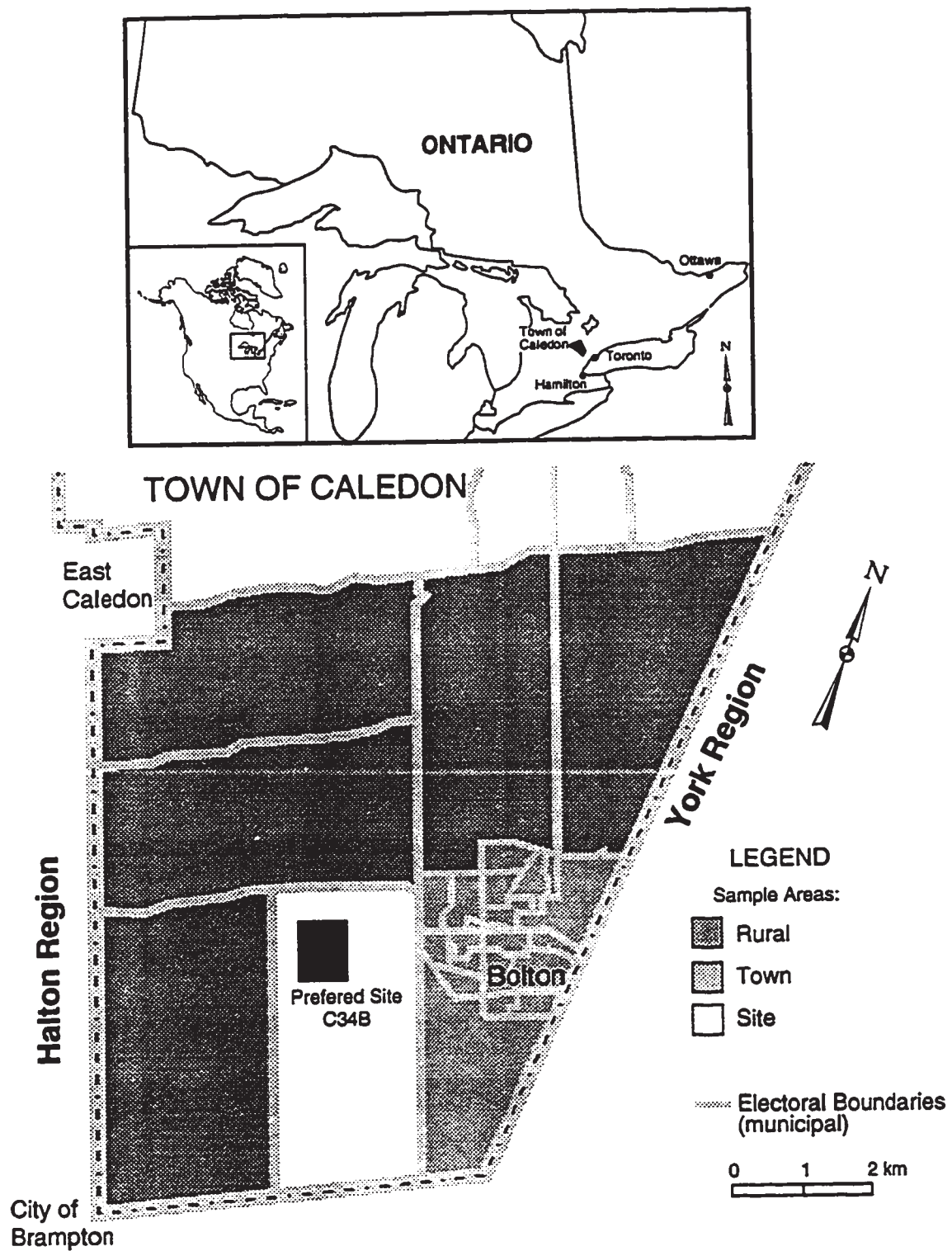


FIGURE 3.3 STUDY SITE AND SAMPLE AREAS.

Contact with a proponent expert from the Interim Waste Authority (IWA) was facilitated through a co-investigator on the larger project. From this contact snowball sampling was used to develop a rapport with each new IWA participant. All people in the IWA who dealt directly with the community siting process in Peel were interviewed in this manner. Due to the demise of the IWA in June, and the subsequent dissolution of the Environmental Assessment Hearings process, interviews intended with a small cross-section of consultants and lawyers (i.e., other "experts") were not conducted.

A second round of interviews was conducted in order to: track changes in meaning of risk and uncertainty held by residents, clarify and probe issues raised in the initial round, check interpretations from the initial round of interviews, and maintain/develop a positive rapport to obtain in-depth personal opinions. In a second encounter the participant will, at the very least, know more what to expect and therefore be more at ease and forthcoming. First round interviews were conducted between October 1994 and August 1995 while the second round was conducted between July and August 1996 (Table 3.2). This one year time gap between the first and second rounds was determined less by particular event(s) within the siting process and more by the practicalities of analysis, that is, the time needed to interpret the initial round of interviews in order to determine the issues that need more probing. The rationale for round two participant selection was to continue conversations with a wide array of the most informative participants. The qualitative software used for the analysis (NUDoIST) was used to select the top 10 interviews when ranked by total number of *different* emergent themes. The round two sample of 10 has the following

characteristics: four *men* and six *women*, two *leaders* and eight *non-leaders*, five *town* three *rural* and two *site*, and no refusals.

### 3.4 Interview checklist

The checklists used for each of the groups interviewed: leaders residents, non-leader residents, experts and round two residents respectively are included in Appendices B-E. The first round of interviews explored a number of topics mentioned in the environmental risk literature including:

- iii) the *effects* of the proposed site on the individual/family/community;
- iv) issues of *safety*, as well as present and future *concerns* related to the site;
- v) defining *risk* in relation to individual and community *values*;
- vi) the *communication of risk* information and the development of *trust* between community laypeople and experts; and
- vii) the effects of, and ways of dealing with, *uncertainty* related to the potential site/siting process.

The checklists were used to ensure consistency of topics covered mainly *within* and somewhat *between* interview groups while still allowing the participant to focus on the topics that interest her/him the most. Between group checklist similarity suffered somewhat in order to ensure that each checklist was tailored to cover issues of primary relevance to the respective group. For example, the IWA proponent checklist centres more on the *siting process* than does the resident checklist, yet the latter group generally still talked about siting by raising the issue themselves (see Appendices C and D). Since the group leader interviews were used to develop a rapport within the community and understand the role of opposition groups in the process this checklist has the weakest

connection with the literature. The second round of interviews, however, has the closest connection with the environmental risk literature. This checklist contains central concepts within the literature which emerged as most relevant in Caledon including views on *benefits, equity, trust, and uncertainty*.

### **3.5 Methodology: A merging of frameworks**

The methodology for this research is informed by frameworks for understanding the meaning of phenomena in everyday life including: hermeneutics, interpretive sociology, structuration theory, and symbolic interactionism. As indicated above, the principal *method* used was face-to-face in-depth interviews, but these are set within a methodology which allows interpretation of how people view risk and uncertainty in the context of daily living. This was done by incorporating their expressed understandings with my interpretations of those understandings and by situating both in the literature on technological environmental risks and uncertainty.

#### **3.5.1 Hermeneutics and the role of language**

While the review in chapter two serves to ensure that topics discussed are relevant to the risk literature, the methodological design is based largely on hermeneutics within interpretive sociology. There is no universal definition of hermeneutics within interpretive sociology. Ricoeur (1970, 8) defines hermeneutics as, “the theory of the rules that preside over an exegesis - that is, over the interpretation of a particular text, of a group of signs



that may be viewed as a text". He also points out that one of the main difficulties within interpretive sociology is that there is no *general* hermeneutics, that is, there are different theories about the rules which should govern interpretation. Ricoeur reduces these to two "poles" of hermeneutics. On the one end of this continuum is the *restoration of meaning* - the restoration of meaning which has been bound up in symbols (defined below); and at the other end is *demystification* - the reduction of illusion. Ricoeur does not go into much detail in distinguishing these two poles, but what he does make clear is that both are concerned with *double meanings*.

Ricoeur comments on the relationship between double meaning and language in his discussion of Freud's method of interpreting dreams,

...by the same token language itself is from the outset and for the most part distorted: it means something other than what it says, it has a double meaning, it is equivocal. The dream and its analogues are thus set within a region of language that presents itself as the locus of complex significations where another meaning is both given and hidden in an immediate meaning. Let us call this region of double meaning "symbol". (7)

Two points are critical for this research: i) language is the medium through which people express the meaning of phenomena; and ii) the meanings expressed in what people actually say may be symbolic of additional meaning(s). Meaning is presented through *symbols* which are, "double- or multiple-meaning expressions whose semantic texture is correlative to the work of interpretation that explicates their second or multiple meanings" (Ricoeur, 1970, 13). Symbolism is presented through the *fullness of language*, that is, "a second meaning dwells in the first meaning" (31). This is elaborated in Habermas' (1971)

distinction between the denotative, connotative and pure quality functions of language. The *denotative* concerns intended meanings, the *connotative* (or representative) concerns meaning(s) other than the denotative and the *pure quality* refers to meanings which are unintentional. Thus, in order to gain as complete an understanding of meaning as possible social scientists must penetrate as many of these layers of language as possible. What is somewhat absent from Ricoeur's discussion of language symbol and interpretation is a more practical account of how social scientists might go about peeling back these layers of language and meaning. An exception is his discussion of the role of *reflection*, which recognizes that the knowledge in social science is only one form of knowledge and one which depends on understanding the composition of lay knowledge (see also Habermas, 1971).

Reflection is defined as, "the appropriation of our effort to exist and of our desire to be, through the works which bear witness to that effort and desire"(Ricoeur, 1978,46). To clarify, it is useful to link reflection to *intersubjectivity* - the notion that within groups/cultures there is tacit/understood knowledge which does not need to be stated to be understood among members of the group (Dilthey, 1967; Giddens, 1993; Habermas, 1971). Giddens (1993, 62) points out that "understanding is achieved through discourse...and language is the medium of intersubjectivity". It is through self-reflection on intersubjectively understood phenomena that assists in unmasking the various layers of meaning bound up in what people say in an interview. This unbinding of meanings should happen though self-reflection by the participants as well as the researcher, neither of which

commonly reflect on the nature of the inter-subjective meanings which are incorporated into their daily lives. Thus, research should encourage participants to engage in self-reflection by talking about themselves and their communities and thinking about both in ways to which they may not be accustomed. For example, few people actively think about the environmental risk and justice and how these may be connected to their own community expectations. Similarly, the researcher should be self-conscious how they interpret the of meanings by reflecting on how these relate to their own understandings of how the world does and *should* work.

### **3.5.2 Interpretive sociology**

In a review of Schutz's existential phenomenology, Garfinkel's ethnomethodology and the work of Winch, Giddens (1993) summarizes some of the main assumptions of an interpretive sociology which includes hermeneutics. First, the technique of *verstehen* - "the particular experiential form in which common sense thinking takes cognizance of the social cultural world" (Schutz, 1962, 56) - is not only essential to sociological investigation, but all social interaction. Second, as a consequence of *verstehen*, social scientists draw on the same sorts of resources as lay actors in making sense of the world. Thus, the "practical theorizing" of laypeople cannot be dismissed by social scientists as irrational, since it is through such lay theorizing that meaning and understanding of phenomena is constituted (see also Shraeder-Frechette, 1991). Third, social scientists must have prior understanding of the concepts used by the laypeople under study in order

to develop their own concepts of the associated phenomena. Fourth, while intersubjective knowledge may be taken for granted in social interactions, since this is often difficult for lay actors to articulate in propositional form, it is the responsibility of the social scientist to articulate such knowledge. These are what Schutz refers to as second-order typifications which are scientific constructs of first order typifications - lay understandings of their own common-sense lives (see also Eyles and Donovan, 1986). Giddens argues that this contradicts Schutz's (1967, 44) postulate of adequacy which states that a proposition/construct (of intersubjective knowledge),

...must be understandable for the actor himself as well as for his fellow-men in terms of common-sense interpretations of everyday life. Compliance with this postulate warrants the consistency of the constructs of the social scientist with the constructs of common-sense experience of the social reality.

Giddens asserts that, in the end, the *metalanguage* (second-order typifications) of the social scientist should take precedence over the terms used by lay actors since social scientists, through techniques such as self-reflection of intersubjective knowledge, are better able to articulate phenomena. Also, "the interests, and therefore the criteria, which guide the formulation of sociological concepts are different from those involved in everyday notions" (Giddens, 1993, 38). However, this criticism seems to contradict Giddens' notion of the *double hermeneutic* - that social scientist's interpretations are in fact interpretations of lay interpretations of their own (and other's) actions. Along with this, "there is a continual 'slippage' of the concepts constructed in sociology whereby these are appropriated by those whose conduct they were originally coined to analyze, and

hence become integral features of that conduct” (Giddens, 1993, 170). Since ‘slippage’ is apt to occur and to avoid as much distortion of meaning as possible, it seems reasonable to do as Schutz seems to suggest and, where possible, use concepts which arise inductively from lay worlds so that they may be readily understood by the lay actors . This is especially relevant in studies, like this one, which feedback interpretations to their participants (see member checking - section 3.5.2)

### 3.5.3 Symbolic interaction

Blumer's (1969) symbolic interactionism framework formalizes how meaning is constructed between people through face-to-face interaction (see also Berger and Luckman, 1967). As with hermeneutics generally, language is at the forefront of analysis guided by symbolic interactionism since it is through language that meanings are expressed and negotiated. Symbolic interactionism may be condensed into three main premises:

- i) human beings act toward things on the basis of the *meanings* those things have for them;
- ii) the meanings of things are derived from, the *social interaction* that one has with others; and
- iii) the meanings that things have are handled in, and modified through, an *interpretive process* used by people in dealing with the things they encounter (Blumer, 1969).

For example, one's opinions about a local landfill are likely to be based on interpretations of conversations with family members, members of the community, and groups who support or denounce the facility. This framework is important for highlighting the role of communication between people in the formation and alteration of what various

phenomena (e.g., the risks of the proposed landfill) mean to individuals and groups. Symbolic interaction also stresses the need to understand social interactions without removing them from the settings in which they take place. This requires direct engagement with participants face-to-face within their community in order to understand directly how they interpret their world. A major criticism of symbolic interactionism is that it emphasizes the particulars of *meanings* for relatively small groups at the expense of understanding the role of *social structure* on social phenomena. There is a relationship between meanings negotiated between individuals and the social structures within which those meanings are formed. That is, context and setting are important. Nevertheless, social structure does not influence people in uniform ways and thus, must be understood at least partially in terms of how people interpret the social structures in which they are embedded.

#### **3.5.4 Structuration theory**

Giddens (1993) tries to strike a balance between meaning and social structure. He points out that hermeneutics should not be all that comprises the interpretive social sciences. He outlines at least three major shortcomings of much interpretive sociological work which focuses on hermeneutics:

- i) a focus on meaning to the exclusion of other practical activities of human life;
- ii) the tendency to explain human conduct in terms of motivating ideals with very little attention paid to causal conditions of such conduct; and
- iii) the failure to examine social norms in relation to asymmetries of power and divisions of interests in society.

This is situated in the so-called structure-agency debate and is the foundation on which Giddens builds his theory of *Structuration*. For Giddens (1993, 169), “to enquire into the structuration of social practices is to seek to explain how it comes about that structure is constituted through action and reciprocally how action is constituted structurally”. As such, one of the major tenets of structuration theory is that while human agency does determine human action and meaning, due attention must be paid to the possible “causal” influence of structures in society which may be both constraining and enabling. Much work in the interpretive social sciences has focused on the role of human agency as a reaction to the hegemony of logical positivism with its focus on the causal influences of social structures. Structuration theory reconsiders the influence of structure, seen less as unchanging influences on social action and meaning, but as phenomena which are constantly reconstituted through human agency and are mediated by the meaning of social phenomena (e.g. actions and the structures themselves). It is also necessary to recognize that there are likely discrepancies in power within any group studied as well as between the social scientist and those studied. As Giddens (1993, 167) points out, “social science stands in a relation of tension to its ‘subject matter’ - as a potential instrument of the expansion of rational autonomy of action, but equally as a potential instrument of domination”. One of the key ways that social scientists can be mindful of these “tensions” is through the process of (ethically motivated) self-reflection discussed earlier.

This thesis is interpretive and strikes a balance between the major methodological tenets of structuration and symbolic interactionism. Neither of these approaches is associated with particular research methods. Structuration implicitly emphasizes

observation to understand the connections between institutional social structure and individual meanings, while symbolic interaction focuses more on *direct engagement* with the people studied. In this thesis symbolic interactionism is used as a general guiding framework for interpreting interview texts generated through face-to-face contact, while the ideas from structuration theory are used to contextualize these meanings by observing the structural influences of community groups and the proponent siting agency in particular. At the same time there is attention to different levels of meaning (*particularly double and denotive meanings*) in what residents have said. These are revealed through taking notice of things as subtle as body language as well as more overt phenomena like the participant's expressed need to protect personal financial or political interests. This combination of exploratory frameworks will be useful for building on existing theory concerning risk and uncertainty. The form of interpretation is explained further in the next section.

### **3.6 Data reduction and analysis**

#### **3.6.1 Contextualized thematic analysis**

The form of qualitative interpretive analysis is determined somewhat by the volume of data to be analyzed. The 44 interviews in this study averaged approximately 60 minutes in length with some being over 120 minutes and others as short as 40 minutes. This translates into over 42,000 lines of text within approximately 850 pages of interviews. This volume of data necessitated the use of a computerized data management scheme for indexing themes and tallying theme frequencies. Thus, all interviews were taped,



transcribed into WordPerfect, and analyzed for emergent themes with the aid of the qualitative software package NUDoIST (see Figure 3.2). NUDoIST was selected from among a variety of computer packages due to its user-friendly tree-structured indexing (nodes/codes/themes) interface (see Appendix F) as well as its capacity to handle an evolving index system (e.g., merging of themes, cutting and pasting of sub-trees).

The approach to data presentation in this thesis may be called *contextualized thematic analysis* and builds on traditional modes of presentation in interview-based studies. Much qualitative work involves inductive emergent thematic analysis whereby codes (nodes) are ascribed to discrete units of text (DUT) within the interviews (Willms and Johnson, 1994). The coded DUTs are retrieved at some later stage in the analysis to be presented as quotations representing ideas developed in the interpretation (Miles and Huberman, 1984). Displaying data in this format alone has been criticised for failing to indicate the degree to which the quotations are representative of all quotations or DUTs within the dataset (Baxter and Eyles, in press).

Three types of data are presented in this thesis (see Figure 3.2). First, as with most hermeneutic analyses, quotations will be used to show how the participants talk about the proposed landfill and its associated risks to reveal the meanings of various phenomena. Second, there are also tables which show all related themes for each quotation, to indicate how the themes are connected within the hierarchical coding scheme. These tables include three columns (e.g., see Table 4.1): the theme from the NUDoIST index system, the number of times that theme is mentioned among the transcripts, and the number of interview participants who said something related to that

theme (also expressed as a percentage of the total data set<sup>12</sup>). The first column reveals how groups of sub-themes are connected to each other under a main theme, the second column shows *how often* the topic was talked about, and the third column indicates if the topic was raised by only a few participants or a variety of *different participants*. The themes are contextualized in two ways. The frequencies within the table show how related sub-themes rank relative to each other, while the maximums at the bottom of each column show how the themes in the table rank relative to rest of the data set. That is, these frequencies indicate how prominent each theme and set of themes are relative to other themes (see also Silverman, 1993). Third, there is a conceptual framework which connects the most important themes in the data set.

### 3.6.2 Structure of the NUDoIST theme database

This section elaborates more on the form of the data and how specific data were chosen for presentation. The interview data are categorized within NUDoIST under themes which emerged from our conversations, so the themes are not entirely shaped by the checklist of topics (see Willms et al, 1990). Each interview transcript was printed as hard-copy and read while margin notes were made about the themes to which various sections of text referred. During a second reading, DUTs were more formally delineated and marked with themes in the form of: *words* if no code already existed in the NUDoIST

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<sup>12</sup> The numerator for the percentages varies depending on how the data are partitioned for the table (e.g., experts n=4, all residents n=40, round one residents n=30). The partitioning itself was useful since certain themes occurred only in certain sets of interviews.

database; or simply a numerical *node address* if the code had already emerged in previous transcripts. Thus, the coding scheme/theme database grew as each new transcript was coded to a point where no new codes were added - the coding *saturation point* (Patton, 1990; Willms et al., 1990). For all practical purposes the saturation point was reached after about the 27<sup>th</sup> interview was coded, after which very few new codes emerged, although several code definitions changed somewhat to accommodate themes in the second round of resident interviews (e.g., code 4 1<sup>13</sup>: *images of dumps* was changed to *images of dumps and garbage-R2-2* to incorporate responses to the second round {"R2"} question concerning people's mental images of landfills {labeled question "2" in the checklist})

There are 278 nodes/codes/themes<sup>14</sup> in the NUDoIST database in a four-tier hierarchical system containing 7 top-level themes, 87 at the next level down, 157 at the third level, and 27 at the deepest level (see Appendix F). For example, *landfill site/concerns/water quality/wells=preferred source*<sup>15</sup> (1 2 1 1) spans all four levels and describes rural residents who talk about the landfill, and say that they prefer a well to "city" water. It is not unusual for hierarchies like this to have successively more codes

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<sup>13</sup> Throughout the thesis codes will be identified with a node address, a series of numbers separated by spaces, which identifies the location of the theme in the NUDoIST database. This may be used for reference, to situate the theme within subsets of themes in the coding hierarchy in Appendix F.

<sup>14</sup> These terms will be used interchangeably throughout the thesis. *Node* is the term used within NUDoIST, *code* is the most commonly used term in the qualitative literature, while *theme* is perhaps the most widely understood of the three as being an idea or set of ideas within a text represented by a single word or phrase.

<sup>15</sup> The "/" separates each level in the coding hierarchy.

further down the tree and then taper back to fewer codes at the deepest levels. This reflects that the third level deep contains series of lists of related codes (e.g., *water quality* (1 2 1) is one of 37 *landfill site concerns* (1 2) - all of which are on the same level), but that some of these may have their own sub-codes which serve to qualify various important themes (e.g., *wells=preferred source* reflects the idea that many of the people in Caledon value well water). Twenty-two codes were removed from an original list of 300 through *merging* and *eliminating* codes. Codes with similar definitions were *merged* such that all of the DUTs connected to the node title which was eliminated were cut and pasted under the remaining node title (any duplication of DUTs is automatically eliminated by NUDoIST). Any code with only one associated DUT, and which was not merged with a code of similar definition, was eliminated unless it was at the end of a code branch as part of a list (e.g., a specific concern about the site) and/or was diametrically opposed to some of the main themes within its branch within the coding hierarchy (i.e. it is a negative case). Merging was done much more frequently than elimination in order to retain as many DUTs as possible. Appendix F shows the full set of theme names as well as the structure of the hierarchy when read from top to bottom and left to right.

### **3.6.3 How data were selected for presentation**

One of the challenges of qualitative data analysis is to present the full range of ideas represented by these 278 themes in a concise manner. Since several DUTs may be associated with any one code (e.g. landfill site/concerns/water quality has 42 DUTs - Table 4.1), only a fraction of these DUTs are presented in the findings. Thus, presentation

of DUTs and interpretation are necessarily selective. The rationale for DUT selection was to select quotations which satisfy at least one of the following conditions:

- iv) they are among the most *representative* of all DUTs for a code;
- v) they contain ideas which *oppose* the main themes within the data (i.e., negative cases);
- vi) they are in the form of a *narrative* (see section 3.6.4);
- vii) the speaker expresses a range of ideas in an *articulate and/or concise* manner;
- viii) DUTs from that speaker are *rare* in this chapter, for example because the person seldom satisfies criteria iv (i.e., this allows many to "speak").

In order to assist theoretical development research fieldnotes and analysis notes were consulted prior to DUT selection. Throughout the process notes were made about the theoretical implications of what various people said. While many of these notes were made in a field notebook during the interview process (e.g. post interview thoughts), ideas were also recorded on the computer during coding. These notes are attached to documents and/or nodes in NUDoIST and were printed at the end of coding to provide a full set of ideas for conceptual/theoretical development throughout the process. These have been used as a partial guide for selecting and arranging quotations.

The remainder of this chapter connects with the notion of "dread" discussed in chapter two. That is the themes and quotations may represent a partial explanation of why landfills and municipal solid waste are so dreaded. Throughout these next three chapters there is a conscious use of concepts/terms contained within the literature in order to facilitate connections to the literature in the discussion chapter (seven). To be clear, however, themes/terms outside the literature emerged as well - those included in the interview checklists (some researcher derived), and raised by the respondents themselves (respondent derived).

Each section is sub-divided by selected themes (in bold) and under each theme various DUTs (quotations) are presented. Within these sections round one and round two data (see section 3.2) are presented one after the other to show how the second round was used to refine/probe various ideas. Presenting both sets of data side-by-side, rather than in two separate sections, shows how the round one findings were used to develop second round questions/probes. For example, while round one respondents were asked what *concerns* they had about the preferred landfill site it seemed from their responses that some very fundamental things were being threatened. Nevertheless, these "things" were not articulated explicitly. Thus, in the second round residents were asked directly what the landfill *threatened* to see if/how they would talk more explicitly about these more basic concerns. This helps to guard against reading too much in to what they said.

#### **3.6.4 Narratives and metanarratives**

Narrative analysis is a form of textual analysis which interprets in-depth interview data as "stories". Narratives or stories display distinct characteristics. Paget (1982) contends that a story consists of a cast of characters, a *raison d'être*, a preface, a central theme, various sub-themes, a coherent structure, and a resolution. Such a definition may be too restrictive since it pertains mainly to rather lengthy DUTs or combinations of DUTs and presumes that telling stories is the main way people converse. Sacks (1972) outlines characteristics which are less limiting in his claim that a narrative usually has a proper beginning and end, proper in the sense that their location in a narrative is understood by all

members in the "in group" in question. He also emphasizes that while narratives can be quite short, even only two sentences long, they can still be endowed with numerous, unstated meanings.

Narrative analysis is one of many ways to organize and interpret interview data and is useful for revealing different layers of meaning and linking meanings for individuals to social structure (Coffey and Atkinson, 1996). The features of narrative analysis which make it an attractive technique for reconstructing the meanings contained in interview texts are summarized below:

- i) A narrative contains meanings which are unstated (e.g., the relationship between actors; the order of sentences indicates the order of occurrence of their contained meanings), and may not be revealed through interpretations which are less contextual (Sacks, 1972). In this sense narratives allow for possibilities which are not available through stricter question and answer sequences (Mishler, 1986). For example, the second round of interviews was used to clarify stories developed in the first round.
- ii) Stories contextualize meaning and the construction of knowledge by placing statements in logical and temporal relation to other utterances in a text. This avoids the *trivialization of meaning* since the dialectic of the interview is maintained. That is, an exchange between an interviewer and interviewee is not divorced from the discourse process since it is connected to preceding and following conversational exchanges (Paget, 1983).
- iii) Stories are a common conversational form and they are an intrinsic feature of the production of knowledge through in-depth interviews (Paget, 1983). In this sense they are understandable to scientists and lay people alike.
- iv) Focus may be placed on the intentions of the narrator rather than the intentions of the researcher (Agar and Hobbs, 1982).

Sayer (1989) is concerned that there must be a tradeoff between narrative analysis and what he calls *analysis*. While he is largely concerned with scientists' rather than participants' narratives, he does not want the use of narratives to divert attention away

from the influence of structure. He distinguishes analysis from narrative whereby the former has to do with abstracting common, widely replicated structures and mechanisms which affect different groups in different contexts while the latter has to do with both the construction of texts and the way accounts are given of social life in terms of a story of successive events. Thus, he focuses less on the form of participants' narratives and more on how scientists construct and use these to form *metanarratives*. One of his main points is that while narratives often only focus on sequences of events, and are told in a manner which serves largely to maintain the reader's interest, metanarratives involve an analytical search for structures which are tied up with the meanings and actions of those studied. Sayer proposes a realist approach to resolving the tension between the two types of narratives by searching for the necessary and contingent conditions of various events. While Sayer's ideas about recognizing the role of structure in metanarratives is useful, as indicated above, structuration theory rather than realism guides this thesis.

Where possible, quotations in the analysis are presented as narratives within the thesis which itself is a narrative of what happened at Caledon when it was the preferred site for the Region's waste. With a data set of this size a tradeoff in the structure of the analysis must be made between the depth that can be obtained through a narrative analysis which focuses on a few "typical" case transcripts, and the breadth that can be gained through inter-interview comparisons of themes in all transcripts. The main problem for this dataset is that many people did not express themselves by using stories - opinions need not be narrative in the strictest sense of the term. The narratives presented in this



thesis are of the type described by Sacks - usually short, and sometimes as few as one or two sentences. As indicated in the previous section there is a tendency towards inter-interview analysis of emergent themes in this thesis, however, where possible quotations which represent longer narratives (i.e., "stories" involving sequentially linked sequences of events - see Mishler, 1986) are selected for presentation where possible.

### **3.7 Enhancing qualitative rigour: Strategies for reinforcing trustworthiness**

One of the major challenges for qualitative research is to interpret data in a manner which is demonstrably rigorous. Further, a problem within social geography is that while many do use strategies for enhancing rigour they often do not report these explicitly (Baxter and Eyles, in press). The work in this thesis is done in accordance with Lincoln and Guba's (1985) criteria for establishing *trustworthiness* (qualitative rigour), in order to construct, "findings which are worth paying attention to and worth taking account of" (290). They outline four main criteria for establishing trustworthiness: credibility, dependability, confirmability and transferability. Credibility is the most important since it represents the degree to which a description of human experience is such that those having the experiences would recognize it immediately and those outside of the experiences can understand it. This is linked to Schutz's postulate of adequacy discussed in section 3.3.3. The strategies used here for enhancing credibility, and advocated by Lincoln and Guba, are purposeful sampling, triangulation, member checking, and prolonged engagement, all of which are elaborated in the following sections. Dependability is closely linked to

credibility in that it has to do with the extent to which it is possible to deal with the instability/idiosyncrasy and design-induced change or more practically, the consistency with which the same constructs are matched with the same phenomena (see also Kirk and Miller, 1986). Triangulation and the use of low-inference descriptors are among the strategies used in this study to address dependability. Confirmability, which is linked to credibility, concerns the extent to which the findings are determined by the participants and the conditions of the inquiry and not solely by the biases, motivations, interests or perspectives of the researcher. An autobiography based on self-reflection is used in this thesis to demonstrate how this threat was avoided. Transferability refers to the degree to which findings fit within contexts outside the study situation. For most qualitative researchers, however, this is likely the least pressing concern since most social geographers who do qualitative work acknowledge the idiographic nature of social phenomena. It is not the aim of this research to *demonstrate* the transferability of the findings beyond Caledon. Nevertheless, the variety of sampling strategies used to obtain a maximum variation in opinions bolsters the representativeness of the findings within Caledon and the ability to determine the transferability of these findings in future work.

### **3.7.1 Source and investigator triangulation**

Triangulation can be among the most powerful techniques for strengthening credibility and dependability. Two types of triangulation were used in this research: source triangulation and investigator triangulation. Source triangulation refers to

situations where several different sources say approximately the same thing (Denzin, 1978). There are at least 34 different "sources" or participants in this study from three major source groups (community group leaders, resident non-leaders, and proponent experts). NUDoIST is used to demonstrate how meanings are corroborated across sources by showing how many different people talk similarly about the same issues. This is found in the results tables in the third columns concerning the number of *different* participants who talked on each theme. While participants are not always expected to agree, when they do such issues are considered to be prominent in the community.

Investigator triangulation involves two or more investigators coding/indexing the same sample of interview texts to check for consistency in matching the same DUTs with the same themes. My coding was compared with Dr. Eyles' coding of the same three randomly selected transcripts using the same list of themes developed in collaboration with Dr. Eyles. Table 3.4 shows the number of times codes appeared in one coder's summary and not in the other's. The discrepancies indicate low inter-coder dependability, but they should be clarified in at least three ways. First, the coding scheme is highly complex, involving 278 codes which overlap in many places, so that the likelihood of mismatches is considerably higher than it would have been with a shorter list of codes. However, a smaller code set would have made the selection of quotations exceedingly difficult since numerous DUTs would have to be manually searched for typical cases.

Second, the mismatches occurred mainly at the lower (particularly the bottom) levels (n=101) in what is a hierarchical coding scheme. Mismatches at the highest level in

the hierarchy are much less frequent (n=3), as both coders generally placed the DUTs in the same broad code categories (see Table 3.4)(see also Willms et al., 1990). Thus, discrepancies resulted from subtle differences in understandings of the *code definitions* and the fact that some DUTs could easily fit under several themes at once. While John was involved in the code development stage, I was much more familiar with the intended meanings of each code (noted in NUDoIST "memos") which helped minimized overly exhaustive coding of particularly robust DUTs. For example, John used codes for first round interviews "Andrea" and "Jackline" which were developed after the second round of interviews (e.g. 2 15 - *description of ideal community R2-5*). This also explains why John generally had more codes/transcript than I (see Table 3.4). Parsimoniously coding robust DUTs is desired to reduce search and retrieval time at later stages of analysis while, at the same time, retaining the DUT at *some* different places in the code hierarchy. This exercise reinforces the point, that the frequencies found in the results tables are conservative estimates as various DUTs which may have been coded under numerous categories were instead coded only under the most *obvious* categories (to this researcher). The value of such an exercise is that it draws attention to potential interpretive biases which are to be taken into account at later stages of analysis. For example there was a tendency for me to list a DUT under *concerns* where John would code it as *impacts*. The coding of the transcripts was re-done with such issues in mind.

**Table 3.4: Comparison of Two Different Researchers' Coding**

<b>Transcript</b>	<b>Code in *JWB not in JDE (total JWB codes)</b>	<b>Code in JDE not in JWB (total JDE codes)</b>	<b>Discrepancies at Highest Level in Index System</b>	<b>Discrepancies at Lower Levels in Index System</b>
Andrea	16 (47)	13 (47)	0	29
Jackline	14 (44)	20 (50)	2	32
Nancy2	17 (38)	24 (42)	1	40

\*JWB - Jamie Baxter's version of coding

JDE - John Eyles' version of coding

Third, many interpretations can be made using the same data, however, this does not mean that every interpretation is equally credible, but that the interpretations should be judged against the data from which they are derived and the degree to which others agree with the interpretations. Table 3.4 suggests that two different interpretations of the same data and raises questions regarding whose interpretation is more credible. However, despite different coding we both have the same general interpretation of the entire data set. That is, both of us agree actually agree on the same meta-narrative - that the landfill and siting process threatened deeply-held values in the community.

### **3.7.2 Member checking**

Member checking involves authenticating the analytic categories/constructs with those from whom the original data were obtained. Some, like Hammersley (1992, 65), are cautious about such an approach since,

To assume that participants can validate or even falsify accounts in some definitive way is to forget the social character of the relationship between researcher and

participants and to assume that they have privileged access to the truth. Neither of these assumptions is sustainable.

Participants do, however, have privileged access to their own opinions and it is these which concern this research, not *the* truth. Checking with the participants is done in the spirit of an "exchange of ideas" in order to guard against inappropriately forcing participants' opinions into existing or developing constructs/frameworks (Borland, 1991). Member checking was accomplished by sending a simple one-page form entitled Did We Get The Story Straight? which was attached to a summary of main findings as of June 1996 (see Appendix F). The form contains one question, "Do you feel that the information in the attached summary makes sense with the way you understand the landfill siting issues at Caledon?", with a section for further comments. All 30 residents were sent the form in a pre-addressed and stamped envelope which nine people returned. In addition to this eight more people responded verbally in the second round of interviews. All 17 people responded that the findings did make sense with how they understood things at Caledon and the additional comments, all positive, are in Appendix H.

### **3.7.3 Prolonged engagement**

Prolonged engagement involves spending sufficient time in the field to build trust and rapport with the participants, to learn the "culture" of the group(s), and to investigate for possible misinformation/distortions introduced by self or participants. I have contacted or spoken with the participants in this study, on several occasions over the course of well

over two years, including: an initial letter introducing the study, a phone call to arrange an interview and discuss the study, the first interview, the second round for 10 residents, the member checking feedback discussed above (3.5.2), and various phone calls to and from experts and community leaders to discuss the progress of this research and the Caledon waste siting issue. Based on the positive rapport built with all participants and the general willingness of people to talk at length I have good reason to believe that people were forthcoming and truthful in their statements. There were cases, however, where people were not willing to divulge names related to certain controversial statements (e.g., regarding aspiring politicians within the community opposition groups), but in many cases these names are not as important as the ideas themselves.

#### **3.7.4 Low-inference descriptors**

Threats to dependability increase with the number of layers of interpretation in analysis (e.g. from *fieldnotes* to *analysis notes* to *constructs* to *theories*) as one gets potentially further away from what a participant actually says, does and means. One way to guard against this is to maintain the original words of the participants throughout the analysis. This is aided by audio-recording the interviews, transcribing verbatim, maintaining the verbatim DUTs in the analysis, and altering DUTs only at the stage of preparing the quotations for presentation (when they were "cleaned" to change the idiosyncratic style of speech into a more formal written style).

### **3.7.5 Autobiography**

Autobiography involves self-reflection (see also section 3.3.2) and serves at least two main purposes: to illuminate the nature of interview relationships, particularly power relations and rapport, and to clarify some of the biases, motivations and interests of the researcher in what they interpret from the data (Bell and Roberts, 1984). In the former case the degree to which the participant is forthcoming about issues relevant to the research is in question while in the latter case it is the interpretations of the researcher that are in question. The goal is not to eliminate bias per se, but to expose them for the scrutiny of readers of the research.

Interview relationships are immediately affected by appearance and demeanour and it is recommended to dress in a similar manner to the participant in order to foster an atmosphere of equality (McDowell, 1994; Roberts, 1984). Since most of the interviews were in people's homes during their leisure time I chose casual summer dress, usually tailored shorts and a T-shirt with a collar. In cases where the interview was at a person's place of work I wore pants and slightly dressier attire. In all interviews I reinforced that I was a student which put most people at ease and in many cases the interview actually included friendly conversation about my future aspirations. This served to support a positive rapport and at the same time reinforce that my intentions are academic and not political. The only cases where power seemed to be an issue were interviews with those younger than me, especially those with other students. These people were put at ease through continued reassurance that the interview was not a "test" and by averting the



conversation, at times, away from the research to other areas of mutual interest (e.g. student life). Rapport and power may also be affected by socio-demographic differences in gender and ethnicity. Some women were cautious about meeting with a male researcher, especially since the first round of residents interviews coincided with the high-profile Paul Bernardo murder trial. Most women were reassured by being able to choose an interview location themselves (e.g., at work or some other public setting), yet two women refused interviews because they were suspicious (see Appendix A - *suspicious of motives*). Ethnicity, and particularly language differences proved to be a challenge in three interviews. These were overcome by asking questions in several different ways to ensure all topics were adequately covered. Nevertheless, it is difficult to know if ethnicity-specific meanings may have been lost.

This thesis concerns the role of values in the construction of risk so it is important to be clear about my own value biases. The thesis argues that the people in Caledon share traditional rural and small town values whereby things like spaciousness, friendliness, and natural clean environments are paramount for residents. I grew up in a town similar to Caledon which has long since undergone considerable growth and change, so I share some of the same values as Caledon residents. While shared values facilitated to good interview rapport and ready understanding of shared meanings in the community this may threaten the findings if they favour the residents' point of view to the exclusion of all others. Biases in this research should also be viewed in the context of at least two central equity issues at Caledon: whether the siting process was fair and whether the waste should stay in the

region of Peel. I began the research under the presumption that values were likely low-priority considerations in landfill siting and thus was sensitive to whether the residents viewed the siting process as unfair on these grounds. I empathize with communities who feel like they are under seige. Nevertheless, I agree to the principles that communities should be the guardians of their own waste, and that economically disadvantaged communities are not unreasonably exposed to the risks from hazards generated in comparatively wealthy communities. The former opinion predisposes me to be sympathetic towards the residents' points of view while the latter urges me to also be critical (since many favoured the export of waste outside the community). In interviews I generally took a neutral stance on these issues except in cases where I played "devil's advocate" to urge a participant to think through their position on an issue. Interviewing and interpretation have been done with a conscious effort to keep these predispositions in check.

The next three chapters report the main findings of the case study followed by a discussion chapter which puts the interpretations of this research in the context of the environmental risk literature.

## **Chapter 4: Concerns About Landfill**

These next three chapters present the findings from the study. These findings are divided into three sets of related themes which emerged from the interviews. This chapter focuses on the concerns residents have about their community, risk and safety and the landfill in particular, including images of landfills generally and why they may be so dreaded. Chapter five centres on the potential impacts of the landfill, the likely impacts of the siting process, and the underpinnings of concerns in terms of community values, costs weighed against benefits and the role of uncertainty. Chapter six extends discussion by putting the construction of risk at Caledon in the context of the siting process and differences of opinion between residents and experts. It also focuses on issues of equity, trust, community participation in decision-making and community opposition and ends with a summary of findings within a conceptual framework for understanding risk at Caledon (see Figure 6.1).

### **4.1 Dread**

Initial meetings with group leaders indicated that the level of concern about the landfill was high, and one of the purposes of this research is to determine *why* since expert opinion indicated that the risks to individuals and community of C34B, and municipal solid

waste landfills generally, were quite low. This section is divided into four sub-sections which together unearth some of the things that are dreaded: images of landfills, expressed concerns about C34B, background concerns within the community, and community risk and safety concerns.

#### 4.2 Images of landfills

Concerns that people have about the Region of Peel's preferred site C34B must be put into the context of how they view landfills generally. Many people, especially those who have lived for a long time in rural areas, have considerable first-hand experience with municipal "dumps" which likely shapes their feelings about C34B. In general in Caledon these images are rather negative, and are so varied that they are not sub-categorized in the coding scheme in many cases (i.e. *general images of landfills* (1 4) has the most mentions: n= 39). Thus, one of the major foci for coding these DUTs was to separate *positive images* of dumps from the more pessimistic ones. In terms of frequency of mention Table 4.1 shows that the negative imagery overwhelmingly outweighs the positive imagery 70 DUTs to 5 and only 4 different people have at least one positive image of landfill while a minimum of 26<sup>16</sup> different people have negative imagery.

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<sup>16</sup> The 26 refers to the *general negative images* code. While many of the mentions in the related negative image codes are from the same 26 residents (e.g. *horror stories* - n=14 residents), whether the remaining 4 (of 30) residents have negative images was not tested.

**Table 4.1: Residents' Images of Landfills and Garbage**

<b>*Theme\topic</b>	<b>Number of Mentions</b>	<b>Number of Residents (% of the 30)</b>
general (negative) images of landfills	39	26
horror stories about similar landfills	19	14
community vs megadump	8	8
positive images	5	4
expected mishaps	4	4
<b>maximums for community data set</b>	<b>55</b>	<b>28 (93)</b>

\* The first column contains a set of related themes from the hierarchical indexing/coding scheme for the interviews (contained in NUDoIST); the second column shows *how often* the topic was talked about and the third column indicates if the topic was raised by only a few respondents or a variety of *different respondents* (also expressed as a percentage of the set of interviews from which the themes are tallied). The maximums at the bottom of columns two and three represent the greatest frequency of mentions and respondents respectively for *any* theme in the relevant set of interviews (in this case all round one resident interviews n=30 is the relevant set of interviews such that percentage of residents is calculated as:  $30/28*100=93\%$ ). The frequencies contextualize themes within the subset of related themes, and when compared with the maximums, contextualizes the subset of themes within the broader data set.

#### **general images of landfill (1 4)**

For example, Roberta's comments are typical of those who focus on visual appearance:

<sup>17</sup>ROBERTA (town, non-leader<sup>18</sup>): I picture seagulls all over the place, I picture rats, I picture mounds and mounds of garbage just sitting there. I picture thousands of diapers...

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<sup>17</sup> Where necessary the quotations in this thesis have been edited in order to facilitate ease of reading. Thus, words like "uhm" and "ahhh" have been *removed* and grammar has been corrected where possible. Words that have been *added* are enclosed in parentheses. Several lines of text have been removed when these do not add to the main point of the quotation. Thus, each quotation does not necessarily represent an entire conversation. Careful attention has been paid to maintaining the meaning of quotations and to not omit nuances of meaning (however subtle they may be) in this process.

<sup>18</sup> This notation refers to the sample zones (town, rural, site) and respondent type (expert, resident opposition group leader, resident non-leader) to provide some context to the respondent's comments. Additional information about the respondent is often provided if it adds to the point being made and respects as much as possible respondent anonymity.

This type of imagery is extended by Jennifer who appeals to the sense of smell,

JENNIFER (town, non-leader): Well an image that I personally get is being acres of land of rotting stinking garbage and gulls and rats and then a big bulldozer and then a big dump truck and dumping more stinking garbage. I just don't get a good feeling about it;

In both these cases there seem to be connections to ideas about pestilence, that seagulls and rats will accompany waste and that these animals are particularly despised for being dirty. Cheryl invokes the sense of taste to make her point;

CHERYL (rural, non-leader): You can even taste it, you know. It's just that, the air you know, you can just sort of, inhale it, it's just gross you know?

Bob and Doug refer to negative body imagery when they talk about landfill which, in this case, actually concerns the proposed site;

BOB (rural, non-leader): There's nothing good about it. You're gonna have a big mountain of shit in the, you know...

DOUG: Ya it's going to be forty meters deep and thirty meters high. It's going to be like a big hill. Just like a zit in the middle of the field.

Cheryl, Bob, and Doug seem to be concerned that waste, in various ways can invade the body - either through the air as pollution, or visually as an aesthetic eyesore. Along with these images that appeal to the senses, others like Veronica, see landfill more as a metaphor for general societal failures. In the following case she refers to the failure to develop more environmentally "responsible" technologies for disposing of waste,

INT: What is it about landfill that you don't particularly like?

VERONICA (town, non-leader): There is a risk to the environment and it's a really big reminder of our own failures in trying to figure out... We're just being so senseless. It just seems so irresponsible in a way and it's a reminder of that I guess.

Thus, having a landfill nearby would be a "big reminder" of one way that science, technology and society has failed not only the local community, but community in the broader sense - society.

While positive images of landfill are far fewer, they tend to be based more on direct experience with local landfills. For example Giselle, who is actually an opposition group leader, talks about the landfill currently operating in her region,

**GISELLE (rural, leader):** Britannia landfill, is one of the best run, probably, in Ontario or Canada. I mean certainly it is a classic example of a well-run landfill. I was quite impressed. It's very clean and well organized, and it wasn't the horror story of seagulls and smells and whatever's expected. Yes, there were seagulls, I'm not saying there weren't any, but there weren't flocks and you weren't being attacked. I just expected that it would be horrible experience to tour a landfill site. And the open space of the landfill was very small. I mean they were working, because we were there during the day. But I didn't find the odour offensive.

Giselle's comments are somewhat puzzling given that she is among the most vocally opposed to C34B. This is an indication that there is more to opposition than just *gut reactions* (as dread is often defined in the literature) to landfills themselves. Giselle is among the most articulate of the respondents so conversations with her will appear frequently and her position will be made clearer throughout these three findings chapters. Nevertheless, Roberta's comments imply that the initial appearances to which Giselle refers can be deceiving. She relates what her friends who live near Metro/York's (neighbouring region) landfill tell her,

**ROBERTA (town, non-leader):** What I heard about the Maple landfill is apparently it looks like Disneyland driving (in) it's all green, you don't even see it from the community. So if you're driving up near Maple landfill, having been up there, it's all greenery I guess until you get right into it. Like people have

complained about the stink but I don't know, like a kilometre away and out on the deck all the time with my kids you know with the stench.

The use of terms like "stink" and "stench" show Roberta's particular aversion to smells that may be associated with garbage and landfill and are evocative of the rot and decay others mention in relation to a technology that is generally unwanted.

### **horror stories (1 4 3)**

While some refer to direct experiences with landfills others draw on stories they hear from others - often through the media. For example, Bob and Doug talk about a newspaper article which refers to leachate rotting people's basements,

DOUG (rural, non-leader): In years to come if they make these big holes and put all this garbage in it, it'll be just like puddles of contaminated waste everywhere right? And that goes into the ground, like I said on the Brock Road all those houses south of that, you can go up to the concrete and pick it off.

INT: Do you know someone down there?

DOUG: No, but I seen they had a write-up in the paper years ago. They had a write-up in the paper of it and it was just saying that the people were saying that their fucking basements were falling apart.

Such horror stories seem to represent visions of almost apocalyptic proportions whereby the homes that people work so hard to obtain and maintain crumble in the wake of landfill. The following passage attests to the lasting effect that past environmental catastrophes which have been covered extensively by the media have had on people's perceptions of related issues. Jennifer is one of three residents to raise the spectre of Love Canal (a toxic waste dump in New York State that leaked) and unknowns,



INT: What did the preferred site threaten the most?

JENNIFER (town, non-leader): Well number one I would think the groundwater. Water is quite a big one and maybe some other toxins that we don't know about like the Love Canal situation. Who knows. There could be other circumstances coming about that we don't know about.

Perhaps the most meaningful implication of horror stories about other places is that for some they reinforce the certainty of impacts from similar facilities. Rosemary's comments are an example,

ROSEMARY (site, non-leader): I mean I know people who have lived across from dumps. There's another... there was another one on Fifth Line up and it ruined their well. I know one of the farmers that lived on the road, on the farm up there and she had to put in city water and she did want to, but it ruined her well eventually.

INT: So when you hear about things like that...?

ROSEMARY: Yeah, and then if you hear of it you think, "Oh well, it's going to happen the same to you."

In this way past events get translated into cause-effect relationships. That is, if a landfill has ruined a well in the past it *will* most likely "*happen the same to me*"<sup>19</sup>. This contrasts with the way scientists refer to the relationship between potentially environmentally hazardous sites and contamination as probabilistic events - with usually very low probabilities attached to contamination events.

#### 4.3 Lay concerns about the preferred site

When people are asked directly about their concerns about C34B most of the responses involve the expected concerns about things like *water quality* (1 2 1), *health* (1

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<sup>19</sup> Italics within quotations represents that the quotation is paraphrased.

2 7), *property values* (1 2 9), *traffic* (1 2 5), *noise* (1 2 20), and even *community stigma* (1 2 26). Table 4.2 is a list of the top 20 concerns, in terms of mentions, among the 30 residents. Not all of these themes can be elaborated here via quotations, but these are found in the environmental risk literature (e.g., Baxter et al, 1992; Eyles et al., 1993b). However, *water quality*, because of its prominence (42 mentions from 26 of 30 residents) and its connection to so many other concerns, warrants some elaboration. The following exchange with Christine is typical of many whereby she makes the connection between *health, smells, and water quality*:

INT: You talked about property values, were there any other concerns?

CHRISTINE (site, non-leader): Health, smells.

INT: Yeah...?

CHRISTINE: Any other concerns...?

INT: Why were you concerned about health and smells?

CHRISTINE: Well if the dump goes up? Yes, because we're all on well water there. And sometimes you don't want to treat your lawns because it can penetrate through the soil, it can go towards the water. Although they say, "No there's other things that you can use", but yet, it's still some kind of chemical base or something that's going to destroy. So, you try to keep the water as natural as possible. But well water is that way. I mean whatever they put on the roads goes into the water.

Water is by far the most tangible concern for most residents since most have their own well or get their water from Bolton's well. People like Christine may even be chemophobic. When talking about wells and contamination chemicals are perceived to have a considerable capacity to "destroy" and "penetrate" undetected into water systems. Giselle (rural, leader) equates taking away fresh well water from the people of Caledon with "hitting a child", an evocative metaphor to show how devastating losing "fresh water" would be:

GISELLE (rural, leader): That created like an incredible amount of support from the community because everybody deserves to have clean, fresh water right?

INT: Oh ya, that really lit a fire under them did it?

GISELLE Oh no (ironic, implying *yes*), but the community, like that's a natural thing. It's like, "How dare you hit a child!, like you can't take my fresh water away from me!". It's like a right.

There is considerable debate about the likelihood of contamination from a waste site at C34B, so there has been much focus on hydrogeology. There are those in the community like Janice who, based on their experiences with digging their own wells, are convinced that the leachate that escapes a landfill at site C34B would enter local wells,

JANICE (rural, leader): Frankly, I can't imagine that there's not a connection. Anyone who knows anything about, you know, osmosis and the movement of water, no one can convince me that adjacent water supplies don't ever mingle.

The idea that "no one can convince" Janice that the water supplies are *not* connected reinforces the point above that residents like Janice (and Rosemary above) seem to think in terms of (100% probability) cause-effect relationships. However, it is important to note that opinions about water tables varies. Tim a local contractor who, although he does not like the politics behind siting, questions whether there is a water table close the site,

TIM (rural, non-leader): But regardless of that, in certain ways, it is a good spot because there's no water over there. The 4th Line there's no water because they had to bring the water from Grandpa's up to there. So all this carrying on about the aquifer... I used to drill water wells for a time and all this about the aquifer over there is just horse.... There's no water there. There's people (that) drilled and drilled and drilled 'til they're blue in the face and they had to put water all there. So in that aspect you're looking at yeah okay, well maybe, because there's not a major water course there or whatever. So if they line it right and do it properly, well not a problem.

While Tim may not accept that the existence of the aquifer, he qualifies that the site would have to be engineered "properly" in order to avoid "problems".

**Table 4.2: Resident's Top 20 Concerns About the Landfill and Siting Process**

<b>*Theme/topic</b>	<b>Number of Mentions</b>	<b>Number of Residents (% of the 30)</b>
1) water quality	42	26 (87)
2) health	33	19 (63)
3) smell	27	17 (57)
4) property values	23	11 (37)
5) traffic/trucks	24	15 (50)
6) farmers/agriculture	22	13 (43)
7) pests (esp. seagulls and rats)	21	10 (33)
8) waste of money	19	11 (37)
9) immanency of effects - concerns for the future	17	13 (43)
10) top concern?	17	12 (40)
11) effects on children	15	12 (40)
12) leaks/leachate	14	12 (40)
13) unknowns	13	10 (33)
14) other people's (municipality's) garbage	12	9 (30)
15) who benefits? (not community)	11	4 (10)
16) forced not voluntary	10	8 (27)
17) people not disciplined re: disposal habits	10	7 (23)
18) too big	9	9 (30)
19) no guarantees re: safety	9	8 (27)
20) community stigma	8	7 (23)
<b>unconcerned</b>	<b>34</b>	<b>13 (43)</b>
<b>maximums for community data set</b>	<b>55</b>	<b>28 (93)</b>

\* see bottom of Table 4.1 for description of how to read tables

#### **unconcerned (1 2 32 & 1 2 32 1)**

There are a large number of mentions (34) about being unconcerned about the site.

At first inspection it seems difficult to reconcile the fact that the number of residents 13 (43%) who are apparently unconcerned does not balance (i.e., add to 30 - the number

interviewed) the number who mention at least one concern (e.g., *water quality* 26 [87%], *health* 19[63%]). The reason for this is that people are only unconcerned about specific things or their lack of concern is conditional on other aspects within the local siting context. For example Craig, a real estate developer, is not very concerned about property values dropping because of a landfill which is viewed as no more problematic than a "train track",

INT: Were you really concerned about your (property value) here?

CRAIG (town, non-leader): No.

INT: So, what do you know about the properties down there?

CRAIG: That it really doesn't affect people. It's kind of like a, for new people coming into an area it's sort of like a train track.

INT: Oh yeah.

CRAIG: Within a close proximity to their house. They don't really view it as any big impact.

However, elsewhere in the conversation Craig mentions 10 different concerns that he does have including *water quality*, that it is *too big* (1 2 8), and a *waste of money* (1 2 21).

Christine is unconcerned about C34B largely because she did not expect that it would be approved,

INT: You weren't entirely surprised that it was going to be stopped?

CHRISTINE (site, non-leader): Well I was. I would say I was surprised, yeah. I can't see them aiming for that, for that area there where we are because, I don't know, they would ruin that, I don't know.

INT: It doesn't make sense to put it in that spot?

CHRISTINE: No, no.

INT: Why not?

CHRISTINE: Because there's too many people that have, too many hard working people that have put everything they have towards a piece of land and a home. Perhaps they have a business too. These are all people that are hard working people, they've got more than just a regular home you know. So, you kind of do it

as an investment, maybe you do it because you like it or whatever. So I don't know I just couldn't see something like that going in that area.

It is apparent how people like Christine *would* be concerned should the site be re-considered in any new siting process since there are undertones of threats to "hard working" peoples' property values in what she says. Nevertheless, there are those like Isaac, who seem entirely *unconcerned* about C34B since they are convinced it will be run safely,

ISAAC (rural, non-leader): But you people don't know about the precautions that are taken, right. I work on a lot of construction sites and like there's a lot of precautions taken and that there's nothing to worry about. Like know that they'll spend as much money in landscaping there as anything else. If they don't like I'd be very, very surprised. I'm sure there'll be trees, stuff like that planted around the outside.

However, there seem to be very few like Isaac, who appear to have no concerns. More are like Craig and Christine, and are only unconcerned about specific impacts and are thus cautious to avow a lack of concern entirely.

#### **4.4 Background concerns**

It is useful to place the concerns about the landfill in the context of general concerns within the community to see how one may affect the other. Table 4.3 lists all concerns raised by residents which were not directly linked to the landfill. These issues were raised in response to probes within four major topic areas from the checklist (Appendix C) meant to account for unsolicited concern about C34B: environmental concerns, safety concerns, risk concerns, and general concerns within the community.

What is remarkable is the overlap between Tables 4.2 and 4.3 on the following themes (where codes do not exactly overlap, Table 4.2 codes are in parentheses): *loss of faith in government* (2 16 6 3) and *government picking on "the little person"* (2 16 6 2) (*forced not voluntary*), *water* (2 16 1), *traffic* (2 16 4), *high taxes* (2 16 7) (*waste of money*), and *noise* (2 16 13 3). What is striking is that the landfill seemed to intensify general concerns that residents already have about their community.

**Table 4.3: Everyday Community Concerns  
(Not Explicitly Linked to Proposed Landfill)**

<b>*Theme\topic</b>	<b>Number of Mentions</b>	<b>Number of Residents (% of the 30)</b>
loss of faith in government	19	13 (43)
traffic	15	11 (37)
water	14	12 (40)
high taxes	11	8 (27)
government picking on little-person	11	7 (23)
isolated	10	9 (30)
rural life	9	3 (10)
general pollution	7	6 (20)
access to Toronto	7	5 (17)
maintain income	7	2 (7)
local property restrictions	6	3 (10)
politics	4	3 (10)
health	3	3 (10)
noise pollution	2	2 (7)
lack of amenities	2	1 (3)
<b>maximums for community data set</b>	<b>55</b>	<b>28 (93)</b>

\* see bottom of Table 4.1 for description of how to read tables

### **loss of faith in government**

For example, Matt and Roberta show that their lost faith in governments to be believable and trustworthy is confirmed by the landfill issue,

**MATT (town, non-leader):** This is... it's very cynical because I think I'm very cynical, I mean the more you read in the paper about what the governments are doing, I don't believe that anything is safe.

**ROBERTA (town, non-leader):** You know I don't trust them. I mean I just don't trust them.

The following passage shows how people in the community can be united by their mutual dislike of government. Giselle tells a story of how the police reacted to one of the community protests against the landfill,

**GISELLE (rural, leader):** Remember the police had quite an issue with the government as well. These officers are sitting there with no expressions on their faces, I thought, "Oh this doesn't look particularly good", cause you try to read a person's body language as to you know, (and I'm thinking) "Is my story sinking in? Am I making any headway with these people or do they think we're a bunch of wacko farmers and Italians causing problems on the side of the road?". So then I hit the buttons, it was sort of, "And we're fighting the government", suddenly these smiles came across their faces.

**INT:** Oh, ya?

**GISELLE** I'm going, "Oh thank goodness (laughing) there's a reaction out of these guys!"

**INT.** Who isn't fighting the government?

**GISELLE** Right. And then they said well we can appreciate that and it was kind of calmed down and we got out and went back to the people, and of course the IWA decided not to show up that day.

Once the police recognized that the protest was against a government initiative "smiles came across their faces" which immediately signified some sympathy for the resident's "cause" which is important recognizing that the duty of the police is also to enforce "government" legislation.



### **picking on the little person**

Linked to this general lack of faith in government is the idea that they are targeting certain groups with unfair policies. Thus, Roy and his son Tim talk about how unfair are the NDP provincial government policies regarding not only waste, but gun control and speeding,

ROY (rural, non-leader): It's a dump for the city and that's what I'm saying a lot of people resent. The way the NDP government put it, "It's going here no matter what." And that's what gets most people riled (that,) "It's going here no matter what." Something like the gun law that's going through no matter what. And this is what gets people riled up. It's really becoming really like a...

TIM: ...communist...

ROY: ...police state. "You do this, you do that or you'll get fined." The same with the, I just heard on the news tonight that there's been more people killed by speeding and everything else since they put the (photo) radar in.

Roy and Tim seem concerned about fairness in the way government implements policy.

This issue will be elaborated in the section on equity fairness which includes a discussion of differing views on equity between residents and the government/TWA (section 6.1).

### **general water problems**

The concerns about well water contamination may be connected to a heightened attention to water issues since many people have wells and know how fragile they can be.

For example, Bob and Doug talk about how difficult it is to maintain water *quantity*

("steady water") and *quality* ("good water") in some wells,

INT: Do you have Town water out here.

BOB (rural, non-leader): No not here (Doug's). Our house out on the fourth line. They brought it up for six houses. Cost ten grand each.

INT: Why did you hook up?

BOB: The wells were all bad in that area. Out of six of us only two guys had good water, had steady water.

INT: Oh, and what was that because of?

BOB: Because they had just bad wells, I don't know what it was, just that little area.

DOUG: Sometimes you get a vein that, you know only produces so much.

Similarly some are concerned about the viability of well water into the future. Colin talks about how disconcerting it would be to have to connect to Toronto water,

INT: What about environment?

COLIN (town, non-leader): Environmental risks let me think. I've been thinking a bit about water and the fact that the ah... (sigh) is going to becoming a concern, I heard of we might join the Toronto water and I'm not exactly happy with that. The idea that we're going to take it from Lake Ontario where the Americans dump and we dump and it all comes back into here is... is the dumbest idea I've ever. And I know that Caledon has it's spring water that they sell and whatever, in the bottles and stuff, and I think that it could become a concern to us in the ah... in the future. That if we either become part of the (Toronto) water, or if our water, for example, by the dump gets tainted.

For Colin, the possibility of a landfill contaminating wells presents a "no win" situation whereby the alternative, Lake Ontario water, is presumed already polluted.

#### **4.5 Risk and safety concerns**

The literature on risk, specifically that which concerns risk communication, often presumes that siting potentially harmful landuses concerns mainly risk and safety issues (e.g., Lundgren , 1994; Walker, 1995). That is, a potentially noxious landuse like a landfill is a concern for residents primarily because it threatens individuals and their safety - including tangibles like health and financial concerns. To address this, each resident was

asked early in their (round one) interview to describe some of their general risk and safety concerns in the community to see if the landfill was one of the issues to emerge unsolicited (see Appendix C). This was intended as an introduction to talking about the preferred site for the landfill since the latter was presumed, based on reports from the community leaders and experts, to be among the biggest risk and safety concerns (traditionally defined) in the community.

### Risk

In terms of community risks, the *landfill* (2 20 5) was the most frequently mentioned single issue, but this is rather low considering there were 23 mentions of other things other that also pose risks. Landfill seems to be only one of many risk concerns in the community.

**Table 4.4: Risk Concerns in Caledon**

<b>*Theme\topic</b>	<b>Number of Mentions</b>	<b>Number of Residents (% of the 30)</b>
risk (unclassified)	6	5 (17)
proposed landfill	5	3 (10)
financial	4	4 (13)
crime	4	4 (13)
risk = safety	3	3 (10)
children	3	3 (10)
water quality	3	3 (10)
<b>maximums for community data set</b>	<b>55</b>	<b>28 (93)</b>

\* see bottom of Table 4.1 for description of how to read tables

**risk (unclassified) (2 20)**

In many cases, when asked what risks they face, people do not quite know how to respond. This partially explains the relatively high number ( $n = 6$ ) of unclassified mentions concerning risk. These are all single mentions which could have been dropped through the code culling process (single mentions were eliminated or merged with other codes). These residents did not seem to readily connect "risk" to environmental concerns like landfills. For example, Cheryl thinks about risk in terms of not-so-rare events like traffic accidents and rare events like lightning strikes, but does not include landfill impacts within the list,

INT: You talked about things like traffic, are there any other risks associated with living here?

CHERYL (rural, non-leader): Living up here, is there anything else that would create problems?

INT: Well any risks, yeah, do you think you face any risks up here?

CHERYL: Uhm, (pause) not really, I don't know (pause). It's a very open area so I mean, I don't know maybe lightening or something I don't know. I don't know, that could cause a lot of damage.

INT: What about risks associated with the landfill?

CHERYL: I can't think of any.

Colin talks about risk in terms of Bolton, and those who live there, being "left behind",

INT: We all face risks in our lives. Do you think there are any risks living in this area?

COLIN (town, non-leader): How about death of boredom. Apart from... risks, let me think of risks here in town risks of living here. I can't think of any say physical (thing) or anything to that extent but maybe one risk (is) of living in Bolton, sort of obscure or something, but sort of being like left behind.

This idea of Bolton and Caledon being slow growing, traditional, and by Colin's account "boring" will be revisited in later sections where people actually comment that, for some, these types of things are in fact valued aspects of the community. Nevertheless scattered single mentions like Cheryl's and Colin's seem to portray a topic which may be more

readily talked about among technical scientific experts who deal with definitions of risk on a more regular basis than laypeople. Darren and his mother reinforce this idea in the following exchange in which they try to understand what is meant by "risk",

INT: What about risks? I mean we all face risks in our lives. Do you think there are any risks related to living here?

DARREN (rural, non-leader): I don't quite understand what you mean. I don't know how would there be a risk?

INT: I don't know.

DARREN: Well, ... I don't think there are any... not...that I can see anyway.

INT: No immediate ones?

DARREN: Not that I can think of.

INT: Yeah... nothing that you'd... concern either of you personally or your family?

DARREN: No, I don't think so.

MOTHER: No, I wouldn't think so either.

INT: What about...

DARREN: You mean risks like if you lived in downtown Toronto or something and you're afraid to...

MOTHER: Step out the door?

DARREN: ...go for a bike ride in the middle of the night or something like that, is that the type of risk that you mean?

The fact that Darren and his mother to seem to grapple with the intent of the question underscores the problems with this type of research where laypeople are not used to thinking and talking about concepts which are very basic and familiar to experts.

### **landfill**

While there are five mentions of the landfill as a risk, these come from only three different people. Each of the three talk about the risks of the landfill in very different ways. Andrea mentions the landfill when asked specifically about *environmental* risks

(i.e., a partially solicited mention - by signalling Andrea to think of risk environmentally)

and she responds with concerns about keeping Caledon "clean",

ANDREA (rural, non-leader): Not so far, I don't see any risks really.

INT: What about in the environment, are there any risks in the environment do you think?

ANDREA: Well the only thing we were thinking about is that landfill that they're going to bring, that's the only thing so far. Because I think even Caledon, they're trying to keep everything, you know, clean.

Rosemary is specifically concerned about water. The following is important since it represents an unsolicited mention (interviewer gave no cues about the *environment* or *landfill*) of concerns about the risks to wells,

INT: Do you think there are any risks living here?

ROSEMARY (site, non-leader): Well if they had of put the dump in, yeah (laughs).

INT: (Will you) elaborate on that?

ROSEMARY: Well, I betcha my well would have been no good.

INT: Yeah?

ROSEMARY: Oh, I'm sure it would have gone.

INT: Why do you think that

ROSEMARY: Well, they were testing the wells. They were testing every 3 months when they were testing for the dump.

Daniel expresses a broader concern about the capacity of environmental risks to pose particularly frightening threats. In the following exchange landfill sites and nuclear power sites are compared in terms of the magnitude of the risks they pose,

DANIEL (town, non-leader): Producing more power or converting people and keeping things going, maybe we should be mothballing Pickering (nuclear power plant) or maybe we should be mothballing Douglas or both. (Laughing) these are real issues. Frightening issues.

INT: On the same scale as the landfill issue?

DANIEL: No, far, far greater. Far greater I mean we're talking serious, serious problems and any corporation that gets itself into \$35 billion in debt when they had

carte blanche for income is one fucked up organization! Pardon the language, but I have no love for Ontario Hydro. I mean I literally am afraid of that beast. They built these humungous time bombs, that's all they are. The waste is a time bomb, the (nuclear power) facility's a time bomb.

INT: Is landfill a time bomb?

DANIEL: Well in a lesser degree because a little bit more physical constraint, as you said, liners and methane extraction and... It poses a threat at a degree of magnitude...

INT: What are the, I mean what are the degrees of magnitude?

DANIEL: I'm a terrified of Ontario Hydro. I really am. Landfilling that's another order of magnitude, I'm terrified.

Daniel views both landfill and nuclear power sites as "time bombs" in terms of their potential to cause devastating future impacts. While landfill is "an order of magnitude less" because of the potential to control contamination it is still seen as something that is "serious" and "terrifying".

### **financial**

In four cases (in terms of both *mentions* and *residents*) residents talked about risk as a financial rather than an environmental issue, the former being one of the more popular uses of the term risk. However, in this case the two issues are connected. When Michael is asked about the risks of living in Caledon he talks about the potential for various things to "devalue" his house,

INT: What about risk... risks associated with living here, I mean we face risks in our lives...

MICHAEL (town, non-leader): Okay, you know, the big risk is, one of them, and (this) is every homeowner's nightmare is to have something that will devalue your house.

Michael goes on to mention how this is connected to his concerns about the landfill,

**MICHAEL (town, non-leader):** Like you put a lot of time and effort and money and you make certain decisions. It's like sort of playing stock market or whatever you make an investment you sell and... and you move one and everyone said that... when they were going to build the dump that was chosen as a site. "Would that decrease your house's value?", being that it's going to be 2 kilometres away, the wind would blow the smell this way ah...

Christine, who works in a bank, also thinks of her property as an investment and that a local landfill has the potential to threaten that investment. However, she is more confident than Michael that her property will retain its value despite a landfill,

**CHRISTINE (site, non-leader):** I do face a risk but we've always looked at it the old way, if you have property you have money. So hopefully in the near future, something will come about that the value will go back up.

**INT:** Your property's gone down mainly because of just general trends rather than anything specific in the area?

**CHRISTINE:** Well we figure the dump too, if the dump is going to go up. In our area we all have custom built homes. There hasn't been really a developer in that area that has all these homes, one after another. Everybody is distant from (one) another and they've spent good money on their homes, they're all custom built so everybody's trying to put the finest of what they can afford in their homes, outside their homes.

While Christine sees the value of property involves *risk* she is confident that "custom built" homes with large lots ("distant from one another") are likely to hold their value. Elsewhere in her interview Christine confides that C34B would likely not be approved which may bolster her confidence about a real estate market upswing. However, this combination of factors may also make those like Christine all the more susceptible to feelings outrage if C34B is eventually used for the region's waste.



**risk = safety (2 20 3)**

At least three residents seemed to equate community risk with community safety. This corroborates the notion that risk is somewhat loosely defined by such people since, for them, risk is not directly about the probability of an adverse impact from landfill. For example, in the following exchange with Matt and Veronica, Veronica links risk, safety, and community crime,

INT: Are there any risks associated with living here do you think?

MATT (town, non-leader): Risks?

INT: Yeah, risks. Some terms that I sort of want you to define (for) yourself and talk through them. This is part of what I'm interested in is how you might define something like that. So do you see any risks associated with living here.

MATT: Risk?

VERONICA: There's risks in living in anywhere isn't there.

INT: I would say so. Any particular ones here?

VERONICA: Not any more risks here than living anywhere else. I would think it would be safer here.

MATT: Yeah.

INT: Safer in what way?

VERONICA: Well in terms of crime, burglaries, robbery.

Veronica, who actually has a number of concerns about the preferred site for the landfill (e.g., see section 4.3.1.1), actually talks about *crime* and *safety* and not the landfill when asked about risk. The next section elaborates how safety itself is talked about by the residents.

**Safety**

Safety was probed in the first round of interviews as a partial test of some of the risk society concepts referred to in chapter 2. That is, residents were asked about their

safety concerns to find out not only *what* they mention but also *how* they talk about the issue of safety . This was expected to provide some insight into how important safety is generally and how (consciously) reliant are people on expert systems to ensure safety/security. Table 4.5 shows that the most frequently mentioned safety concerns are *crime* (2 19 2) (19 mentions by 16 residents), followed by *traffic* (2 19 1) (9 mentions by 8 residents), *personal safety* ( 2 19 6) (8 mentions and residents) and then the *landfill* (2 19 7) (4 mentions and residents).

**Table 4.5: Safety Concerns in Caledon**

<b>*Themetopic</b>	<b>Number Mentions</b>	<b>Number of residents (% of the 30)</b>
crime (general)	19	16 (53)
traffic	9	8 (27)
crime (personal safety)	8	8 (27)
landfill	4	4 (13)
health	3	3 (10)
safety (unclassified)	3	3 (10)
water quality	2	2 (7)
<b>maximums for community data set</b>	<b>55</b>	<b>28 (93)</b>

\* see bottom of Table 4.1 for description of how to read tables

### **crime (general and personal)**

While crime is the first thing many people in Caledon think of when asked about safety, there are differing views on Caledon's safety. Colin, Desmond, Katrina, and Andrea all consider Caledon to be safe while Penelope and Nancy are less convinced. For example, Colin perceives the area to be "unbelievably safe" because there is "very little crime",

INT: Do you think it's a safe place to live?

COLIN (town, non-leader): You mean here? Yeah, it's extremely safe.

INT: How would describe the safety?

COLIN: I think it's unbelievably safe. See in Bolton there's very little crime, there's very little of anything in Bolton. And I've also heard that Bolton, or the Caledon area is like the Beverly Hills of Ontario for police to work in.

Desmond and Katrina are a little more cautious since as Katrina says, "you can never be sure",

INT: Do you consider this a safe place to live?

DESMOND: Very safe.

INT: How are you defining safety?

KATRINA (rural, non-leader): You mean your kids can go outside and not get kidnapped and stuff? Yeah I think it's pretty safe. You can never be sure though.

DESMOND: Yeah, you can never be sure of anything. But I can leave my nieces and nephews out there for hours and nobody will bother them.

Andrea thinks of safety and crime in the relative sense, that Caledon is much "safer" in comparison to Toronto,

INT: Would you consider this area a safe place to live?

ANDREA (rural, non-leader): Yes, I think so, so far.

INT: Yeah. How would you define a safe place to live, you know, what makes it safe?

ANDREA: That's a good question.

INT: (laughs) These are the types of questions. I know they're hard to answer in some senses (because) it's not something you (may) think about.

ANDREA: I don't know maybe because in the city (there are) more people. Of course you have more, you know, young people on drugs and they carry on. Well we were living in an apartment in Toronto and we got broken into.

Penelope thinks about safety in terms of "break-ins", something her family has experienced twice,

PENELOPE (site, non-leader): Oh, safety I think this is a good subject. We've been break-in at least two times here.

INT: Oh really?

**PENELOPE:** The last time it was in December here. I think in the Bolton area and Norwood and all this, it's getting bad. We had a big break-in in December before Christmas.

Similarly, Nancy actually considers the safety of the area to be "terrible" due to break ins and threats to "personal safety",

**INT:** How would you describe the area in terms of safety?

**NANCY (rural, non-leader):** Terrible.

**INT:** Terrible?

**NANCY:** TERRRRIBLE, absolutely, as far as personal safety goes, as far as break-ins and whatever like that, it is definitely on the increase. We, as I say, are close enough to the city and are pretty vulnerable here because the position we're in nobody can really see. I mean I know my next door neighbour can tell because her dog barks when we get company coming in here.

Others are concerned about the nature of protection from the crime. For example, Daniel appears to connect safety to police presence in the community - a presence that seems to be lacking,

**INT:** Do you ever think of safety in any other way?

**DANIEL (town, non-leader):** Overall safety there isn't an appearance of constabulary as much as in Toronto. For instance, OPP (Ontario Provincial Police) have a bigger territory, you might see a cruiser go through an area once every two weeks. In Toronto, it's not uncommon to see a cruiser every day. So the appearance of safety, if you want to use law enforcement as part of that, there's no question (it is lacking).

Thus, Daniel has a concern that the expert police system which normally helps to ensure safety in any community is somewhat lacking in Caledon.

**traffic**

Caledon has a number of people who commute to the city and it is also a corridor for many travelling north. People often travel the back roads of Caledon for alternative, quicker routes to the often congested multi-lane highways. These drivers are aggressive, they drive over the speed limit, and take chances according to residents who have witnessed numerous vehicle accidents in their area. Cheryl, like Andrea, assesses safety by way of comparison to the city. Caledon has lower crime, but "driving" is a concern in Caledon,

CHERYL (rural, non-leader): Well, it's, just a very peaceful place, everything is so, everybody's at ease and you don't see too much violence up here. In that respect it seems to be safe. Than it would be living down in the city there.

INT: When you say safe what do you mean by that?

CHERYL: Like I'm not afraid. I'm not afraid to walk outside, like take a walk. If you go into the town of Bolton here, I mean you're not scared to walk around as if you were in the city. (In the city) You'd be looking around and be scared you know.

INT: So you mean like crime, violent crime that sort of thing?

CHERYL: Yeah.

INT: Do you ever think of safety in any other way? You know there might be other...

CHERYL: The only thing up here, driving.

It is important to note the way Cheryl talks about her community - as a "peaceful place" where "everybody's at ease". In Cheryl's view these things seem to be threatened most by crime and not the proposed landfill explicitly.

**landfill**

However, there are those who *are* concerned that the landfill is something which threatens community, family, and individual safety. In the following exchange Desmond and Katrina are encouraged to think of safety in environmental terms to see if this will prompt them to talk about the landfill as a safety issue,

INT: Okay. What about what we were just talking about in terms of uh, the environment? Do you ever consider safety that way?

KATRINA (rural, non-leader): That's unsafe, all that garbage.

DESMOND: Yeah all that garbage all that pollution.

INT: In what way?

DESMOND: Like I said right now it's fresh air. When they bring that in who knows what kind of garbage they're bringing in. All the soil could be contaminated, we're gonna smell that. You know you can get sick. I wouldn't want that.

KATRINA: I'm unsure if it's in the water in the wells or stuff like that.

DESMOND: Yeah in the well water.

INT: (You're) concerned about the ...

DESMOND: Sure. It goes into the soil, into the dirt.

Thus, when prompted, residents like Desmond and Katrina eventually start talking about safety in terms of landfill as a potential environmental threat. In particular, Katrina and Desmond refer to issues like the inability to keep track of the types of waste that goes into landfill, as well as soil and water contamination - similar to the things that are mentioned when residents are asked directly about landfill concerns rather than community /environmental safety generally (Table 4.2). Others did not have to be prompted to talk about safety in relation to the community or the environment, they raised the issue of safety on their own. For example, Philip describes his concerns about C34B and how landfills are not safe for future generations.

**PHILIP (site, non-leader):** I think it's the fact that it sits there forever. Our children, our children's children, no matter what, that will be there and I think that's in the back of everybody's mind. I don't think the safety is there, the safety factor's not there, you know.

#### **4.6 Summary**

Despite being officially classified as non-toxic waste, municipal landfills and waste generally are viewed very negatively by a number of residents. These residents appeal to all the senses to elaborate evocative images of filth, chemophobia, pestilence and invasion of the body by waste in the form of air and ground contamination. These images and the threat of catastrophe are seen as causally, not merely probabilistically connected to landfill - views reinforced by knowledge of horror stories of past contamination scenarios from sites similar to the landfill that was proposed at C34B.

The powerful aversion to waste is part of what underpins a litany of expressed concerns about landfill and C34B in particular. However, these concerns extend beyond aversions to waste into social and political realms (e.g., loss of faith in government). All concerns seem interconnected and many are linked in some way to a fear of water contamination. This threat is prominent largely because all water in the area is drawn from personal or public wells, but also because this type of water is part of ways of life that are particularly important to residents. The concerns about the landfill are also connected to everyday concerns that already existed in the community such that the former seem to exacerbate the latter and intensify concern generally. Residents, however, do not seem to

think of the landfill explicitly as a risk or safety issue in the community unless prompted to do so. Risk and safety tend to be thought of in terms of everyday issues like crime, traffic, and financial concerns not probability of threat as it is defined in the risk literature.

Nevertheless, issues like traffic and financial concerns are indirectly linked to the landfill in terms of truck traffic and impacts on property values.



# Chapter 5:

## The Underpinnings of Concern

The previous chapter outlines some of the concerns residents had about their community, the landfill and the extent to which the landfill was seen as a risk and/or safety issue. This chapter focuses on actual and potential impacts of the site and siting process and what lies beneath the concerns about C34B besides an aversion to waste and landfill. Included is a discussion of how residents talk about (un)certainty in relation to impacts from landfill. One of the main arguments is that the landfill threatened intangible aspects of the community which are highly valued by residents. The chapter also reports the ways residents talk about the costs and benefits of landfill, a conventional, scientific approach to assessing environmental impacts of projects like landfills.

### 5.1 Impacts of siting

Despite the fact that the landfill only got as far as a preliminary environmental assessment hearing, the siting process seemed to affect some residents adversely. Table 5.5 lists themes which represent both impacts from the siting process and anticipated impacts as the process proceeded. Adverse impacts of the process range from *emotional responses* (1 3 1 3) to various landfill siting announcements, *personal sacrifice* (3 6) on the part of community leaders, *stress* (1 3 1 2) and *depression* (1 3 1).

**Table 5.5: Residents' Perceived Impacts of Landfill and Siting Process**

<b>*Theme\topic</b>	<b>Number of Mentions</b>	<b>Number of Residents (% of the 40)</b>
emotional responses (e.g. shock)	21	13
way of life	15	11
personal sacrifice (re: groups leaders)	10	6
shattered dreams	10	8
community-level impacts	9	9
stress	9	4
depression	5	5
quality of life	2	2
<b>maximums for community data set</b>	<b>65</b>	<b>35 (80)</b>

\* see bottom of Table 4.1 for description of how to read tables

### emotional impacts

Many of the mentions of emotional impacts (n = 21) are linked to the announcement of the preferred site in Caledon. The three sites on the short list were so scattered within the region that many seemed to delay concern until the announcement of the preferred site - that is, as is typical of many who have to sort through a range of life concerns, until something happened people suspended concern. Penelope's reaction was typical of interviewees close to the site,

PENELOPE (site, non-leader): Of course we were shocked.

INT: Yeah...

PENELOPE: We were shocked and... and worried, what else.

INT: Did you ever think that it would end up being that one?

PENELOPE: No, we didn't think that it would be right next to us, so close. It's only when they (showed us) the little map or whatever that I said, "Oh my god, it's only a couple of kilometres from us."

In some ways it is difficult to determine how deeply felt was this "shock". However, there are those like Nancy who, although she is not nearly as close to C34B as Penelope, shows how emotional attachment to one's home is linked to reactions like Penelope's,

NANCY (rural, non-leader): Well hang me (if) somebody came in here and said "This is where we're going to put the dump." We planted every tree in this place as a seedling. I *would* be emotionally involved.

Others were more generally disturbed by how the landfill issue prompted residents to interact with each other. Colin relates his frustration in sorting out "both sides" of the landfill debate and how community meetings concerning the dump tended to bring out some of the worst in people,

COLIN (town, non-leader): People are so strong willed and stubborn and tend to get very emotional about it (so much) that either side doesn't give a clear picture necessarily. I remember going up there to one of the meetings and just having people yelling and screaming, it sounded like there was going to be a brawl. And I was amazed that people, adults, would act in such a way.

Thus, the impacts of the landfill issue on his neighbours has causes Colin to question the way he sees his neighbours and other "adults" generally. Colin, a high school student seems shocked and disturbed at how people, presumed to get along with each other, can start "yelling and screaming" at each other.

### **personal sacrifice - community groups**

Several who became emotionally dedicated decided to become involved in community opposition groups. Becoming heavily committed to these groups may have exacerbated the overall emotional toll on these individuals and their families. Giselle talks

about the "price" she is paying in terms of "time" and "disruption" for being so closely involved in the fight against a landfill in Caledon,

**GISELLE (rural, leader):** You have no idea the price I'm paying for this. To be there all the time. And some people chose in terms of even protesting or not becoming involved, you know it's easier (not to be involved). I know why people aren't doing it because it's a horrendous disruption to your life. You know the stress and just the amount of time that it takes, and you know like I'm out three nights this week dump related.

Similarly, Theresa tells her story of how taxing opposition can be,

**THERESA (rural, leader):** You know when (you're) working you get home from work at quarter to six and throw something together that you can call supper and you're out the door again at quarter to seven and you see you've seen your kids for an hour and you know, that goes on and on and on, so for people that just say, "Leave me out of it", I understand.

Theresa goes on, however, to relate how once you *are* involved community peer pressure makes it difficult to pull out which, in turn, prolongs the emotional sacrifice,

**THERESA (rural, leader):** So I sort of decided long ago that I wasn't going to judge people because no one is in this situation willingly and everyone has their reasons for doing what they do. But I really find it hard to maintain that attitude when I...(baby crying)

**INT:** Do you ever feel like just giving up?

**THERESA:** Oh, many times, many, many times but...

**INT:** Do you feel like you have a choice?

**THERESA:** Well you don't have a choice and I don't think I could look a lot of people in the face who are still fighting. Because there's been a lot of personal sacrifice on a lot of people's parts. Like if I look at people like Martin and Giselle, you know Martin has a young family, he travels a lot.

### **stress/worry**

"Stress", and "worry" were also detected in the larger community. Mark, one of the community group leaders, discusses some of the reactions he sees in the community,

**MARK (rural, leader):** I think there's a tremendous amount of stress in some parts of the community. I think its other parts, unfortunately (who) aren't, who knows why, particularly worried it's not a real concern, or are worried they aren't involved. But there is a group that is extremely upset and I know for example that part of the Italian community is very upset and they come to meetings and they're worried about devaluing of their properties.

Mark's opinion about mental health/well-being is particularly relevant because he is a physician in Caledon and is thus reasonably qualified to identify such conditions in his patients, neighbours, and fellow opposition group members (including himself).

#### **way of life impacts**

The landfill seems to threaten something very fundamental in Caledon. This is evidenced by the themes: *way of life* (1 3 3) (15 mentions by 11 residents), *shattered dreams* (1 3 4) (10 mentions by 8 residents), and *quality of life* (1 3 2) (2 mentions/residents). While the impacts to things like property values, traffic, smells, water quality and health likely remain to be seen once the landfill is built and operating, the selection of C34B proved to be an immediate affront to rural ways of life. Roberta relates that "*however you select a landfill*", the process may mean very little if one outcome is that somebody's centuries-long way of life is threatened,

**ROBERTA (town, non-leader).** When they were looking for the landfill they arbitrarily flew around and did all this stuff right, however they selected it. So they took some farmer's land that he's been working on like it's been in his family for 100s and 100s of years and they said, "Well part of this is going for a landfill". I mean the government just wandered in arbitrarily and takes your livelihood. Like I wouldn't want him to come into my house say half of your house has to go to somebody else. So I mean they should have asked the farmer you know "Do you

want to sell your land to us?" And if he agreed then fine if he didn't go find somewhere else just don't take over their life.

Further, Theresa speculates on the changes expected to happen in her community if a landfill were built nearby,

**THERESA (rural, leader):** Beside a landfill I just see more of a deterioration. I think you're going to find that whoever lives here wants to live here. Obviously that's going to lend itself to a general feeling of well being and a content community. (What) we are going to end up with (is) people who don't want to be here anymore and maybe forced to live here because of economics or people who have no other place. Choice is a big thing. Yeah I think it really influences your outlook.

Thus, there are concerns about a movement from a general sense of community "well being" to one of "deterioration" and lack of "choices". It is important to recognize that concerns like these are less direct than many of the ones residents mention when asked specifically about their landfill concerns (Table 4.2). It may be some of these deeper concerns that prompt such vehement opposition to the landfill.

It is not just farmers who feel threatened. In the following passage Katrina and Desmond relate how Desmond's father constantly questions his choice to retire in Caledon because the landfill may be nearby,

**INT:** So this is something that gets talked about at the dinner table?

**KATRINA (rural, non-leader):** Yeah, yeah his father often mentions it.

**INT:** Yeah does he get really mad or what?

**KATRINA:** At the dinner table (laughing). Like, "Oh shoot, you know if I just would have sold it!" I don't know if he gets "mad" but it's something he thinks about a lot.

**INT:** Does he? Do you know if he intends to stay, this is your father (to Desmond)?

**DESMOND:** He would like to retire here. Sure, he loves it.

Katrina's comments that Desmond's father sometimes regrets not selling his place before the landfill issue arose, may be the type of restricted choices about which Theresa talks above.

### **shattered dreams**

Giselle tells a story about one of the first community protests and how it is connected to the protection of the type of lives residents wanted for themselves. This particular situation involves residents' reactions to IWA officials wanting to do some preliminary on-site tests, shortly after the announcement of C34B as the preferred site. Giselle starts by describing the problem,

GISELLE (rural, leader): I called the mayor and said, "This is the problem we have, they're trying to come on these properties at Christmas time", and he of course called David Tilson (local member of provincial parliament). We got a lot of officials involved, and they of course called the police and they said, "Can you intercede and keep these people off of the property", because now it was like December 19th, it was the week before Christmas, and that really was our issue. It was like listen, "These people have been through so much stress this past summer. Just leave them alone for another ten days and in the new year come back on, but there's no great, like the expediency that you people are demanding is not going to be of any great benefit to you and we are going to capitalize on this if you don't leave us alone". Two days later they arrive on the site to start drilling.

Thus, the issue was not so much that the IWA was coming onto people's properties with signed access agreements, but that it was too soon after the announcement of the preferred site and around Christmas time. Next, Giselle describes one man's reaction. He had signed an IWA access agreement months earlier and what follows is a description of how that signature suddenly became the reality of people drilling holes on his land,

**GISELLE (rural, leader):** So I get this call from this little Italian gentleman. (He) is going on about, "the men they are here!". I'm going, "X what men are here. He said, "the men in the little trucks", he sounded like an alien (laughs). I'm going, "X calm down", and he was really, you know how Italians are excitable. And so finally I realized he was talking about the IWA consultants and drillers and whatnot had shown up on the site. And I (am) going, "Whoa, that is important they shouldn't be there, it's just a day or two after the announcement, you're quite (right) you know, what are they doing?". "Oh I don't know what they're doing, but there's a lot of them here", and I'm going, "Okay, I'll be right there".

**INT:** So did you get a lot of other people to come down with you ?

**GISELLE** Not at that particular point in time because I felt confident going by myself as long as I had the police there as a witness as to what happened. So I went by myself, and the (police) staff sergeant was there by the time I arrived.

Thus, Giselle felt the need to come to the aid of her neighbour who apparently felt under siege by "a lot" of IWA consultants. In the following passage Giselle reports on the confrontation itself,

**GISELLE (rural, leader):** There was a major confrontation with X, from the IWA, and myself, because I said, "You have no right to be on this property at this particular point in time". And he of course had his hand full of, you know, site agreements and said, "Yes we've got signed agreements to be on all of these properties", and I said, "That's not the issue here", I said, "It's the issue of the community needs to be shown respect. I mean only two days ago, I mean they were announced as the preferred site". I said, "I think that the way you should handle this is you should come forward and explain to the community what can be expected over the next few months, because all they know is that they're being impacted on in an incredible nature that they've never been impacted on before. And I think they deserve respect and an explanation as to what they can expect." "Oh we don't have to do that!", and I said, "Well, I'm not saying you have to do that, but I'm saying (laughing) I think that is the appropriate manner in which to handle it."

**INT:** What do you mean by respect though?

**GISELLE** Well, in that you are imposing, I believe that they are imposing on a community. I can't think of a simple explanation. You're sort of, it's a privilege to come into a community, I think it's a privilege to come into a community. They don't think it is, they think it's their right to come into the community and I think that's the difference. So because we define it as privilege to come into a community, especially land, I think there is a lot you have to understand about



owning land and how precious it is, especially to farmers and to Italians. It's not just something they turn over every few years or that they profit from. It's something that derive their livelihood from, if you're a farmer, or if you're an Italian it's your lifelong dream to own land. So by coming in and violating that kind of right, walking onto property, even though it's somebody else's property and they have their signed access agreements.

Central to this confrontation is the issue of "respect". The IWA did not acknowledge that drilling on somebody's land is a "privilege" not a right, signed agreement or not. It is as if the landowners want the IWA to remember that they still own the land. Giselle concludes by showing how this event, in a way, represented a crisis point since it sparked the mobilization of a whole host of powerful residents who helped to harmonize future opposition.

**GISELLE (rural, leader):** I strongly recommended to X that they not impose themselves, that they meet with the community, set up a public meeting and approach it as, "This is the next step".

**INT:** So how did it go with him?

**GISELLE:** Oh he stood his ground, and was adamant that they would not move, that they were continuing.

**INT:** So what happened?

**GISELLE:** At that point I wanted some municipal officials to back me up. I went down to the X farm next door and called from there and explained the situation to them. Within the next half hour we get a couple of emergency calls through and explained what was happening on the site. We decided that nothing was going to be achieved that day because the IWA were taking such a stubborn position. What we should be doing was confronting them the following morning and barring them access from the site.

The landfill process and the landfill itself seemed to threaten particular ways of life. However, these conversations were rarely evoked by questions about landfill concerns - rather it was usually talk of the siting process which prompted these mentions. Thus, in the second round of interviewing residents were asked directly what was "threatened" to

allow them the opportunity to speak in more detail about these deeper concerns (see Appendix E).

### **round 2: threats (1 12)**

For some, the direct probe about threats also elicited mentions of the tangible concerns like *water quality*, *traffic*, *health* and *smells* (see Table 4.2). Others, when asked, "What did the landfill threaten?", responded rather differently than in the first round. For example, Roselyn weaves her concerns about water quality, traffic congestion, and noise into a general concern about community "cleanliness",

INT: Is there anything else that the preferred site threatens besides water?

ROSELYN (town, non-leader): The traffic congestion and noise.

INT: How were the things you talked about, how were they threatened, or not, by the prospect of having a landfill?

ROSELYN: I don't think that that sort of thing would be threatened by a landfill other than the cleanliness, the perceived cleanliness.

In the following excerpt Philip adds some detail to the notion of threats to "livelihood" and "retirement" to explain why people were so vocally opposed to the site,

PHILIP (site, non-leader): Their life earnings are basically their home. That's their asset, that's basically their retirement, that's everything to them. And I think if that is threatened, your livelihood or whatever or your retirement or whatever and I think if you're back's against the wall then you sort of fight. And then people come together, because it is an issue, it's a big issue.

Theresa who, in the first round, spoke of *deterioration of the community*, talks here about this deterioration in terms of threats to agriculture and the "rural way of life",

INT: In your view what did the preferred site threaten the most?

THERESA (rural, leader): From a personal point of view or a community?

INT: Either or both.

THERESA: Well, I think more generally I think it threatened agriculture, and it threatened a rural way of life that people choose. I mean there are a lot of pressures on agriculture, I mean it's not something that's valued in our society. And I think whether someone is looking at the land and thinking it would be a great place for a landfill or whatever. I think that there are a lot of threats, mostly because it's not valued and in fact I don't even think it's considered. I don't even think that it enters into the minds of planners and developers who are mostly urban.

In this passage Theresa's idea of "choice" (i.e., lack thereof) emerges again. In the first round she linked choice to being forced to stay next to a landfill (e.g. due to lack of buyers) and in this case she connects it to a lack of respect/value for the lifestyle that rural family farmers *choose*. Thus, probing about threats rather than just concerns proved to be helpful for getting people to put in their own words what they mean by things like "cleanliness", "livelihood", "rural way of life", and "choice".

## 5.2 Core values: Values, worldviews and ways of life

Much of the environmental risk research does not pay due attention to the role of context in the perception/construction of risk (chapter two). Therefore, questions about what each resident values about their community were included to broach conversations about how community context might shape how risk is viewed and talked about. The topic was usually broached with a very general question, "How would you describe the area where you live?" with subsequent probes tailored to how people responded (see Appendix C). These topics were among the easiest for people to talk about and DUTs related to these themes occur at many different points in the interviews, not just in

response to the above question. The volume of data related to these issues is evidenced by the Tables 5.6 and 5.7 which contain relatively large frequencies of mention in the NUDoIST index system (e.g., *small town\town vs city* n = 55, *place to raise kids\family* n = 31, *quiet peaceful* n = 31).

The codes in Tables 5.6 and 5.7, and more importantly the quotations connected to these themes, reinforce that there are fundamental issues that underlie expressed concerns about the landfill site. What underpins these concerns may be called core values - values, beliefs and expectations about the world/community which are deeply held and vehemently protected since they support cherished ways of life. The ways of life overlap and share the same general sets of values and worldviews, nevertheless their importance lies in the fact that they are consciously pursued and/or maintained by residents. Examples of ways of life include rural farming, family/child rearing, and retirement. Walter, a retiree and gardener who enjoys having his large family visit on weekends reveals how the three are connected. His comments are instructive since they provide a concise representation of the way people like him think about Caledon - as being as pristine as a "garden",

WALTER (rural, non-leader): I say Bolton is like a garden. It's a garden, it's all farms and you know big houses with two acres, three acres.

Walter's comments are indicative of the type of place some residents expect Caledon to be. The following is a discussion of the kinds of things that people in the community value and what they expect from the place where they live. This is what the proposed landfill threatened, and which sparked ardent community opposition.

## Values

### slow-growth (2 17 10)

Two of the values shown in Table 5.6 succinctly demonstrate that there is more at stake than expressed concerns like property values and health: it is a way of life which involves being for *slow-growth* and respecting a *traditional way of life* (2 17 6). These are expressed in Roselyn's comments about her hopes for the future,

INT: What are your hopes for the future here?

ROSELYN (town, non-leader): Well I hope it stays pretty much the way it is, myself. I don't want to see it growing too much. I'd like to stay here and I don't want to have to move because of all this (including landfill issue), like just what happened in Rexdale. We wanted out of there because (we) saw that it was just going down hill.

**Table 5.6: Things People Value in Caledon**

<b>*Theme\topic</b>	<b>Number of Mentions</b>	<b>Number of Residents (% of the 30)</b>
quiet/peaceful	31	17 (57)
slow-growth	21	15 (50)
respect for privacy	18	13 (43)
friendly	17	12 (40)
rooted	15	11 (37)
independence	15	10 (33)
traditional way of life	12	7 (23)
good property maintenance	9	7 (23)
hard working	7	3 (10)
laid back	7	5 (17)
law abiding/orderly	6	5 (17)
trusting	5	4 (13)
proud	4	4 (13)
conservative	4	3 (10)
<b>maximums for community data set</b>	<b>55</b>	<b>28 (93)</b>

\* see bottom of Table 4.1 for description of how to read tables

**traditional way of life**

People like Roselyn seem to consider the landfill yet another form of community "growth" that is undesired and may cause Caledon to go "down hill". This is fuelled by a reverence for a *traditional way of life*, which is tied up in notions of agriculture and the family farm as Martin (rural, leader) demonstrates in the following passage about the importance of farming for the area:

INT: Is it anything more than that, than just providing food?

MARTIN (rural, leader): I say, "Well I live in Caledon", (and people respond) "Oh that's gorgeous up there." (They imply that) in fact it is a playground for individuals (from the city), but first and foremost it's an agricultural community supplying the needs of basic humanity and, you know, that is paramount, paramount for all of us to maintain that. That's the first and foremost reason for everybody.

While Martin's comments should be qualified by the fact that he is from a farm family, others come to expect such activities to be a defining element of their community. For example, Adele shows her sympathies towards local farmers who "live off the land",

ADELE (site, non-leader): Bolton's a good town. And it's a lot more clean than other places and a lot of people live off their land. So if you put a dump there well it's the same as firing 40,000 people.

**trusting (2 17 1)**

Some impacts of siting and the siting process are quite subtle. The siting process seemed to affected the way certain people viewed their neighbours in community. The following two quotations from Mark and Giselle respectively show how the landfill issue was a divisive force in the community and caused some to question whether they could

trust their neighbours. First is a passage from Mark who talks about a strategy that many saw as a useful way to delay the IWA process - re-examining IWA short-list sites,

**INT:** And so what we want to do is go back in the process and identify those sites, better sites, more appropriate site.

**MARK (rural, leader):** With the argument that we were going to do that for a number of the technical issues. And we had a big argument about that and Theresa was very upset with that because she thought what if they even pick C48? I remember her saying, "you know what happens if you go through this process and you pick C48, C34B is off the list where are you guys going to be then?" And that's a quote "where are you guys going to be then". And I think some of the people were Bolton people and some of them admitted they wouldn't be around because they would have won, honest enough. But I was there before, I was there when there was 21 sites and I told her I would be there no matter where the site was in Caledon, that this was only a short term strategy to get rid of C34B and that was the problem. And if they pick another site I told her that I'd be fighting along with her regardless of where the site was. Because I don't believe in megadumps.

As Mark relates, Theresa was among a group who felt that Mark's approach was unethical since she did not want to risk the landfill going near any of her farming neighbours - no matter how physically distant they may be from her. Giselle shares this ethical stance and describes how such an issue can cause "philosophical turmoil",

**GISELLE (rural, leader):** But think then though how a Bolton resident might think and of course their only thought is that they were threatened and they are threatened by 34B. So in some respects they might not care as much if an old Chingacousy site is brought back onto the list, as long as it's taken away from the Bolton community. Now I'm not saying that that was the attitude, but that was the sort of balance that makes a difference in the way you think things through. And so philosophically, it was quite apparent that the original DARE executive and some of the new Bolton members wanted to fight C34B at any costs. Well, that sounds like a wonderful principle until you start thinking the thing through. And if at any cost means comparing it to other potential sites that were on the list in order to get C34 off, well I don't go for that. That would be going back on our commitment to

the community. So it created a major philosophical turmoil within the DARE executive, and that was what caused the split.

Thus, Caledon residents were forced to confront what is popularly known as NIMBY or Not-In-My-Back-Yard whereby some communities are, or are accused of being, willing to do what it takes to ensure a noxious landuse is not located locally, even if it means another community may have to accept the site. When some residents seemed to be advocating a NIMBY stance it caused deep divisions among opposition leaders. This important point is elaborated further in section 6.4 on community opposition groups.

### **Worldviews**

#### **small town (2 1) + clean (2 8) + place to raise kids (2 6)**

Many residents came to Caledon not only because it has a traditional farming community, but also because of more practical qualities. Table 5.7 shows the kinds of things many expect from their home and community. For example, the following quotations elaborate what many residents expect in terms of a *clean* (15 mentions), *small town* (55 mentions) atmosphere - ideal for *raising kids* (31 mentions). Doug talks about how Caledon must be cleaner than the city since the former has fewer "smells", "fumes", and "carbon monoxide" and contains "trees which give out oxygen",

DOUG (rural, non-leader): I mean in the city you smell pollution and when you go down to the city on Yonge street what do you smell? You're, always closed with all these buildings and all the fumes from the cars and you know what are you smelling? You might as well just breathe carbon monoxide, I mean that's what you're doing really. I mean out here it's a little better, cause the trees give out oxygen and stuff right and you know it's gotta be better than being in the city.



Craig focuses more on how the Caledon represents an appropriate small town

"environment" for raising his children - one which is expected to be "low worry",

CRAIG (town, non-leader): (I used to live) around Toronto and I, like a lot of people, decided to move here into Caledon because it was sort of small town and it's a quiet place. And because I had young kids at time and more to provide an environment for them.

INT: What kind of things, what type of environment were you looking for, for them?

CRAIG: Looking for a small town. Something with a larger lot let's say. Somewhere where you get quiet streets, so you don't have to worry about them running out into heavy traffic.

**Table 5.7: What Residents Expect from their Community**

<b>*Theme\topic</b>	<b>Number of Mentions</b>	<b>Number of Residents (% of the 40)</b>
small town\town vs city (Toronto)	55	20 (50)
place to raise kids \family	31	15 (38)
farming\agriculture\gardening	14	9 (23)
clean\pristine	15	9 (23)
space	13	10 (25)
nature	12	7 (18)
dream place	9	8 (20)
fresh air	7	5 (13)
recreational opportunities	6	6 (15)
worry-free	4	3 (8)
<b>maximums for community data set</b>	<b>65</b>	<b>35 (80)</b>

\* see bottom of Table 4.1 for description of how to read tables

What the landfill threatened was the residents' security in a particular way of life. itself supported by strong attachment to particular values and community expectations. Nevertheless, many do not make explicit value or worldview claims against the proposed landfill. There are those who are quite *good* at relating the importance of such issues and must be called upon to articulate what others do not. In the lengthy narrative which

follows Craig (who sat on a development board) describes how a small town near Caledon fought to maintain its identity by claiming that the septic systems for a new subdivision development would threaten their water supply. Within this story are many of the issues that concerned the residents in Caledon, particularly the connection between a growing community and threats to values,

INT: I'm sorry, what was the issue, something was going in?

CRAIG (town, non-leader): Yeah, it was a development, I think it was in Cheltenham which is just a small little hamlet. And someone had been working on the development for a number of years.

INT: A subdivision?

CRAIG: Yeah a subdivision, to put a group of houses in and they were on land, some of which had already been classified as environmentally sensitive and the remainder of the property they were looking to develop had no sewers in there. They had to look after the sewage that's there. So they were saying, "Look with that many more houses, apart from the fact that it may impact negatively on our existing environment over a period of time, you know it's probably going to end up loading too much nitrates etc. into well water and then we won't be able to drink that."

The residents in this town are against the subdivision on the grounds that the well water may be overloaded with nitrates and undrinkable. However, Craig chose this story because he believes there were other issues involved. In the next passage Craig is asked what else was at stake,

INT: Do you think that was the *real* issue?

CRAIG: I'm not sure that it was the real issue. I think the real issue is, "We don't want any more people coming into our community." But the interesting thing was that these people who were very emotional about this issue, showed up and...

Similar to Caledon the people in this community were very concerned about the growth of their small town beyond a size which would sustain the qualities the residents enjoyed and

had come to expect from their area. This threat prompted "emotional" reactions and mobilization against the development,

INT: All 300 of them?

CRAIG: It wasn't that many but they were representatives of a larger group and they'd obviously been involved in the process as it went along. And they were totally unfamiliar with the planning process, I mean they didn't know how to go about stopping it. All they knew is they didn't want it to happen. So they were learning as they went. But the interesting thing about it was that they had sort of a grasp of the normal evolution that would take place in their community if this continued to happen. Like if the growth continued to happen and they let this in. That was kind of interesting.

INT: They did have a *grasp* of that?

CRAIG: They did have a grasp of that. They'd come around to the idea that it was a process that takes place, I mean you have a little community that has its wells and it has its septic systems, right? And you bring in more houses and their septic systems, and they bring in some more and eventually that's got to filter into the water supply. It's coming out of the ground directly from that area. So the next step is, "Well the water had deteriorated so much that we have to set up a system, we have to set up a filtration plant."

INT: Get a town well?

CRAIG: Get a town well, filtration, piped water, put all that in and then there's a certain number of people (who) you know justify doing that and so then you get into a scenario that starts to propel the idea of growth. If you're going to put these facilities in, why not design them to expect the fact, and accommodate some new growth, because the new growth is what pays for it. Right? And the Region looks at it and says, "We need some development charges to pay for this."

INT: It will increase the tax base...

CRAIG: Yeah, right. So they increase that and they get some development charges on the way in and then it comes around to the next step in the evolution, "We don't want anymore septic systems in town, we can't grow beyond a certain size on that basis. So we'll have to put in some kind of sewage treatment system." And the whole thing snowballed and that is sort of like the natural evolution that takes place.

INT: They probably saw it happening in other towns close by?

CRAIG: Yeah.

Thus, Craig credits this community with recognizing the long-term implications of a seemingly innocuous residential development project. The residents identified a "natural"

or "normal evolution" that accompanies such developments (e.g. eventually being forced to accept piped water) and how it might "*propel (unwanted) growth*". Craig provides an epilogue to the story which parallels some of the concerns in Caledon. He presumes that threats to small-town, traditional life are not seen by the authorities involved as "concrete criteria" for preventing development projects,

INT: So what happened up there? Did the development go in?

CRAIG: I think so, I didn't see a follow-up to it. I think that probably it's going to go ahead. because of the fact that the municipality was behind it. So these people may force the issue and it may end up going to the Ontario Municipal Board. But it met the criteria of the municipality. They had done sufficient studies okay, to show that technically, there shouldn't be a problem with this. And so, you know, they had all their homework done. And I think that uh, when it goes before somebody who's looking at it and it's got the support of the municipality and it meets all the criteria then unfortunately for them, they wouldn't have anything concrete other than their feeling that it's going to impact their little community.

Thus, a subdivision in certain important respects, can threaten in the same way that a landfill does. The people of Cheltenham, like many in Caledon, want to maintain a small town or rural atmosphere and can readily connect sequences of events which would potentially jeopardize that atmosphere. While the people in Cheltenham focused mainly on the technical issues surrounding septic systems and drinking water, the proposed landfill in Caledon was opposed on several additional issues including health, traffic, noise, and safety, but many of these are symbolic of the more deeply rooted concerns about values and worldviews.

There is a risk of reading too much into a possible connection between values/worldviews and the threat of the landfill. Further corroboration of such a link

comes from member checking process (see section 3.6.2). A document which was mailed to all round one respondents subsequent to their interviews and initial analyses of the transcripts includes statements like the following:

"It was expected that residents would be concerned about things like health, safety, and excessive spending of tax dollars, however, the threats to *values* and the *type of place residents expect their community to be* perhaps better explain the often intense opposition to the landfill and the landfill siting process"(Appendix, G).

Seventeen of the 30 people responded and all 17 confirmed that statements like the above "make sense" with the way they understand the community and landfill siting issue at Caledon.

### 5.3 Cost weighed against benefit

To this point the findings have focused on the negatives or costs of landfill. However, chapter 2 reveals that in technology-dependent societies decisions must be made about siting which often involve weighing the benefits of certain technologies against these potential or certain costs (risks). Zero-risk technology, for all practical purposes, does not exist. Given these broad societal considerations, it is useful to consider how the residents of Caledon talk about the benefits of landfill.

There is no topic in the round one interview checklist which concerns the "benefits" of landfill, so mentions of benefits depend largely on whether or not the residents broached the topic themselves. In Table 4.2 there are only 11 mentions by four different respondents under the theme *who benefits?* (1 2 21 1) which indicates that, in

infrequently talked about issue within the interviews . What is more instructive is the content of the DUTs connected to this theme, since all but one of them concerns the idea that any benefits would not likely be realized by the community.

In the following passage Doug is not only concerned that the community would not benefit, but that those who would, would not be accountable for any mishaps,

DOUG (rural, non-leader): When I went to the meetings they said, "The community is not going to benefit from this", so by rights, the way I would do it, if you are gonna jeopardize the community by putting this miserable dump in there everybody shouldn't have to pay taxes (for it) as long as this thing's open. Why? Cause your water's gonna get contaminated, more trucks on the road, you're jeopardizing your kids, your family for what? So they make money and they, after the hole's filled (say), "See you later". They leave, they wash their hands clean, they leave right.

Doug's use of the phrase "they wash their hands *clean*" refers to the notion that those who run the landfill can walk away at any time while, by implication, the community would be left with a *dirty* site. Nancy suspects local politicians may benefit from the location of C34B to the *disbenefit* of the rest of the community,

NANCY (rural, non-leader): I'm cynical, I don't know politicians owning land, owning area beside the land (site C34B) and I don't know. You look into that and there's a lot.

INT: But do you think it's local politicians? Cause...

NANCY: Uh huh.

INT: I mean aren't local politicians...?

NANCY: Against it?

INT: Yeah.

NANCY: Verbally.

INT: Oh yeah?

NANCY: It brings money in here. There's a lot of money can be brought in here. They don't fight very hard. You just figure the tax dollars and everything coming in, the revenue. Sure.

INT: Yeah, why? I never really thought about that, thought of it in that way. Because they seem to be fighting it.

NANCY: Not very hard.

INT: Yeah? Why do you say that?

NANCY: They're not really backing up anybody, citizens that are trying to you know, create a stink over the dump and whatever. They're not really, they're not backing us, they're just mildly verbal.

Darren and his brother Isaac are the only ones in round one who considered that there were actually benefits from landfill, beyond being a place for community waste. For example, Isaac recognizes the possibility of improved roads along the trucking routes.

ISAAC (rural, non-leader): I know they're not going to (just) dig a hole and put a dump full of garbage. I know they wouldn't do that. And I also think it'd create a lot of industry. The roads will be improved around here.

However, what one resident sees as an improvement another may see as a potential problem. This is acknowledged in an exchange later in the same interview,

ISAAC: They don't want to see the roads improved, they don't want to see more trucks, stuff like that, right.

INT: You know what is it about improving road, I mean, who wouldn't want to improve roads?

ISAAC: Because they could have a 4-lane highway, right, going by in front of their house.

DARREN (rural, non-leader): You drive on this road that we're on now and you say, "I wonder why they don't pave this thing"? But if they said they were going to pave this road half the people (who live on this road) would be in an up-roar because they'd say, "Well, if you pave it there's going to be more traffic, and the cars on it will be going faster", not, "It's going to save the bottom of your car", because you won't have stone chips.

JOAN: And we like to keep our vehicles clean so we'd like it paved (laughs).

DARREN: It would never ever get done.

INT: They'll take the stone chips over the traffic?

DARREN: Yeah, and the dust. But that's just the way it is.

ISAAC: I think that's what it boils down to, people don't like change and they don't want to see the country change.

JOAN: Yeah, but don't you think they have to accept that in here now. It was like that years ago but we're a suburb of the city and I mean, the city has to go somewhere so it's going to come out here.

BROTHER: Well sure.

INT: Do you think that's inevitable?

JOAN: Yeah, I do.

Seemingly simple issues like paving roads can be symbolic of a whole range of issues, which can, in turn be traced back to the proposed landfill. Paving local roads may threaten the quiet, slow-paced atmosphere that many have come to expect in the rural areas. Therefore people seem willing to pay the costs of not paving in terms of minor inconveniences like stone chips on vehicles. Others, like Darren, his mother and brother have more pragmatic views of the area. They see it more as a "suburb of the city" - which is expected to have the attendant benefits like paved roads.

## **round 2 - benefits (1 11)**

In the second round of interviews the 10 residents were asked directly about benefits. It was expected that they would be more apt to acknowledge potential benefits of landfill approximately one year after the NDP/TWA process had been dismantled. That is, C34B was no longer the official preferred site which may have distanced residents somewhat from the issue and vehement opposition was expected to be less likely to motivate responses. Five of the 10 residents felt there were no benefits of having a landfill in their community. Some of these responses were as blunt as Jennifer's,

JENNIFER (town, non-leader): I don't see any benefits;



While those like Steve offered brief explanations for their stance;

**STEVE:** What's it going to employ 20 people? Nothing. I can't see it, unless I'm missing something here.

Those who did mention any benefit did so reluctantly and usually qualified their statements by explaining or inferring that the potential harm far outweighed the potential benefits.

Veronica, who actually wants her community to grow, expresses this latter idea,

**VERONICA (town, non-leader):** The look of this community. It would have changed what this community is. It probably would have made it bigger. It probably would have created a lot more traffic. You know this is an agricultural community to some extent so, it'll change the look of what this is. It will change the community.

**INT:** And what do you think of that change? How do you feel about those types of changes?

**VERONICA:** Well, I think the benefits...To change a community by bringing in a landfill site is a little drastic. It's a lot to pay for what you get out of it. I don't necessarily mind that Bolton gets bigger, I'm not one of those that wants to keep it small. I realize that things change.

Colin agrees with Veronica's sentiments about a landfill being a "little drastic" as an engine of "economic growth",

**COLIN (town, non-leader):** You don't bring a dump to your community to increase economic growth. That should be done through other political channels. Although that would be the end result most likely of the dump. It's not necessarily the best way to go about it. I think therefore the problems with the dump far outweigh the benefits that would be gained. So I don't think that it's a fair tradeoff.

Giselle provides one of the most detailed views on costs against benefits. In the following exchange she indicates a disproportion in the burden of proof when it comes to demonstrating benefits as opposed to harms,

INT: So was it a matter of weighing costs and benefits for C34B?

GISELLE (rural, leader): No because the benefits seemed so minuscule, and are very difficult to see. So it all really just appeared to be costs, a risk.

INT: But to be fair some of the negatives were maybe difficult to see as well.

GISELLE: Exactly, there's no doubt about that. But (you) protect yourself from something even if you just perceive it's a risk. And if a benefit is going to be proven, then you (must) be able to give me, to tour me 10 landfill sites so that I see real benefit. And all we could see was maybe a W5 video of the one in Michigan where it was a ski hill and it had million dollar homes around it. But that community had gone into it with the whole intention that, "We are going to rake it in, we want to make income from it".

INT: How many sites would you have to tour to be convinced that there would be negative things?

GISELLE: Just sort of one to three. It wouldn't take too many. And I'd say that's one too many.

Thus, Giselle seems to suspend belief when it comes to benefits and is seems more readily convinced of costs (harms) from landfill. Chapter two indicates that this is to be expected under *prospect theory* where losses are felt stronger than gains, and this runs counter to traditional views of rationality which hold that losses and gains should be treated equally - that is, in terms of the burden of proof for establishing impacts.

It is interesting to note that the experts did not talk much about benefits either. This is partially due to the fact that they were not asked to do so. There are two pieces of evidence to support this: no code concerning benefits emerged under the *IWA* or *Expert* main branches of the NUDoIST index tree, and a text search in the NUDoIST interview database turned up no finds for the word "benefit" (or its derivatives - e.g. benefit[s]ed) in the expert interviews. There are two possible reasons for no talk of benefits by the experts. First, experts stated a number of times that their mandate was to find the most appropriate site *not* communicate about risk, which would presumably involve mention of

benefits. Second, these experts likely did not want to make an already volatile community more incensed by mentioning any benefits of landfill when the main focus for residents seemed to be the negatives of landfill - a prudent risk communication caveat (Lundgren, 1994).

#### 5.4 Uncertainty

The way people view the costs and benefits, and the landfill issue in general, is shaped largely by the uncertainties surrounding landfill risks. While there are several types of uncertainty (e.g., economic, social) associated with the site residents (through interview probes in some cases) tended to focus on scientific uncertainties in predicting the potential for contamination. For example, there were 19 mentions from 15 different people of *the unknown* (1 2 14) when people were asked to talk about their concerns about the landfill in round one. Craig relates how his neighbours seem to view contamination at an "emotional level", and implies that to some extent he shares this opinion (e.g., the switch from "they" to "we" by the last sentence),

CRAIG (town, non-leader): Water and air quality and everything else is very much a motherhood issue and you know, people relate to it on an emotional level more than on a, technical, logical level, which is the way that they present it in studies. And so that brings it to the forefront for (residents), they have this feeling that eventually they're going to turn on their tap and who knows what's going to be running through it. Or there may be a situation where they don't detect it for a period of time, it's almost an unknown, until you have the ability to measure whatever it might be that's (going) into the water. And then it's too late, we've all been drinking it for five years.

Craig highlights that there are differences in the way technical experts and residents view risks. The former address risk on a "technical, logical level" while for the latter emotional issues are also involved, ones which are very deeply felt, as implied in the use of the term "motherhood". Those like Vickey are frustrated by the answers they get when they ask technical questions and are rather demanding of scientists. In this passage she explains how, when it comes to landfills like C34B, she fears the "unknown",

VICKEY (site, non-leader): I guess just fear of the unknown, you know, you don't know what, exactly what that can cause and... and what comes out of that. Still not enough done on that, I don't think.

INT: On what?

VICKEY: In terms of pollution and risk, how it affects the water, maybe it's just my ignorance, I don't know.

INT: There's not enough done meaning...?

VICKEY: They just don't... they can't prove exactly what's going to happen. Like how much of an effect that would have on the water or on the vegetables, that kind of thing. It's kind of just melts around that, no one really gives you an exact answer.

### **imminence of effects (1 2 15)**

To contrast this concern about unknowns there are others who are actually quite certain that particular impacts would be felt. This is corroborated by 15 different respondents who talk about the *immanence of effects* in relation to the proposed landfill on 19 different occasions. For example, Colin talks about how unconvinced he is of the longevity of the liner that was proposed to contain contaminants,

INT: But they said they're going to put (in) a liner.

COLIN (town, non-leader): Yeah, but that's not going to effect a damn thing.

INT: Why not?

COLIN: Because (laughs) it's such a feeble... it just bothers me things like that. It's just so stupid. It's just like, "What are you thinking?", because it's not going to work. You're talking about a liner underneath a huge mass of garbage and something's going to break the liner and it's going to seep down. The way that nature works is that it's not held back just because you put down a liner. Just because you put down concrete or whatever doesn't mean it's not porous. And just because you build on clay doesn't mean that after 20 years the stuff isn't going to eventually get down.

While Colin explains his position in terms of "the way nature works", others like Jackline and Adele are less specific, almost to the point of stubbornness,

JACKLINE (town, non-leader): It rips, tears the liner itself breaks down over the years. It's just a logical conclusion that it wouldn't be fool proof.

INT: But what if the experts say they can develop a fool proof system of keeping it contained?

JACKLINE: I wouldn't believe them.

INT: Why not?

JACKLINE: Because it's... it's garbage.

Jackline does not explain her position beyond this passage, but this corroborates some of the *images of landfill*, earlier in this chapter, as being particularly despised. That is, in this case "garbage" is imbued with great power, capable of bypassing any engineering efforts to contain it. Adele agrees, but does not elaborate,

ADELE (site, non-leader): No matter how much protection you put I don't think it's enough.

Since many of the respondents seemed to be rather certain that various impacts would be felt, though few elaborated their position, round two was used to ask residents explicitly to explain their certainty. The following three passages relate at least three reasons (coded under *certainty of impacts* - 1 2 15) why some are convinced that negative

impacts will happen. First, Colin is "positive" that harms will come by the fact that other "dumps" have failed in the past,

INT: How certain are you that those things might happen? The bad things.

COLIN (town, non-leader): If the landfill was put in? Positive.

INT: Positive? Why?

COLIN: The bad things, there's no doubt because it's happened in the past with other dumps. That's why we know about it now. And also the fact that it's just sort of common sense, you put enough garbage in one area and you're going to have problems.

Like Giselle, (see above), Colin seems to most certain about negative impacts coming to fruition, as demonstrated in the phrase "The bad things, there's **no doubt**...". Jennifer, however, centres on the fallibility of science itself by claiming that "there is always room for error" in research on impacts from leachate,

JENNIFER (town, non-leader): Well particularly for the dump they were going to put up here I'm concerned about the leachate or whatever that would contaminate our groundwater because our community (relies) more on groundwater, not water from the lake, (but from the) Oak Ridges Moraine or whatever. If anything got contaminated then the whole community would suffer from that.

INT: How certain are you that that type of thing might happen?

JENNIFER: Well I would think that nothing is 100% foolproof no matter how much research there's always room for error. If someone didn't calculate... and you can't check like every single bag of what's going in there. Like people have a list of what you should be putting in garbage and what you shouldn't and I'm sure people still throw out cans of paint or other noxious things that shouldn't be going in there and I imagine that that could easily leach into the groundwater.

While experts would accept that there are errors in the calculation of impacts, these residents seem particularly sensitive to such a notion. Similarly, Steve talks about the lack of government certainty, so he relies on his own knowledge of groundwater "filtration" to help form an opinion,

**INT:** You were talking about contamination of water. How certain are you that water contamination might happen in a landfill?

**STEVE:** Geez, the government doesn't know how certain it is. And, they're professionals and we're just everyday people. I just know that if you take, you get rain, and it filters, that's what cleans water right, is the ground. The filtration system, (works) naturally and all of a sudden it's going through some oil and garbage and crap or whatever, wherever that water runs off or whatever it will pick up.

It is useful to put Steve's comments in the context of the IWA's position on revealing uncertainties. In the following excerpt Roger explains the IWA policy on "scientific uncertainty" and the implication of such an approach,

**INT:** What I'm getting at is that in a lot of this there are some uncertainties involved, even in the science. I'm wondering how you resolve that when you talk with the community?

**ROGER (IWA proponent-expert):** You're better off by admitting (it). I think that there is always going to be some uncertainty in the science because then they know that you are being truthful and then there's that credibility that you develop with them. If you say, "Yeah 4 (drill) holes and that's it", then they're going to say that you're telling a little "corky" there (laughter). Yeah, it helps in a strange sort of way. But at the same time they can use it against you, I mean the hydrogeologist will never say the landfill site will never leak, the hydrogeologist will (never) say, "Yes it's going to leak". They are only being truthful because in the end a hydrogeologist will find that statement repeated to them over and over and over again.

Thus, admitting uncertainty does leaves room for controversy, but this seems to be the lesser of two evils - the second being the potential for incorrect assessments/predictions about the impacts of landfill.

Since there are those in the community who seem to want some guarantees about the safety of a landfill, round two participants were also asked the types of guarantees that

might satisfy them. Thus, they were asked to describe a *risk-free landfill* (1 10). Roselyn talks about the principles which should guide the choice of a risk-free landfill,

INT: How would you describe a risk free landfill?

ROSELYN (town, non-leader): Free of any toxins I guess.

INT: Okay, anything else?

ROSELYN: So that it stays kept, nothing can harm the environment or us or the ground.

Roselyn wants the waste "free of toxins" and to stay "kept", the implication being that nothing escapes, particularly toxins. Ironically there is a striking similarity between Roselyn's sentiments and the official mandate of the IWA to find the most "environmentally .." site (ref. IWA docs). People like Jennifer demonstrate that there may be a mismatch between what people expect for landfill safety and what is economically feasible,

JENNIFER (town, non-leader): Something in concrete and lead, something self-contained you know like they make some kind of big reservoir or something that nothing could permeate through, I don't know if there is such a thing. Sure technology could come up with a certain kind of barriers that if it comes through one that there's another emergency type thing, I don't know.

INT: Do you think that maybe it's possible?

JENNIFER: I'm sure they could do something, but I mean but it would probably be such enormous expense that I think another method would be much more reasonable, if things were incinerated or something like that.

There are those like Veronica who feel that such a landfill does not exist - that is precisely why they oppose C34B and prefer other methods like incineration,

VERONICA (town, non-leader): Completely risk-free? I don't think it exists. Probably one of those incinerating types would probably be more risk-free.



Views on incineration versus landfill are discussed in the next chapter, which shows considerable support for the former. Others prefer *an out of sight out of mind approach*,

COLIN (town, non-leader): A risk-free landfill? I guess it depends what you think a landfill is. If you use, like what they were considering as a mine-shaft. If you did that, garbage goes two miles down into the ground. It's not going to hurt anything or anyone down there, nor is it going to have the smell, you don't have to worry about anything. I think that's pretty much risk-free. If you're talking about a conventional dump, I'd say you'd have to take serious precautions in the construction.

The sense of sight and aesthetic appearance also emerged as prominent issues in the images of landfill generally. Giselle has a more pragmatic philosophy about waste disposal which parallels that of the experts. She talks about efforts that would "minimizing risk" rather than eliminate it altogether, and proposals that may have fewer financially constraints than the ones mentioned by Jennifer,

INT: How would you describe a risk-free landfill?

GISELLE (rural, leader): I don't think there is such a thing as a risk-free landfill. I think there are landfills that minimize risks. So those would be landfills that would burn off the methane, collect the leachate, have large boundaries around them that aren't being filled. So we have the classic example of the one that's being proposed by the ministry that has a 500 meter zone around the landfill where you don't have houses.

Thus, residents reinforce the negative sentiments about landfill, but also describe some views that may contradict a position which demands certainty - that is, *safety guarantees* in the form of either prevention or remediation. When pressed, most recognize that guarantees are unlikely, but at the same time alternative approaches emerge as more preferable than landfill (e.g. incineration). The perceived risks of the landfill must be put

in such a context and this is elaborated in the next section on equity and fairness which includes more detailed views on alternatives to landfilling waste.

## 5.5 Summary

There is much that lies beneath expressed concerns about the landfill at Caledon. Impacts were felt in the community in the form of emotional shock in the wake of the announcement short list of sites and the preferred site. For many these seemed illogical/inappropriate and hence unexpected choices. Other impacts include worry about future impacts after the site became operational as well as direct impacts of the siting process. The latter involves a questioning of traditional notions of community whereby community divisions became highlighted. For some, unquestioned trust in neighbours was cast in doubt as ethics became an issue in the tensions over strategies to fight the landfill. The landfill and siting process seemed to threaten ways of life rooted in particular values and worldviews/expectations (which together comprise *core values*) about living Caledon. While residents expressed concern about tangibles like health, smells, traffic and property values there are also concerned about intangible core values which support the traditional, rural agrarian, family oriented lives which many built for themselves in the community. These social-value issues were viewed to be of low importance in the siting process.

The latter partially explains why residents readily discussed the costs of landfill, but found it more difficult to see any benefits from such an undertaking in Caledon, even when prompted to do so by the researcher. These issues are also influenced by a high degree

of uncertainty surrounding the impacts of landfill. Some residents are fearful of landfill precisely because impacts are uncertain and unknown. These fears seem somewhat immune to reassurances by experts who are also viewed to be fallible and uncertain. The landfill siting process highlights for residents what technical/scientific experts accept as part of their work - that there is *always* some uncertainty in estimations of risks from hazards. This appears to unnerve some residents, but lack of faith in expert assessments of risk may also be influenced by the context of siting which is addressed in the next chapter.

## **Chapter 6: Contextual Influences on the Construction of Risk**

One of the central arguments within chapter five, and this thesis generally, is that the landfill and siting process threatened residents' ways of life which are deeply rooted in core values. This chapter discusses how the siting process and community opposition contributed to these threats. A thread which runs through the first section is the ways the IWA experts as opposed to the residents viewed key issues like equity, community participation in the siting process, and uncertainty. This includes a discussion of the function of trust in the relationship between residents and experts. Community opposition is addressed as a related issue since so many in the community seemed to be involved directly in opposition. While impacts of opposition have already been touched on briefly in chapter five, they are revisited here in more detail since the context of opposition was particularly important for both impacts and the construction of risk.

### **6.1 Equity/Fairness**

The level of uncertainty was not the only thing which influenced concern in the community. Uncertainty was also connected to the fairness of the siting process, which

was the foundation of many landfill-related issues in the community. This section describes how the IWA process was at the heart of opposition efforts since, in the eyes of many in the community, it did not involve enough choices.

**Table 6.1: IWA-Experts Impressions of Their Mandate**

<b>Theme\topic</b>	<b>Number of Mentions</b>	<b>Number of Residents (% of the 4)</b>
convince the board	6	4 (100)
equity	4	4 (100)
protect the environment	2	2 (50)
<b>maximums for entire data set</b>	<b>10</b>	<b>4 (100)</b>

\* see bottom of Table 4.1 for description of how to read tables

Chapter three outlines the siting process and shows that the IWA had a mandate which was restricted by provincial legislation to include only potential landfill sites within Peel's regional borders. Table 6.1 shows the things the IWA-experts talked about when asked about their role in this legislated siting process. As might be predicted from chapter 3, the main themes have to do with *convincing the joint board* (5 1 2)(6 mentions/experts) of the viability of the site, *protecting the environment* (5 1 3)(2 mentions/experts) in terms of the finding the site with the fewest (potential) negative impacts, and *equity* (5 1 1)(4 mentions/experts) in terms of disposing of the garbage locally. The first two are important context for a more lengthy discussion of the third.

**convince the board**

The context of expert involvement in choosing a landfill site for Peel is unique in the sense that the Interim Waste Authority had a mandate which, in many ways, had little to do with abating residents' potential concerns about landfills. The effect of this is seen in the Jacques' succinct statement,

JACQUES (IWA proponent-expert): Well, if you say to yourself that the end product of the process in the Province of Ontario is to get it before a board and get a(n) (affirmative) decision out of the board. That's what you do.

By implication, however, this means that risk communication was *not* a priority for the IWA. That is, the IWA proponent experts viewed their role to involve convincing the environmental assessment board *not* the community of the safety of landfill or C34B specifically. While this may seem a subtle difference, for some residents this implied that the community was not as important/legitimate as the board.

**protect the environment**

The guiding principle of the environmental assessment process in Ontario is to choose an alternative which poses the least net environmental effects across a series of predetermined criteria. Sean reveals the important role that process plays in this decision making:

SEAN (IWA proponent-expert): And that's the process we've chosen. Comprehensive, systematic and as open as reasonably as we can given the resources. And because at the end of the day the objective is to find a landfill. If the objective was to do it without upsetting anybody, we would design a whole different process. If the objective was to do it cheaply, we

would do it some other way. And so what you try to do is balance it and again, you have to remember why we're doing it. Why are we doing it? What's best for the environment.

This parallels the provincial Environmental Assessment Act (EAA)<sup>20</sup> for waste disposal the requirements of which also focus on protecting the environment by considering a range of alternatives (IWA, August 1991: 2-3,4):

- a) a description of the purpose of the undertaking
- b) a description of and a statement of the rationale for
  - i) the undertaking,
  - ii) the **alternative methods** of carrying out the undertaking, and
  - iii) the **alternatives to** the undertaking,
- c) a description of,
  - i) the **environment that will be affected** or that might reasonably be expected to be affected, directly or indirectly,
  - ii) the effects that will be caused or that might reasonably be expected to be caused to the environment, and
  - iii) the actions necessary or that may reasonably be expected to be necessary to **prevent, change, mitigate or remedy the effects** upon or the effects that might reasonably be expected upon the environment,
 by the undertaking, the alternative methods of carrying out the undertaking and the alternatives to the undertaking; and
- d) an evaluation of the advantages and disadvantages to the environment of the undertaking, the alternative methods of carrying out the undertaking and the alternatives to the undertaking.

Within these requirements *alternatives to* was restricted to two options waste diversion (the so-called 3Rs - reduce, reuse, and recycle) and landfill, while the *alternative methods* referred to the inclusion of alternative landfill sites and alternative landfill designs. Thus, finding a site for *landfill* within Peel was the only option. While the EA legislation did

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<sup>20</sup> The act was amended in January 1997 by the Progressive Conservative government under Premier Mike Harris.

restrict options for waste disposal it remains progressive in its use of a broad definition of the environment,

The planning process must consider not only effects on the natural or biophysical environment but also effects on "the social, economic and cultural conditions that influence the life of man or a community" and their interrelationships. (IWA, August 1991: 2-5).

This definition includes more than just the natural/physical environment a switch from past versions of the legislation. Many of the people interviewed, however, were neither swayed by inclusiveness of the definition of the environment nor the intent of legislation in general. In effect, the selection of an apparently comprehensive and systematic siting process, designed to minimize net effects to the environment, to the exclusion of any review of alternative methods of disposing of the waste, led to substantial conflict between the experts and the residents.

### equity

The main equity issue for the majority of the group of residents interviewed was a failure to consider "alternatives" in general. In terms of the legislation residents implicitly referred mainly to *alternatives to a landfill* for disposing of waste, and to a lesser degree to *alternative methods* of landfilling. Table 6.2 lists the most frequently mentioned alternatives to landfill. Perhaps most noteworthy is that these were not prompted by any explicit probes on the part of the researcher (alternatives was not a topic on the interview checklist). That is, these issues were raised mainly by the respondents. The number of



mentions contained within this table, and especially for the top three alternatives (*remote areas* {1 5 8 & 1 5 8 1} - n= 53, *incineration* {1 5 1} - n = 43, and *3Rs* {1 5 4} - n = 42), shows that these are among the most talked about topics in the interviews. Why these particular alternatives are preferred will be discussed below, nevertheless Janice summarizes one of the main sentiments concerning the definitions of alternatives in the legislation,

JANICE (rural, leader): Well to me that really tells me (is) that this is not a true environmental assessment where you look at all the alternatives and choose the best. All we're (the province) doing is jamming this one alternative through and the process is becoming so costly they can't even afford to retrench now.

**Table 6.2: Why Experts not Trusted: Alternatives to IWA Process**

<b>*Theme\topic</b>	<b>Number of Mentions</b>	<b>Number of Residents (% of the 30)</b>
remote areas (particularly Kirkland Lake)	53	28 (93)
incineration	43	26 (87)
3Rs	42	23 (77)
alternatives (unclassified)	15	9 (30)
rail haul (mainly to USA)	10	10 (33)
Brampton's turn (regional agreement)	10	8 (27)
voluntary siting	9	9 (30)
let the Region (not Province) decide	9	8 (27)
NIMBY ("anywhere but here")	7	6 (20)
local (municipal) dump only	4	3 (10)
future technological advances	4	4 (13)
user fees	3	3 (10)
<b>maximums for community data set</b>	<b>55</b>	<b>28 (93)</b>

\* see bottom of Table 4.1 for a description of how to read tables

#### **remote areas**

Some, in principle, seemed to agree that landfill is an appropriate means of disposing of waste, but that these should only be located in remote areas. However, in the

following exchange Doug works through the possibility of having a landfill in Kirkland Lake, a mining town in economic crisis looking for ways of stimulating their economy,

DOUG (rural, non-leader): Why wouldn't they take it to Kirkfield, they have an open-pit mine there, right, that's where they wanted to take it. Er, er not Kirkfield...

INT: Kirk, Kirkland..

DOUG: Kirkland Lake, you know they have an open-pit mine there probably hundreds of miles, I don't know how big it is, but it's probably huge, and will probably never seep out of there. And it will create jobs for those people, but again you're just making a big pool of shit. You're not...

INT: Just moving it north (laughing).

DOUG: You're just moving it north, you're not defeating the purpose. You want to try to get rid of it in the most friendly environmentalist way so you don't (mess) the environment up, right?

His concern that even if waste is deposited in a mine, "again you're just making a big pool of shit" demonstrates that he is not entirely convinced that landfill is the most viable option. Similarly, Anthony, Darren, Philip, and Vickey show how complex can be considerations of equity. For example, when asked directly about the issue of keeping waste within the region Anthony responded as follows,

INT: There are those that say Peel should look after its own regional garbage rather than sending it up somewhere like Kirkland Lake. What do you think of that point of view?

ANTHONY (town, non-leader): Well, you're going to get an argument from Kirkland Lake or wherever it's going to go. And you might create jobs up there. It's a small town, it might create jobs up there because they lost the mines and everything. So we might be helping them out.

Thus, Anthony seems to see the Kirkland Lake proposal as an altruistic alternative in the sense that the "*creation of jobs may help them out*". This sentiment is echoed in what Darren says,

**DARREN (rural, non-leader):** Maybe it would be good for business up in Kirkland Lake, I don't know. Just filling in an old mine or something like that from what I understand.

Contradictions emerge here whereby putting a landfill in Caledon is seen as a highly complex threat to the water supply (see above), but the Kirkland Lake proposal is viewed in more basic terms as "just filling a mine". Philip raises a similar contradiction. He considers the jobs associated with a landfill operation as a benefit to Kirkland Lake but not to Caledon,

**PHILIP (site, non-leader):** There would be jobs. The coffers would be full too.  
**INT:** I mean it would create jobs here too. Do you think that this is something that...?

**PHILIP:** I don't think it would create jobs here. For the simple fact that... maybe for the few people that would be working there which I don't know whether... I don't know how it works or who would be the person that... I'm assuming that it would be the township, the community that takes care of the dump. I don't know how that works...

Similarly Vickey talks about who assumes the costs (risks) of a landfill,

**VICKEY (site, non-leader):** Well, I just think it's an unnecessary risk to take. I just see it that way especially when we get into like the, what's it called, Kirkland Lake issue. When we have someone who is willing to take the garbage. Basically as far as I can see it as a money issue then it's kind of a shame that we're putting these people in risk, you know, in this environment here when we could just basically be giving it to someone who wants it so.

Contained in all these statements is a hint of the not-in-my-back-yard (NIMBY) phenomenon such that keeping the risk out of Caledon seems paramount, despite the fact that others, somewhere, will be put at risk - whether they want to accept that risk not.

**incineration**

Not all of the residents' proposals for alternatives seem as linked to the NIMBY syndrome as the notion of sending the waste to a remote landfill. Incineration is one example.

Incineration is the most popular non-landfill alternative among the participants in this study. In the vernacular of the EA legislation incineration was considered an *alternative to* landfill which, as mentioned above, had been ruled out up front by the government.

Like some of the passages concerning *remote areas* there are those who seem to prefer incineration simply because it is hoped to move the site away from Caledon,

INT: Does the landfill bother you more than an incinerator or...

ROSEMARY (site, non-leader): Oh, yeah because they wouldn't be putting an incinerator up here so I won't get the traffic. It was those trucks really that was bothering me, that traffic every morning. It was really going to get me to go up there.

INT: You're certain if they did put in an incinerator it probably wouldn't be...?

ROSEMARY: It wouldn't be out here.

INT: Why not?

ROSEMARY: It better not be.

Like other residents' presumptions about the inappropriateness of site C34B prior to it being announced as the preferred site, Rosemary seems to be setting herself up for potential future emotional shocks by failing to consider the possibility that alternative methods of disposal may also be considered for location in her community. Other opinions seem to be formed more on general impressions of the incineration process itself.

Such is the case with Philip who sees incineration as a "cleaner" option than landfill,

PHILIP (site, non-leader): I like the idea of incineration. From what I've heard new incinerators are like 89, 90 percent clear... clean.

Cheryl offers other reasons why incineration seems like a good idea,

CHERYL (rural, non-leader): Well I don't see anything wrong with burning it because it becomes ashes and, and nothing.

INT: Why do you like that better than a landfill?

CHERYL: You just don't want to see the garbage you know what I mean? I mean like you don't...I don't know. You just, you gotta get rid of it somehow where you don't have it lying around you know what I mean? Whatever solution they come up with as long as it doesn't have anything to do with, you know, having a landfill site and actually seeing piles and piles and piles of garbage you know what I mean?

Jennifer, Veronica and Matt share Cheryl's views,

INT: I mean, you've got a choice between a landfill and an incinerator, it's not much choice is it?

JENNIFER (town, non-leader): No it's not but I think overall an incinerator would be better you know.

INT: Why, why is that? Is it something at just a gut level or that seems more reasonable?

JENNIFER: I don't know it just sounds better, get it in there get it out, eliminate it.

INT: Is there something about incineration that is more preferable than landfills?

VERONICA: Yeah, it's out of sight.

MATT (town, non-leader): It's out of sight.

VERONICA: Maybe it sounds better, "burn it", you know, it just sounds more logical. Get rid of it.

MATT: Burn it, it's out of there.

These people find burning appealing because it is presumed to "get rid of" or "eliminate" the waste which to those like Veronica simply "sounds better". These comments are consistent with the sensory imagery of landfill described earlier in this chapter. That is, preventing the waste from offending the human senses in any way (in Cheryl's case the focus is on visuals) appears to be important. Giselle is more cautious about problems

associated with the bi-products of incineration, or as Cheryl refers to them the "ashes and nothing",

INT: Are people a lot more confident with incineration?

GISELLE (rural, leader): Well, for example incineration is a big controversy, but here in Peel though we live with incineration in that we have the newest incinerator in Canada. And my belief is that at least I know what I'm fighting. I mean there's monitors that tell me what the emissions are and I know that I get point zero, zero, zero two points of this, and it's within the specifically monitored. But there's a lot of controversy about that because some people believe that they should be subjected to zero risk. (If) you're gonna build something beside me subject me to zero risk. And there is like a very small risk being beside an incinerator, so people don't want any of that imposed on them. My attitude, "Well we're not going to stop building cars tomorrow". Like life is a risk, simply to live life. So I accept incineration as a risk.

Despite the fact that Giselle is willing to acknowledge that, as with landfill, there are risks from incineration, she is more willing to accept the risks from the latter. When asked to explain her position she challenges the status quo of using landfill and cites the need for more scientific research,

INT: Do you think that there are fewer unknowns involved with incineration, versus like what might come out of a landfill

GISELLE (rural, leader): I believe that. There aren't enough studies that directly compare incineration with landfill. Landfill just seems to be one of these things which historically we've always done it.

Giselle also confronts the nature of scientific uncertainty in the following exchange which shows she is also cautious about the results of any studies which compare landfill to incineration,

INT: So how do you think that's going to be determined? Do you have confidence in these studies?

GISELLE (rural, leader): No. Because just like any kind of study it can be manipulated and it's not until you have a great deal of, like a wealth of research,

that you're able to look at which ones are well done and compare them to other well done studies.

Giselle's concern about research is echoed in the following excerpt in which Mark cautions that incineration does not have "100%" support in the community,

**MARK (rural, leader):** I don't think that any of the groups are going to say they 100% support incineration that we should solve all of the Region's waste problems with incineration, but it should be considered.

Mark was more concerned that incineration be "considered" as one alternative in the process than he was with it being the only solution to the waste problem. Roberta actually finds little difference between landfill and incineration, especially at C34B, since both involve "hauling garbage" through the community,

**INT:** Would you feel better having an incinerator than a landfill?

**ROBERTA (town, non-leader):** Incinerators, wouldn't that be the same though? You'd still have to haul the garbage up to the incinerator.

**INT:** Presumably, yeah.

**ROBERTA:** So I wouldn't want it around my neighbourhood, no. Like I mean I wouldn't care if it was in the Region somewhere far away from homes, not this close, not this close to, you know, suburbs and people and schools.

### **voluntary siting (1 5 10)**

Some preferred to consider entirely different approaches to siting landfills, including voluntary siting. Voluntary siting is a process whereby communities actually compete against each other for a site, in return for sizeable remunerations often in the form of tax breaks. Community eligibility for such a competition is usually decided through a plebiscite - a community-wide vote. Giselle describes why she thinks this is a reasonable way to site landfills and why Caledon would not enter such a competition, an

opinion that seemed to be shared by at least 25 other participants in the study (see Table 6.2),

**GISELLE (rural, leader):** I have no qualms about shipping it to communities that want it, so they are utilizing it as a resource, whether it's garbage or whether it's ash residue. Because the only qualm I have is that I don't want to fear that you know somebody's made a deal with their government and the government's getting a dollar kickback off of the tonnage and the community's really not - there's not a real agreement made with the community - there's just an agreement made with a government body in the area. And I think we see some classic examples of that even right now - WMI (Waste Management Incorporated?) and their agreement with the village in Ohio. I mean that village is quite outraged.

**INT:** Do you think that there are communities that are accepting? I mean obviously Caledon, Bolton probably isn't one of these communities...?

**GISELLE:** No we said, "No".

**INT:** Do you think there are communities?

**GISELLE:** Like usually they are a community that's very down on their luck and need a resource like Kirkland Lake. A community I think needs the option. A willing host will benefit with employment or with increased economic activity. You must create a benefit in order to balance out the risk to a community. And that doesn't follow the IWA process at all. There is no benefit to this community by participating in the IWA process at all. For example, the IWA spent \$80 million, I would have just put out ads in the papers and said we are looking for communities in these three areas and we are willing to pay \$5 million. Line up, forms here. I bet you would have got applications from communities. That would have been what we call willing hosts. This is a whole new type of process. And I'm not saying that you're buying those communities but you're identifying the fact that there is an element of risk and the community has to look at what element of risk they are willing to take on. But when you come in and people learn, they're obviously going to learn about the risk, and the risk just grows exponentially, it's being forced on you.

**INT:** As far as the willing communities go, who puts the rubber stamp on it in the community - is it the whole community?

**GISELLE:** No, it isn't. It's a majority.

**INT:** Ultimately somebody has to have it in their backyard.

**GISELLE:** But there are communities, we see examples of them in the States where they build ski hills out of them and resorts and big homes around the bottom. They have decided they want them and it's a benefit to those communities and it's sold that way.



In this exchange the interviewer takes on the role of the IWA's advocate by providing counter arguments to some of her claims - arguments that come directly from the IWA documentation on equity. Giselle concedes not only that voluntary siting is new, but that it is flawed when she mentions the "outraged" village in Ohio. Thus, she confronts the issue of how communities that are "down on their luck" have to expose themselves to uncertain risk in order to turn their local economies around. This raises questions about how "willing" are willing hosts.

It is useful to place these views in the context of the IWA's position on equity. It is important to remember that the views expressed by experts in the IWA is constrained by the Environmental Assessment legislation. The main example is that the IWA was not allowed to consider shipping the garbage outside the region or to consider incineration. However, the EA legislation does allow considerable leeway for defining criteria for site selection. Equity was not such a criterion and this irked some residents. The IWA (1991) viewed equity in the following manner,

Whether any community, group or individual is being asked to bear more than "a fair share" of the negative effects (of siting or facility development) (6-1).

Some in the community asked that such a principle be translated into a criterion for site selection such that it might be considered on the same level as such issues as hydrogeology, economic and agricultural impacts. However, the IWA (1991) was concerned that,

This implies that some communities have a more legitimate claim to equity than others and, further, that their claim can be determined in advance of the detailed site assessment studies (6-1).

The Draft Approach and Criteria document is unclear why the IWA felt residents wanted equity claims to be determined in "advance" instead of collecting equity information as they would for all other criteria. Further, this seems to run contrary to a subsequent statement in the same document which indicates that the IWA *was* collecting equity information anyway,

The IWA believes that it would be fair to view all equity concerns as legitimate and to make every effort to understand people's concerns in this regard so that they can be addressed.

It is useful to sort out these statements in what the IWA-experts actually said about this issue. Karen shows that there was some disagreement between experts and residents regarding what counts as equity:

KAREN (IWA proponent-expert): In Peel you will hear that equity, equity, equity which was a very big topic and a lot of people brought it up. Vaughan (another community facing an IWA site) would bring out equity, "we already have one landfill". The truth is there are already so many buried landfill sites all over the place, everybody's got a landfill site.

While Karen's view of equity is clear - the disposal of waste in the region of origin, residents' views sometimes differed. The IWA focused on *inter*-regional equity - keeping the garbage in Peel where it is created - while many residents appeared to be more concerned with *intra*-regional equity - that each municipality takes its turn with a regional landfill and; process equity - inclusion of alternatives to landfill for consideration.

**equity/fairness round 2 (no separate code)**

In order to explore the *alternatives* theme further it was included as a probe in the second round of resident interviews (see Appendix E). This was used as a partial test of the notion that the issue of alternatives is largely an *equity/fairness* issue for residents. That is, it was expected that the residents would (re-)raise the issue of alternatives when asked directly about equity/fairness.

Table 6.3 summarizes the round two responses to probes concerning "fair waste disposal for Peel". The similarity of this table to table 6.2 is striking, with overlap on all themes and a similar ranking based on mentions including *incineration* and shipping to *remote areas*, and the *3Rs* in the top three positions. This reinforces that this group wants the waste to remain out of sight and they seems to equate equity/fairness with the consideration of a wide range of "alternatives to" and "alternative methods". It also supports the notion that these residents' views have changed little over the year since the NDP/TWA process was halted a year previous to these second interviews. The following quotations expand some of the sentiments expressed in the first set of interviews, but this time in the explicit context of *equity/fairness*.

**Brampton's turn**

According to some of the residents like Colin there was a local agreement struck between the three municipalities which make up Peel (Brampton, Caledon and Mississauga) to share the responsibilities for waste. That is, since Mississauga contains

**Table 6.3: Residents' Views on Equitable/Fair Landfill Siting (Round 2)**

<b>*Theme\topic</b>	<b>Number of Mentions</b>	<b>Number of Residents (% of the 10)</b>
incineration	14	7 (70)
remote areas (particularly Kirkland Lake)	11	8 (80)
3Rs	11	6 (60)
let the Region (not Province) decide	4	4 (40)
rail haul (mainly to USA)	4	4 (40)
Brampton's turn (regional agreement)	4	3 (30)
voluntary siting	3	3 (30)
user fees	3	3 (30)
<b>maximums for community data set</b>	<b>55</b>	<b>28 (93)</b>

\* see bottom of Table 4.1 for a description of how to read tables

the current site and before that Caledon had a waste site it was understood (among the regional councillors) that it was Brampton's turn. People like Colin feel it makes sense to honour this pact. While Colin does not recall the details of the agreement, he explains why it is still appealing:

INT: Based on the idea of fairness what should be done?

COLIN (town, non-leader): I know there was another region that deserved, it was their time for the dump. I don't remember which one that it was.

INT: An area within Peel?

COLIN: Yeah that was supposed to have, it was their turn for a dump because Caledon already had something, another community already had something. And this other area, it was their turn for the dump and they were supposed to have the dump. I think that they were also asking for the dump. That was my understanding, they wanted the dump because they knew it was going to bring in a lot of economic benefits. And therefore the most viable option would be to give the dump to them, pass the dump to them.

By most accounts Brampton did not actually "want" the landfill, rather they were expected to take it. For example, Giselle relates how there are those in Mississauga who anxiously

await the covering-over of their Britannia Road landfill. In the following excerpt she talks about recent home-buyers located within a few hundred feet of this site:

**GISELLE (rural, leader):** The people that live in those houses, who moved in the last two to three years - there's two or three good spokespersons in that group that seem to be quite adamant that, "No, no, no, no, when we moved in here and it was going to be turned into a golf course over the course of the next 5 years". They seem to be quite outspoken, but even within that group there's reason. You know though, it's going to take a lot of public process and a lot of negotiation, and I don't think the region has those kinds of capabilities. We'll end up, council will make an ethical versus a financial decision, and we know where councils will side. They'll be split, because the Mississauga council may decide to say, "No we have an equitable agreement, it's selection in the next year and a half, so we will provide a united front that we are going to stand up for our residents". And they have 9 of the 21 votes. And Caledon and Brampton may say, "Well we are not going to have increased taxes, so therefore (here's) our 11 votes, and the chairman are going to vote this (?) way". So (laughs), it's going to be interesting.

Now that the region has to find a solution for the waste problem the intra-regional equity argument raised by Colin has actually come to the forefront of debate. Based on Giselle's comments there are doubts about whether such an agreement, will in fact be honoured in its original form.

### **Rail haul (out of region)**

Jennifer is asked directly if she thinks it is a good idea to have the waste stay in the region, as the NDP had legislated for the IWA process:

**INT:** In terms of disposing of the part that can't be composted and recycled and so on, would you prefer to see it stay in the Region, or you say in Caledon, the municipality, as opposed to sending it out or...?

**JENNIFER (town, non-leader):** Well if we could send it out I'd be happy about that but I wouldn't want someone sending theirs to us because they (we) couldn't deal with it. But if there's any way that you could safely get rid of it...

While she would be "happy" to send waste out of the region, she also shows some empathy for those who would actually have to take the waste in her statement, "I wouldn't want someone sending theirs to us". Statements like these show that for some it is hard to reconcile what may be construed as NIMBY sentiments with notions of fairness/equity.

### **incineration**

There are those like Nancy who *are* willing to face local disposal of waste, even if it is "next door", but as incineration rather than landfill:

INT: Based on the idea of fairness, what should be done with it?

NANCY (rural, non-leader): The incinerator.

INT: Where should it go?

NANCY: I don't care if it's next door, I really don't.

INT: You wouldn't have any concerns about it?

NANCY: Of course I would be worried about the traffic and those are commonsense worries. I would not worry if it was up to date and it was a technologically sound system, I don't think there should be any worry whatsoever. A landfill site to me offers hundreds of years of worry. I know that an incinerator, you have to be worried, because you're not going to know a hundred percent, but from what I can gather they're 80-85% safe. I think if you control the amount of cars then we'd be a lot better off.

Nancy seems willing to tradeoff long-term worry about future contamination for short-term inconveniences (e.g. in the form of "traffic"). For many the incineration issue had as much to do with fair process as it did with "safety". Janice shows how talk of incineration is symbolic of the broader issue of the NDP government's "inflexibility" in the exclusion of choices for waste disposal:

JANICE (rural, leader): I think the NDP started off on a process here that they didn't have any idea how complicated it's going to become. They've been

absolutely inflexible about looking at alternatives. And you know what, if they're so convinced that incineration is the worse thing and that you can't consider it, then you know what, all the research that's been done on... on incineration should be able to be on the table and prove itself.

The second-round conversation with Giselle demonstrates that residents will likely get their wish to consider alternatives, as it fits with the current provincial government's agenda:

**GISELLE (rural, leader):** Considering our current (conservative) government, we'd expected that they might make a more arbitrary process. It will be interesting to see though how it actually works. That will be the true test.

**INT:** I have not focused to much on the process...

**GISELLE:** They are holding public hearings. I'll maybe write a letter, just sort of pointing out the things that we feel are important. Things like the public actually do get a say as early in the process as possible, and that we keep the "alternatives to" which, there is every indication that it's been kept. Because you always had to argue that there are better alternatives and that's one thing that's really important to the public, you don't just have a private piece of land and say, "I'm going to make a landfill or an incinerator here". And the public doesn't get an option to have another put on the table. So that's always been an important issue with us.

**INT:** And that's going to...

**GISELLE.** And that's going to be.

Nevertheless, this will likely bring new issues to the forefront of debate as the region tries to decide what to do with its waste. It is unclear that inter-regional equity will be among these issues without provincial-level authorities in place to push such a position. What is clear is that the consideration of alternatives, more specifically the restriction choices/options, was a central issue for residents and one which fuelled opposition.

## **6.2 Community participation in decision-making**

Efforts at community participation in the siting decision in Peel did not have the intended effect of garnering Caledon's acceptance of the IWA's choice of sites. Section 3.3.2 outlines that the NDP/IWA siting process was unique in the sense that it involved at least two mechanisms for community participation in decision-making. The first, involved invitations to community residents to provide their preferred weighting and ranking of the site selection criteria. The second, "intervenor funding", provided money for residents' efforts (usually by way of community opposition groups) to commission their own research to oppose the IWA in environmental assessment hearings. Such an approach reflects current wisdom that communities should be involved in environmental decisions like waste siting. Despite this approach community opposition to C34B, the IWA, and the NDP government remained high throughout the process.

Table 6.4 lists five themes that are directly related to community involvement in the siting process. Most of the mentions are from the group leaders who each spoke at some length on these topics. Thus, although the number of mentions are relatively low (maximum  $n=13$ ) in comparison to the dataset maximum of 55, the group leaders actually talked at considerable length about these topics during the interviews. What is most informative is the content of what they said.



**Table 6.4: Community Involvement in IWA Process**

<b>*Theme\topic</b>	<b>Number of Mentions</b>	<b>Number of Residents (% of the 30)</b>
participation on the IWA's terms	13	10 (33)
participation on the community's terms	13	10 (33)
community involvement (general)	12	8 (27)
deck is stacked against community	3	2 (7)
too abstract	2	2 (7)
<b>maximums for community data set</b>	<b>55</b>	<b>28 (93)</b>

\* see bottom of Table 4.1 for a description of how to read tables

#### **participation on IWA's terms (5 2 4 4)**

One of the main issues that irked community group leaders was that the mechanisms for community participation were set up and controlled by the IWA. The process was very technical (e.g., rating and weighting of criteria such as hydrogeology, social, and heritage impacts) and time-consuming to understand. Giselle relates how difficult it was to become involved in the process, as it was an "overwhelming" undertaking just to understand the process,

GISELLE (rural, leader): It was pretty overwhelming because the first few interactions went, "Well, go home and read this."

INT: This type of stuff (pointing to the IWA binders - fills long book shelf).

GISELLE: I said, "Okay, I guess I do have to become knowledgeable", because that's the kind of person I am. I have to be knowledgeable about something that I am going to have to argue for. So you go home and go through the books. But then you keep coming back and asking more questions. And actually it's as you become knowledgeable and you start to ask them more questions that you realize just how archaic this process is that they are going through. It's single-pronged, it's not looking at any alternatives and they're quite defensive about that and not willing to even listen to anything other than, "We're going through this process so just bloody well get in line and go through this process". And even in the process it was, "Ahh okay we'll listen to you", and it was kinda like, "Oh what have you

got to say", and, "Oh we'll write this down". And in six to nine months time, "We'll put your little quote in the book".

At least two other issues are worth mentioning here. First, reference to the notion that the IWA expected residents to "just bloody well get in line", demonstrates that Giselle feels the process was inflexible and in many ways was forced upon the community. Second, the sarcasm in the phrase, "we'll put your little quote in the book", conveys the opinion that there is doubt about whether any community input would have been taken seriously, despite being quoted in IWA documentation. Theresa and Martin are also critical of the efforts at community inclusion. Theresa shows how she feels about what she calls "forced participation" such that the IWA is compared to an "invading army",

**THERESA (site, leader):** No, any input from our part is voluntary. You know they're opening up the process to the public and if we choose to participate we may, but I don't know that's like an invading army saying, "Well we invite them to come and talk to us every once in a while". If everyone around here had their choice the IWA wouldn't exist. So they make it sound like it's open and public and people don't enjoy their interaction with it. It is forced participation whether they see it that way or not.

**INT:** So they have a mandate to involve you as the public?

**Theresa:** Well, it's a little box that they have to check off that's part of their process the EA process says public consultation and so as far as they're concerned I really think it's just a box that they check off and really not all that concerned about what input they get, it's just they've gone through the motions of getting that input.

Martin is concerned that the IWA is just going through the motions and complains how community input into the process was restricted. The theme of restricted choice, which appears in the previous section, is echoed in Martin's explanation of how he feels the IWA operates,

MARTIN (rural, leader): Let's put it this way. Well, you listen to your kid. You listen to what they have to say when they're young. But when you come back to them and say to them, this is what I want you to do, you give them two options that you want.

INT: Okay.

MARTIN: Right? And you let them choose, right? So that's what they did, they listened to us and then said, "Okay Martin here are the two options I want you to (choose from), you pick which one you want." Right? So they've given you the choice, they've given you a facade of being able to give inputs, by giving you your two choices. You have to choose between those two choices, (but) what you didn't understand was that the third choice was out here.

INT: Okay, so it's a non-choice really. Also you're giving me the sense that it's also a bit patronizing.

MARTIN: Oh yeah. Oh people are angry about this thing because, well you know they say "Oh we'll listen to you, we'll listen to you".

Not only was the IWA seen to give only an illusion of "choice", by implication, they were viewed also to be patronizing.

Many of the residents did not become involved in the weighting and ranking procedures that Theresa, Giselle, and Martin talk about. One reason may be that they did not hear about it. Philip, who was not as intimately involved in opposition as these leaders thought the community actually was *not* given the opportunity to be involved at all,

INT: When they picked the site here....How do you feel about the way the community was involved?

PHILIP (site, non-leader): To tell you the truth, I don't know if the community was actually involved when they picked the site. I don't know how they came about to pick the site, whether it was a government issue... I know at the time Rae was in power.

INT: They put together that Interim Waste Authority to find the sites.

PHILIP: Ya, the Interim Waste Authority which was a separate body. I don't believe the community was involved was it?

While it may be unrealistic to expect everybody in the community to be involved, a process which was set up specifically to include participation implies that Philip should have at least known about others' involvement, even if he was not a participant himself.

### **community involvement (general) (5 2 4)**

Much of the conversations with the IWA experts had to do with community involvement in the siting process. All four experts talked about the wide array of information provided to residents and that these were available in a variety of forms. However, the amount and availability of information did not necessarily satisfy concerned residents. Sean relates how providing information for residents to get involved was not acceptable to residents,

SEAN (IWA proponent-expert): Our philosophy was we're going to, we're going to give you the information so that, this is how we're going to do it before we've even selected the site, so that shouldn't be a surprise to you. We've told you, we've opened the books to you. We can't anticipate all the requests but most of that information is in the reading room. The problem is that they don't usually like the answer that we write in these things and then it perpetuates this, "We want other information." It's almost like, if I can characterize it, searching for more information to wait for the answer that they want.

INT: Can you give an example of the type, the situation where they ask for a certain type of information? I just want to put it in concrete terms what types of information we're talking about.

SEAN: "Why don't we recycle one hundred percent?" Okay. "Why don't we incinerate like in Europe?" You know. You can down the litany of the kinds of questions and then we reply, we provide a response, but the response isn't satisfactory. But that is the response. We don't incinerate because a) it's banned in Ontario; b) we have different, we have different a cultural attitude towards incinerators. In Europe they are small, you know, you can go down through all the reasons and rationale. And in the end they say, "Why don't we incinerate?"

From Sean's point of view some residents were stubborn since inquiry sessions with these people often resulted in circular discussions/arguments. Thus, the residents and IWA experts became frustrated in a process which was presumably set up to encourage cooperation by working together to find an appropriate site.

**participation on the community's terms - round 2 (5 2 4 5)**

The residents' criticisms of the IWA mechanisms for community participation in round one prompted the creation of a second round probe which asked how communities should be involved in difficult decisions like choosing a landfill site. Those like Roselyn request the very information that the IWA actually provided,

ROSELYN (town, non-leader): I mean that's the fair way to do it. Put something in the local papers, send flyers, whatever, have a representative come door to door.

INT: Did they do any of this when they had the proposed site?

ROSELYN: I don't remember seeing anything.

STEVE: They were posted everywhere.

ROSELYN: No, no one came to us.

Although Steve did come across information that was "posted", Roselyn did not. Others were more concerned with having *direct* community involvement in decisions. For example, Veronica feels that residents' "voices should be heard",

VERONICA (town, non-leader): Well I think number one, a list of information. You should be well informed. Have a mechanism to have your voice heard.

Similarly, Nancy firmly believes in the use of a community plebiscite on the issue,

NANCY (rural, non-leader): I most definitely think that there should be a vote.

INT: A vote.

NANCY: A vote, yes, because it affects us all. You could say vote and be done, and you're never going to get 100% either way, but I think if all the literature and whatever was in the open I don't think it would be a problem.

Further, Roberta takes issue with the idea of taking away a farmers' land - taking over "their life". Again the idea of having choices is echoed in her claim that farmers should be allowed to have the option of *not* selling their land,

ROBERTA (town, non-leader): So I mean they should have asked the farmer you know "Do you want to sell your land to us?" And if he agreed then fine if he didn't go find somewhere else just don't take over their life.

Although some asked for exactly the things the IWA provided - things like access to information and mechanisms for having residents' voices heard - others wanted participation on the community's terms, which seemed to require more democratic, locally-owned mechanisms for involvement.

### **Strategies for opposing the landfill**

Ironically the mechanisms for community participation may have contributed to the demise of the NDP/IWA process as there were unique opportunities for the residents to slow down the process. Table 6.5 shows that despite opposition the respondents mention resident involvement in efforts to actually oppose the site, as well as the siting process. In section 5.1 Giselle talks about how a series of protests were initiated and many of the themes in this table parallel the issues she raises including the themes: *adversarial-protests* (3 2 2 1), *adversarial - visible anger* (3 2 2 3), *adversarial - polite/legal confrontation* (3 2 2 2), and *adversarial - general (uncategorized)* (3 2 2). Other

strategies were less confrontational including *letter writing* (3 2 9), and *signing petitions* (3 2 10), yet the table paints a picture of a community determined to prevent the landfill.

**Table 6.5: Strategies for Opposing Preferred Site C34B**

<b>*Theme\topic</b>	<b>Number of Mentions</b>	<b>Number of Residents (% of the 44)</b>
adversarial - protests	17	13
slow down the IWA process	10	9
attract media attention	9	4
adversarial - visible anger	8	7
adversarial - polite\legal confrontation	8	6
political lobbying	7	7
petitions	7	6
general strategies (uncategorized)	6	3
re-consider previously eliminated sites?	5	4
separate politics from science	4	2
ethically	3	2
letter writing	3	3
adversarial - general (uncategorized)	3	3
no dump period! (NIMBY?)	2	2
participation in IWA process	2	2
<b>maximums for community data set</b>	<b>66</b>	<b>36 (82)</b>

\* see bottom of Table 4.1 for a description of how to read tables

### **slow down the process**

However, one of the key strategies orchestrated by the community opposition groups was to *slow down the process* (3 2 5) (10 mentions from 9 residents) which was the second most popular interview conversation topic regarding opposition. Dale explains the political nature of this strategy,

DALE (town, leader): I've met some very interesting people in that time-frame. I had an opportunity to meet with Ruth Grier (Minister of Environment) and have met X and the several of his senior people in the IWA and within various other

ministries and so on. It became very obvious to me, very early in this period of time, that political pressure, was in my mind, the way that we were ever going to slow this thing down, or stop or change it. That as how it had to come and that was where we had to get that through.

Giselle elaborates how, as Dale phrases it, “slowing this thing down” as a strategy for opposition met with initial resistance among residents. She also explains that such a tactic was appealing because it used the IWA’s efforts at “public participation” against them,

**GISELLE (rural, leader):** From a strategic point (of view), they were simply government employees. So the way that they think is very much straight line. Tick off the boxes, go through this process, "I've got my job to do and I'm going home at five", you know "It's like I, it's my job and I'm going to do it this way because I've been told to do it this way". But on the outside as someone fighting that process you're a more creative thinker, and you don't have to think in a straight line, you can say, "Okay, I know how they're going to think", so this is how we combat it, we just overloaded their system and that was what caused probably all the delays. We created public participation in such an overwhelming manner that they could do nothing, that was the beauty of it, it was public participation. "What, you don't want public participation, that's what your whole program is about?!" And yet we also had to coach the public, because the public says, "Well, why bother to participate in your (IWA) stupid program, they're going to do whatever they want with it?". "No, no, no, participate, do this, you must participate, it's very important". There definitely was a division with, even within DARE about whether to participate or not to participate, because of the frustration, because we knew it was of no benefit to the community to participate other than that was the way that the IWA process could break down.

**INT:** How do you know they were overwhelmed?

**GISELLE:** Feedback actually from them, and the numbers. You know, it's kinda like they had ten and we had sixty, "Hey we did pretty good on that one!".

Thus, the community may have participated in the process less to find the most appropriate site, as the NDP/IWA intended, and more to buy time until the next election when the community would have a chance to vote the NDP out of power. This strategy relied on political speculation that the NDP in Ontario, for various reasons, were likely



lose the provincial election. An additional irony to the fact of the community turning the IWA participation process against the IWA, is that the process became extremely costly, a concern not only of the IWA but the community as well (*waste of money* {1 2 21} 19 mentions by 11 residents in Table 4.2). The IWA experts recognized the residents' strategy of prolonging the process. Nevertheless, Jacques questions whether this will ultimately remove C34B from consideration.

JACQUES (IWA proponent-expert): The process that we were involved in, a lot of the aim and object of the objective was to prolong the process.

INT: Why do you think?

JACQUES: Well, we were getting problems from the parties not in power, that they would defunct the IWA and put the process back to the municipalities, but it doesn't make the process any more or less valid if you put it back to the municipalities.

INT: We'll see what happens then I guess.

JACQUES: My answer has always been, if you put it back in Peel what does Peel do next? If I was Peel, as a logical person, I would go the Province and say I want to go ahead with this site, there have been a lot of effort spent in finding it, I don't have any problems with the criteria but therefore let's use it.

If Jacques' prediction that Peel may say, "*let's use C34B*" is correct, the slowing of the process may just prolong the uncertainties and concerns already felt in the community.

Alternately the temporary defeat of C34B may set up those in the community who think the issue is over for future emotional shocks.

### **6.3 Lay - expert interactions and the role of trust**

The previous two sections discuss that differing views on equity and the form of community involvement in the siting process were two major sources of tension between

residents and the IWA experts. This contributed to an environment of conflict and distrust which is reflected in a wide range of themes/quotations in the dataset. This section describes why residents did not trust the IWA experts for information about the site and siting process despite considerable efforts on the part of the IWA to provide accessible material. Included are details of how experts and residents viewed each other, which greatly shaped the interactions between the two groups.

### Trusted information sources

In round one residents were asked about their trusted sources of information concerning the landfill and siting process. Table 6.6 expands some themes already foreshadowed by previous sections of this chapter. Most important among these is that none of the 30 residents made any mention of the IWA or experts as trusted sources of information while one person did contact the Joint Environmental Assessment Board (*assessment board* {1 6 1}) directly.

**Table 6.6: Residents' Trusted Sources of Information about the Landfill Issue**

<b>*Theme\topic</b>	<b>Number of Mentions</b>	<b>Number of Residents (% of the 30)</b>
"did not follow it"	18	8 (27)
opinions of media coverage	14	13 (43)
local papers	8	8 (27)
fairness of media coverage	7	4 (13)
local government	7	4 (13)
who trusted (uncategorized)	5	5 (17)
"myself"/family and friends	5	5 (17)
assessment board	1	1 (3)
<b>maximums for community data set</b>	<b>55</b>	<b>28 (93)</b>

\* see bottom of Table 4.1 for a description of how to read tables

**didn't follow it (1 6 3)**

Over one quarter of the residents interviewed (8 of 30) actually claimed that they did not make any conscious effort to follow the siting process. While many claimed not to follow the issues directly they were often concerned and/or knowledgeable about the process. For example, Philip explains that he followed the issue, but not too closely,

INT: How else did you follow the issue? Was that the main way, you went to (community meetings)...

PHILIP (site, non-leader): It was the main way and then the newspaper, I would read, you know, what... what happened at some of the meetings. I mean I didn't pay much attention to it either, personally, I mean.

INT: Why not?

PHILIP: I've always been under the... we were assured almost that it would not come in at first., because of the fact that the out going leader, which was the NDP at the time.....would... would be out by the time of voting. So, after awhile it was just tedious, or a waste of time for me to even show up for the meetings.

Those like Philip, who "*were assured that the landfill would not come in*", seemed only to follow the issue peripherally. Similarly, there are those like Rosemary who relied on people close to them to follow the issue closely and keep them informed,

INT: How did you follow the issue?

ROSEMARY (site, non-leader): I really didn't follow it my husband did. He was up there protesting, he was just talking about everything. But I really didn't follow it. I just figured well if they're going to put it, they're going to put it. I mean what can I do? I can't fight it

INT: Why not

ROSEMARY: Well, we did. We did fight it. I mean, my husband made me go to the meetings... (laughs).

It is important to recognize, however, that Rosemary and Philip actually live quite close to C34B and are quite concerned about landfill as a threat.

### **family and friends**

Some depended on passive means of getting information, particularly relying on family and friends to keep them informed. While Rosemary relied on her husband, Roselyn and Jennifer relied on their friends,

**ROSELYN (town, non-leader):** I didn't really follow it probably as closely as X did. I mean sure you read about it in the paper (but) I don't really read the paper that much I just (sigh) never seem to have time to sit down and read the paper. But you're in conversation with people, you might be out together with people and you start discussing it. We had this one friend who - one of the proposed sites was right in his backyard - so then you get talking to people, but that's pretty much how I followed it.

**JENNIFER (town, non-leader):** I would think (I know) pretty much what I needed to know. I have a neighbour down the street she's quite politically involved so she would kind of keep me informed of things. I'd meet here at the mailbox and she'd be all ticked off about something and she'd want to let off a bit of steam, and I think I'd be the one there.

People who express concerns about the landfill (see Table 4.2) are among those who actually did not follow the issue very closely. Nevertheless, some did get information through friends and family who seemed to be very well informed. That is, those who claimed they "did not follow it" may have set standards for knowledge about the issue that are made against their highly informed family and friends.

### **local papers (1 6 2 2)**

At least 8 of the 30 residents mentioned that the local papers were the most trusted source of information about the landfill issue. Vickey offers her reason for this preference - that the people at local papers are "from within the community",

INT: Who did you trust to get good information? What sources, (or) what people did you trust to get...?

VICKEY (site, non-leader): I would probably say the local newspaper only because, that's based on the assumption that a lot of those people are from within the community.

It is responses like these which were the basis for developing a probe question for the second round of interviews which had to do with *why* the local papers were trusted and for what types of information. In the following exchange Veronica and Matt explain why they trust the community papers,

INT: As far as information about the landfill, getting information about the landfill issue it seemed that a lot of people trusted the local papers. I wonder what your thoughts are on why that is.

VERONICA (town, non-leader): Because they told the truth. You know they had...

MATT (town, non-leader): Well it's the local papers so they're looking out for the community. So I'm sure they're a little bit biased, but at the same time they're looking out for the community so.

The idea that the paper was "looking out for the community" was offered as a reason by at least 6 of the 10 resident interviewed in round two. However, Matt recognizes that the local papers are "biased", which is acceptable when balanced against the fact that these papers have the community's best interests at heart. This opinion is shared by Cheryl who admits that the local papers will "not always be accurate",

INT: What about the accuracy of the information?

CHERYL (rural, non-leader): I don't know, I can't really remember what they wrote.

INT: Just your general impression.

CHERYL: I don't think they will always be accurate. I just think that it will always be negative, because people in Bolton don't want the landfill. So the people that are writing it are going to be all negative, they're not going to be positive

(about the) landfill. So I think it's always going to be negative because we don't want it. So they're not going to be, they're not going to have everything.

INT: Is that a problem do you think?

CHERYL: A problem? It might be, it depends. But people just don't want it so they're just going to write all that negative stuff. So, when you write that stuff you help to get the people's attention and help fight not to have the landfill in Bolton.

These residents seem less concerned about accuracy than they do about hearing all the potential "negatives" about the dump. However, Nancy explains that while the local paper may have been a vehicle for venting community concerns, she sought sources like the "Toronto papers" for things like "scientific details",

NANCY (rural, non-leader): Because it's pertinent to us. It obviously effects our everyday life. You learn the scientific details from the Toronto papers or whatever like that, but you learn how it is going to effect you in the local papers.

Thus, residents may seek information sources which serve specialized needs.

The general disagreement between lay and expert opinions of equity described in section 6.1 agrees with the lack of mention of government or experts in Table 6.6. However, it is useful to explore other influences on the interactions between the residents and the IWA-experts. Table 6.7 represents all the themes that had to do with the communication between the IWA and the residents within all 44 interviews. Thus, the table needs to be interpreted carefully. For example, the idea that the experts *accommodated community needs* (5 2 1) regarding communication (12 mentions by 4 people) are exclusively from the experts themselves while the concerns about *inappropriate inadequate communication* (5 2 3) (12 mentions by 9 people) are only from the residents.

**Table 6.7: Trust and Lay-Expert Communication**

<b>*Theme/topic</b>	<b>Number of Mentions</b>	<b>Number of Residents (% of the 44)</b>
accommodation of community needs	12	4 (9)
inappropriate or inadequate	12	9 (20)
general comments about communication	9	6 (14)
addressing public concerns?	9	6 (14)
<b>maximums for community data set</b>	<b>66</b>	<b>36 (82)</b>

\* see bottom of Table 4.1 for a description of how to read tables

### **accommodation of community needs**

All of the experts interviewed talked about how the IWA went to extra lengths to accommodate community needs in terms of providing information, making it accessible, and making themselves available. For example, Sean talks about the variety of "opportunities" residents had to become informed,

SEAN (IWA proponent-expert): I don't think you'll find another process in Ontario which (has) the breadth in the number of mechanisms that were there. I don't think anybody could have any criticism about the number of opportunities. What they may have criticism with is, they may say, "the IWA wasn't listening", or the IWA wasn't doing these things, but you know, we can't accept what everybody says to us cause we would never be able to do it.

In order to move forward in the siting process Sean admits that communication, in some respects, could only be one way (from IWA to residents) which gave the appearance that "the IWA wasn't listening". While communication may not have been entirely two-way, Karen is convinced that the IWA was flexible in their approaches to public involvement. In the following passage Karen discusses how a workshop meant to weight and rank the IWA's criteria for site selection turned into a forum for "answering questions",

**KAREN (IWA proponent-expert):** So, there had to be the flexibility. So, for example I got called into one group and they sort of said we don't want to do this exercise (weighting and ranking) we want you to answer some questions. We want you to tell us what you think of this, what you think of that, answer these questions for us.

**INT:** So the workshop changed all of a sudden?

**KAREN:** For that particular group of people they thought that was more important for them at that particular moment in time. (They said,) "You're the person, here's live body, you're here, we're here, you can answer our questions".

**INT:** Did they go away from that feeling that they got what they needed do you think?

**KAREN:** That's very difficult to ascertain. I think it would have depended on the individual. I think some people, I know some people through the exercise, even though, through the process, even though they didn't like what was happening, there was a landfill site proposed to be next door to them, still felt that they were being listened to, they were getting answers.

To summarize, Sean explains that the one of the main philosophies guiding IWA communications with residents was to avoid "surprises",

**SEAN (IWA proponent-expert):** Our philosophy was we're going to, we're going to give you the information so that, this is how we're going to do it before we've even selected the site, so that shouldn't be a surprise to you.

But the section on Impacts (5.1) shows that people *were* surprised and shocked by various IWA announcements, foremost the announcement of the preferred site C34B. This, implies that the communications were often inappropriate or inadequate and did not guard against surprises. These impacts, however, were also influenced by strategies used to cope with uncertainty which are discussed in section 7.7.



### **inappropriate or inadequate**

Despite efforts by the experts to include/inform the community, many of the residents were concerned that the communication of information about the siting process and the risks of the site were inadequate or inappropriate. For example, those like Craig (a property developer who expressed interest in knowing about the landfill issues) apparently did not receive enough information. In the following passage he expresses concern about the IWA doing everything "behind closed doors",

INT: Did you ever see things that laid out the arguments (for choosing C34B), you know someone laid it out...

CRAIG (town, non-leader): Never. Never. It was kind of like the IWA was working behind closed doors. How they were coming up with selections of things never seemed to be clear. It was never clear as to why they decided on this one over that one. And they certainly didn't get any coverage of it. The only thing that I'm aware of that they did was set up an information centre, and had all the documentation. So it had the first draft and it had the selection of the short list and from there you know, it had the sites that were actually chosen for this Region anyways. But there was no synopsis or anything that you could read.

INT: Right.

CRAIG: So who's going to pick up, you know, a 60 page report and go through it. I'd have to say they did a very poor job in selling it to the people.

Others *did* remember receiving some of the IWA messages, often in the form of pamphlets. Philip describes what may be a typical response to the receipt of an IWA pamphlet,

INT: So what did you do with those pamphlets or leaflets that you got from the IWA?

PHILIP (site, non-leader): I don't know, I think they're in the garbage.

INT: Did you look?

PHILIP: Well I think I browsed through them, but basically I think the IWA was saying where the land would be, what land was being used, (and) the position that they were in.

INT: Was it a good leaflet, a bad leaflet, did it grab your attention?

PHILIP: I really couldn't tell you because I really just thumbed through it, just took some of the highlights.

While the IWA may have only hoped that residents "thumb through for the highlights" Philip, despite being very close to C34B, seemingly dismisses the messages within the brochure by throwing it in the garbage. Others actually had difficulty understanding information they were given. Walter distrusted of the IWA who were perceived to "hide" things. In the following exchange is a discussion of problems interpreting technical information when English is not your first language,

INT: What do you think of those things they send you? Do you believe them, are they accurate?

WALTER (rural, non-leader): (There are) many things that are not in the report, (there are) so many things they hide.

INT: Can you give an example?

WALTER: See (the IWA) was talking in a meeting (but other) they have school they have they know what they was talking about. But if I have to explain to you what it was, well I can't.

INT: So was it hard to understand?

WALTER: Well yes because it's scientists the words are so hard, it's not my language. I never go to school. You know the worst is for Italians, this (understanding English) is side work. The words is no...what I know.

However, these 12 claims of inadequacy by 9 different residents must, in many cases, be put in the context of the community groups' delay tactics described in section 6.2. That is, some may have disregarded the IWA's information hoping that the political manoeuvre of slowing things down would work to disable the IWA. Giselle, a major proponent of this strategy, provides another explanation. She explains how the IWA workshops may have

had little "relevance" for residents because they happened so early in the process and were in a "language" that few understood,

**GISELLE (rural, leader):** They (experts) don't even have a common language to speak in. And at different points in time - like for example, at the beginning of the process they had a lot of these workshops where they'd bring in the experts. Well the expert would speak in a language that was in no way relevant. The public didn't know what was needed to know, but they knew they needed to be there, and it was so (too) early on in the process. Here you have this expert expounding all these things and it just wasn't working at all.

**INT:** Do you think people were expecting too much of the experts?

**GISELLE:** I don't know what the answer is.

Giselle's view is that these early workshops did not work, yet she does admit in the next quotation that eventually most residents did acquire the information that they wanted/needed,

**GISELLE (rural, leader):** I very firmly believe that the public do need that information, and they did acquire it over the course of the 3 years, but it was all thrown at them in the first 4-6 weeks. And it was just total knowledge overload, and it wasn't the appropriate time for it to be occurring.

According to Giselle the process relied too much on residents being informed early in the process, at the stage of weighting and ranking criteria to come up with the preferred site. Implied in Giselle's and Karen's comments above is that residents often came to workshops to become informed rather than to actually participate in the process - the latter being the IWA's intended use of the workshops. For some residents this raised immediate suspicions about the IWA, their intentions and hence their trustworthiness.

### Residents' perceptions of experts

The community's general lack of trust in experts was not entirely due to suspicions about their motives and their technical language. Trust seems to have had as much to do with residents' recognition of the limits to expert knowledge. Table 6.8 lists the residents' responses to questions about their impressions of the role of experts played in the landfill siting process. These themes elaborate some ideas already discussed in this section. That is, experts were described as being: *too technical* (4 8) (4 mentions by 4 residents), *patronizing* (4 5) (5 mentions by 4 residents), (un)accountable (4 11) to the publics for whom they ultimately work (9 mentions by 8 residents) and are even *biased* (4 6) (9 mentions by 7 residents). However, the two largest number of mentions have to do with the limits to expert knowledge about the effects of landfills. Since there are already quotations about the technical and patronizing nature of expert interactions with residents, the focus in this sub-section is on expert biases and the limits to their knowledge.

**Table 6.8: How Residents Perceive Experts**

<b>*Theme/topic</b>	<b>Number of Mentions</b>	<b>Number of Residents (% of the 40)</b>
limits to expert knowledge	20	15 (38)
need more research/testing	11	8 (20)
commonsense contradicts experts	11	8 (20)
more accountable	9	8 (20)
biased (even fraudulent) research	9	7 (18)
a good expert is...	7	6 (15)
stalemate - no definitive answers	6	5 (13)
just a job to them	6	6 (15)
patronizing	5	4 (10)
too technical	4	4 (10)
overwhelming amount of information	4	4 (10)
<b>maximums for community data set</b>	<b>65</b>	<b>35 (80)</b>

\* see bottom of Table 4.1 for a description of how to read tables

### **biased (even fraudulent) research**

Those who accused the IWA of biased research generally seem to have a dim view of government and authority in general. However, the following expert is from Ron who seems to have some faith that science can, for the most part, be conducted with minimal bias. Ron is concerned specifically about the health effects from landfill and he describes how an IWA representative claimed he would *develop* a study to demonstrate that there are no health effects of landfill. The following demonstrates Ron's shock at hearing mention of such a blatant misuse of science,

RON (town, leader): X (from the IWA) at this meeting said, 'Well everyone knows that there are no health effects and we're going to develop a study to show that there are no health effects.'

INT: They said that to you?

RON: Yes.

INT: In no uncertain terms?

RON: No uncertain terms. And you know for those of us that have a scientific background, you know you kind of sit there and think it seems like you've already made your conclusion before you've really looked at this.

### **limits to expert knowledge**

This apparent manipulation by experts, who appear then to be working in bad faith, must also be set in the context of an overall feeling (often by people with non-scientific backgrounds) that there are *limits to expert knowledge* so they cannot make guarantees. For example, Adele talks about her lack of faith in experts to predict the long-term impacts of landfills,

INT: Don't you think the scientists can predict that kind of stuff (impacts of landfills)?

ADELE (site, non-leader): No. No I don't think so.

INT: No? Why not?

ADELE: Maybe the first couple of years they can predict, ten years down the road they can't. And I plan on living a long time. So, I don't know. I don't think they can. Man can only do so much and then in the end man destroys himself as far as I'm concerned. And that's what we're doing, we're putting the dump in Bolton and destroying ourselves.

Others seem to value local expert knowledge more than that of the IWA. Nancy elaborates how she connects local knowledge with a lack of "respect" for experts in a discussion of the water table below C34B,

NANCY (rural, non-leader): Because the farmers knew that they couldn't farm the land there because it was too wet.

INT: Right, so they probably dug down or something like that.

NANCY: Well they didn't have to it was right there. The farmer said, "this is where you want to put the dump?" I mean the river's right there. I mean this stuff isn't even logical so how can we possibly respect these experts.

Further on in the discussion Nancy is asked what the experts would have to do to convince her of the reasonable safety of a landfill,

INT: Even if there are liners and if they do take precautions?

NANCY (rural, non-leader): With the amount of garbage there's no way they could possibly protect us. I'm sorry that's how I feel.

INT: You're not the only one that feels that way. If or when you get new information that says, "That won't happen, the water won't be affected..."

NANCY: That's okay. If they give me some proof that they've got some scientific (proof), with testing to prove that. You can't do that without years...

INT: Years of data?

NANCY: Yes. Because you can't possibly say because this is a new one (landfill) it's going to work.

INT: You would be willing to believe?

NANCY: That they could actually do something? I'd be willing to give them the benefit of the doubt. But they would have to prove it.

INT: Did you get any messages like that?

NANCY: No. Well yes they tried to say that there was going to be....it was a joke.

INT: Why?

NANCY: Because of this 12 foot water table (laughing). I mean it was just a joke.

While Nancy claims to be willing to accept arguments that a landfill is "safe", she requires "scientific proof" which, as she admits would require "years" of data on site C34B itself. Thus, she puts the burden of proof on the experts to demonstrate the safety of the preferred site *outright*, not just its safety relative to all possible sites in the region (as set out in the EA Act). This places extremely high, perhaps unrealistic, expectations on experts since even years of data may prove little in highly complex technological systems like landfills which involve the interface of large-scale natural and human-made systems.

#### more accountable

Indeed the IWA themselves were seen as irrational and not to be trusted by some residents,

INT: None bought the idea that they were rationally choosing the best site for Peel? I mean that certainly was the impression that I was given, that the IWA wanted to choose the best site based on criteria.

CRAIG (town, non-leader): Right. I guess it's a matter of criteria, you know, their criteria versus the criteria of the community. It was kind of like the IWA was, was working behind closed doors and, how they were coming up with selections of things never seemed to be clear. It was never clear.

CRAIG's comments fly in the face of an environmental assessment process legislated to produce clear and traceable documentation and written in language that the lay public is able to understand. Thus, residents acknowledged and challenged expert understandings of the landfill and its supposed effects, which are both recognized as uncertain.

### Experts' impressions of residents

Residents' overwhelmingly negative opinions of experts seemed to solidify over time which may, in part, be attributed to the ways IWA experts viewed the community. Table 6.9 outlines typical ways that the IWA experts characterized landfill siting issues and, in turn, how they viewed the residents.

**Table 6.9: Proponent-experts' views of residents**

<b>Theme\topic</b>	<b>Number of Mentions</b>	<b>Number of Experts (% of the 4)</b>
rational vs irrational	6	3 (75)
fact vs rhetoric	3	3 (75)
science vs politics	3	3 (75)
fact vs values	1	1 (25)
lack of knowledge	1	1 (25)
looking for compensation	1	1 (25)
<b>maximums for expert data set</b>	<b>10</b>	<b>4 (100)</b>

\* see bottom of Table 4.1 for a description of how to read tables

#### rational vs irrational (5 8 2)

The distinction between *rational and irrational* was the most common way (6 mentions) the four proponent experts characterized the people of Caledon. Karen indicates that the IWA found it easiest to talk with people who were seen to be "rational" while interaction with those deemed "irrational" were the most discouraging encounters for both parties:

**KAREN (IWA proponent-expert):** There are two kinds of people. There's irrational people and rational people. (Rational people are) the people who don't like what's happening but they want to understand, they're willing to talk to you, they're willing to listen to you, they're rational. And then there are people who are irrational and it doesn't matter what you say or how you say it, they're not interested at all, and they just want to yell and scream and take a piece of skin off



your back.

### **lack of knowledge (5 8 3)**

Roger suggests that this irrationality may be linked to a lack of knowledge,

**ROGER (IWA proponent-expert):** There's a lot of lack of knowledge out there about landfill sites. There's a lack of knowledge out there about the Environmental Assessment Act and they feel that we have a lack of knowledge of what they do for a living.

Lack of knowledge likely played a role, but as described above, given the technical nature and sheer volume of material produced by the IWA for Peel it is not surprising that many people did not choose to inform themselves beyond what they read in the local newspaper.

### **facts/science vs rhetoric/politics/values (5 3 1, 5 3 2, 5 3 3)**

The IWA seemed to feel that only certain issues were worthy of attention, the most central being the *facts* and *science* relevant to the landfill search. These are distinguished from the *rhetoric*, *politics* and *values* typically raised as issues of concern in the community. Table 6.9 shows that such distinctions were made by at least three of the four experts interviewed. For example, Jacques talks about how facts, not rhetoric, served to eliminate potential sites taken from the list:

**JACQUES (IWA proponent-expert):** There was also a lot of rhetoric that didn't get sites off the table. Because we said to the people, we're dealing with a factual process, if you can give us facts, we'll act on those facts.

There are clues, however, to the reasons for rhetoric and politics being invoked by the community people who are staunchly opposed to the dump. This is demonstrated in the following passage where Sean talks self-critically about communication between himself and residents,

SEAN (IWA proponent-expert): I don't think we have a problem communicating. I think what we have a problem doing is that one party is not willing to listen - and this works both ways - to what the other party is saying. And it goes back to, "I don't like the answer that you are giving me, therefore that's not right or you're morally bankrupt or whatever". I explain to them here's my role, here's my job, here's what I do, here's what we have been doing, here's the facts. You decide for yourself what is correct, right or wrong.

The comment that Sean is "morally bankrupt" indicates that, for residents, the dispute had as much to do with *values* as it has to do with *facts*. Giving people information about the site/process (i.e. "facts") may not be enough to allay resident concerns. Yet, experts returned to the centrality of facts. Part of this factual base included the way the experts responded to concerns about risks. For example Jacques' comments are informative. He talks about a different town who was concerned about the prospect of having a low-level radioactive waste site in their community ,

JACQUES (IWA proponent-expert): This is very low level stuff and yes if I sat in a puddle of it for thirty-five years I would probably increase my risk. But their concern was spills. And I said to them, 'you people have had how many gasoline and oil trucks run through your community on a daily basis?' And the answer was a lot. And I said, 'well, you know, personally I'd sooner have the risk of these two or three (low-level radioactive waste) trucks a day dump something on my front lawn by mistake, an accident, as opposed to a gasoline truck thank you very much'.

Jacques' attempt to put the risk of the waste in perspective by comparing it to gasoline underscores that laypeople and experts appear to use different logics to appraise risk.

This gap did not seem to be bridged by the IWA or the community. The proponents, in particular, appeared to undervalue the threats to everyday life that the residents themselves hold dear. Such a position led to heightened distrust, anxiety, and concern over the future.

Giselle summarizes one of the main concerns about expert-resident interactions - that there was an atmosphere of "us versus them" rather than "cooperation",

GISELLE (rural, leader): I mean again, (we needed) this sort of this give and take. Well if that works, then you have a sense of building of trust. But if that doesn't work there is that constant undermining of the trust.

INT: So it sort of started off very low trust and once you get there, it's sort of hard to get away from that?

GISELLE: Because the attitude, for example, of the (IWA) staff was very much, "We're the experts". They didn't come in with the attitude, of any sense of cooperation. It was like "them" versus "us". There was very much an entrenchment of camps, right from day one.

#### 6.4 Community opposition groups

It is unusual that there is no mention in the table concerning trusted sources of information (Table 6.6) of the community opposition groups, especially since there were four such groups. This must be understood in the context of a community which did trust local media and therefore *indirectly* trusted community groups. That is, many of the local news pieces were written by community group leaders or included interviews with them. For example, Giselle talks about her role vis a vis the media,

GISELLE (rural, leader): I think there were only two or three articles in the course of about a year and a half where I actually got a bi-line and somebody might know that I wrote it. Otherwise I would write it just as if I were a newspaper reporter. I might mention DARE, (actually) I would make sure that I

mentioned DARE's name two or three times in the article as quotes. But again, that would probably be enough to instill the trust in people. Because, "Giselle had been quoted from DARE..."

Despite this exposure there were those who either did not know about groups like DARE or questioned their credibility. Table 6.10 indicates how the community groups were perceived in the community and these themes are elaborated in quotations which follow.

**Table 6.10: How Community Groups Perceived in Wider Community**

<b>*Theme\topic</b>	<b>Number of Mentions</b>	<b>Number of Residents (% of the 40)</b>
general perceptions of groups	21	16 (40)
perceived effectiveness/credibility	19	17 (43)
effective/credible	17	15 (38)
not effective/credible	1	1 (3)
no opinion	1	1 (3)
no knowledge of groups	4	4 (10)
<b>maximums for community data set</b>	<b>65</b>	<b>35 (80)</b>

\* see bottom of Table 4.1 for a description of how to read tables

### **no knowledge of groups (3 7)**

Table 6.10 shows that 4 residents actually claimed to know nothing about the groups despite the wide exposure these groups had through the local media. For example Vickey, who was interviewed at a time when the issue was very prominent in the community since the IWA had recently been dismantled by the Conservative government, indicates limited knowledge of the groups,

INT: What about the community groups, there were a few community groups formed against the dump, do you know much about them?

VICKEY (site, non-leader): No, not really. I think there were a few things in the newspaper that said you know, "A meeting at such and such and such a place," but I don't know much about them.

Perhaps more surprising is that Penelope has no knowledge of these groups, despite the fact that she is less than a kilometre from the site and was actually prompted with the group names,

INT: There were a few community groups opposed to the dump, are you aware of any of them?

PENELOPE (site, non-leader): Well, we didn't go to many (community meetings) we just (went) to a few.

INT: Did you hear about other meetings from DARE or...

PENELOPE: No, I don't think so.

INT: or PROBE, or Envirohealth or any of those groups?

PENELOPE: No.

One explanation for Penelope's apparent ignorance of the groups is that English is her second language, although the interview itself did not seem hindered by this. Nancy supports an alternative explanation, that certain people were missed by the community groups in their efforts to organize various events. Nancy talks about not being made aware of a demonstration,

NANCY (rural, non-leader): Hang, if I'd have known when there was a demonstration I'd have been there.

INT: Oh yeah?

NANCY: Yeah. That I can do you know of course. I didn't know. You know you get a little bit of blurb, you know on the news (after it has happened).

INT: Why do you think that (happened)?

NANCY: Lack of communication.

However, she seems to contradict herself in a later statement,

INT: Do you think they (IWA/government) did a reasonable job as far as involving the community?

NANCY (rural, non-leader): No, I think the people themselves (did). People worked their buns off to get people involved and they really had almost had to blackmail people to get to go to meetings.

That is, since it may be inferred that "people" includes the community groups, she acknowledges that the groups did in fact "work their buns off" to get people involved in opposition events. Even if it was not explicitly opposition groups who "*got people involved*", somebody did, which contradicts her claim that there was a "lack of communication".

#### **perceived effectiveness/credibility of community groups (3 7 1, 3 8)**

Despite some lack of recognition, mentions about community groups were favourable. There are at least 15 mentions that these groups were either **effective** and/or **credible**. Before elaborating on what some of these 15 residents said, it is important to point out that at least one person, Craig, thought the groups tended to be quite "militant" and therefore were not entirely credible. Craig talks about this view of the groups,

CRAIG (town, non-leader): I view the groups that are opposing that as one pole, one end of the spectrum and that unless you're predisposed to that it's perhaps a little too militant to sit there and listen to it.

INT: Do you get the sense that they were fairly militant groups?

CRAIG: Yeah.

INT: Why's that?

CRAIG: Oh just in terms of demonstrations.

INT: What was your impression of those demonstrations?

CRAIG: Well I think it's important, that's their role, to say (that) you know, I don't have anything against the group.

Even though perceived as militant, community groups were seen by Craig to have a "role" and thus, he actually does not feel strongly against them. Others were more favourable. For example, Anthony talks about the credibility of the groups generally,

INT: Do you think these community groups are quite credible then?

ANTHONY (town, non-leader): Yeah they're credible I think they're like a lot of other groups they blow a lot of hot air. But if you break it all down and look for the issues I think you'll find a lot of..

INT: Why do you say hot air?

ANTHONY: Well, you know they're saying... Maybe they blow things out of proportion, but they have their facts and they might try to blow it out of proportion but they're just trying to make their point.

INT: Do you have an example

ANTHONY: No.

Although Anthony claims the groups are generally credible, like Craig, Anthony recognizes that opposition groups are biased and "blow" certain things "out of proportion". Walter is more positive than Craig and Anthony as the following passage attests,

INT: Do you think that they did a good job of that they have done a good job?

WALTER (rural, non-leader): Ya.

INT: How do you know?

WALTER: Well I've been there. They call me, like my son's brother in law calls me or some other people because they have (a) list of people who they have to call. Cause when we go to the meeting you sign up who was to be called with the phone number and you know. So...

INT: And they call every time...

WALTER: They called every time there was anything for the group.

Thus, Walter's gauge of credibility involves the degree to which the groups kept people apprised of key events. Like Walter, Roberta and Michael talk about the capacity of the groups to keep the community informed. However, while Walter talks about telephone

networking the latter two speak more about how the groups actually raised awareness in the community,

**ROBERTA:** See I don't know too much about it so when I read something new I said, "Oh yeah, you know, I never thought about that." You know like, "I never thought about it leaking, you know, I never thought about all the rats and all the...

**MICHAEL (town, non-leader):** Seagulls.

**ROBERTA:** ...seagulls and all that like circling, and ah... I never thought about the wind, you know, whenever it's a hot, windy day you're going to be getting that smell from the dump. I never thought about all the toxins, I never thought (about) a lot of that." So I didn't know anything about dump 'till they starting talking about it. So I always.... every time there was an article in the paper I always read it.

**INT:** Right.

**ROBERTA:** Plus we were getting some stuff directly from them weren't we?

**MICHAEL:** Yeah.

**INT:** From the IWA or DARE?

**MICHAEL:** DARE.

Roberta reinforces the notion that locals got their information from the papers which, in cases like Roberta's, raised awareness about numerous issues which she "never thought about". As this couple acknowledged that they had received information from the IWA as well, they were asked which source was more credible the opposition groups via the paper or the IWA. As explained in the following response they favoured the former since the provincial government generally is not trusted,

**INT:** But when push came to shove who did you believe?

**ROBERTA (town, non-leader):** DARE.

**INT:** Dare.

**ROBERTA:** Oh yeah. I would never believe anything the government says.

Thus, for people like Roberta and Michael, the content of the message seemed to matter less than the messenger. Messages from opposition groups concerning things like toxins,



seagulls and other potential negative impacts were believed partially because the groups that delivered the information had the community's trust.

### **Problems among opposition groups**

Since the community opposition groups seemed to garner considerable influence in Caledon it is worth outlining some of the problems these groups encountered and how this may have affected community unity against C34B. There is some mention of problems with opposition groups in section 5.1 which concerns impacts of the landfill siting process and the toll it took on community group leaders. That section focuses on the extraordinary amounts of time these residents devoted to fighting the landfill, sometimes at the expense of personal/family commitments. This section has a slightly different focus. The siting process exacted further strain in the form of frustrations between the groups which caused many involved to question both their sense of community and trust in others.

**Table 6.11: Problems Among Community Opposition Groups**

<b>*Theme\topic</b>	<b>Number of <i>Mentions</i></b>	<b>Number of <i>Residents</i> (% of the 40)</b>
frustrations	19	8 (20)
united in crisis?	12	9 (23)
united	8	5 (13)
not united	4	4 (10)
too many "leaders"	3	3 (8)
<b>maximums for community data set</b>	<b>65</b>	<b>35 (80)</b>

\* see bottom of Table 4.1 for a description of how to read tables

**too many leaders (3 3 1)**

The siting process outlined in section 3.3.2 describes how a total of four community groups formed to oppose C34B where opposition in most communities is usually guided by only one or two groups. Within each group there were a number of leaders and this number fluctuated throughout the siting process. Because of this unique context there was no single figure which stood out as the leader of the opposition efforts. This may have been influenced somewhat by the fact that there was a change of Mayor in Caledon in November of 1994 such that neither the outgoing mayor nor the incumbent were in a position to politically spearhead the opposition campaign. Both were publicly opposed to the site. In the following passage Ron laments the lack of a "figurehead",

RON (town, leader): What might help is if there was one... I think every cause, needs a figurehead, needs somebody that everybody respects.

INT: Do you have that?

RON: We need one, we need one, I just hope we have one.

INT: Do you think that may happen in the future? Do you think there *is* someone. You don't have to necessarily name someone.

RON: There the potential of having someone like that. There are a lot of talented people in all groups.

INT: I see that.

RON: You know the talent in that room Thursday night, you had all spectrums of society represented and I think everyone would acknowledge that if you had one individual that could act as a coordinator that would help.

However, there may be at least two reasons that no one person emerged as the "coordinator". First, being a co-leader of a single group seemed a great enough strain for even the most committed residents, let alone being an umbrella-style leader of four different groups. Second, coordinating the groups would have been difficult given the

history of divisiveness among the groups. This latter point is elaborated in the next section on *frustrations*.

### **frustrations (3 1 5)**

Many of the group leaders experienced frustrations since it was difficult to reach consensus on many of the strategies for opposition. For example, Table 6.5 indicates the variety of strategies used to oppose the dump and section 6.3 describes that there was considerable disagreement about adopting such strategies as *re-considering previously short or long listed sites*, or becoming *involved in the IWA process* of weighting and ranking site selection criteria. In fact, disagreement on these types of issues served to divide what was once a single group (DARE) into the four groups (DARE, PROBE, Envirohealth, and CLEAN). Mark, who eventually became a leader of PROBE (centred largely on Bolton-specific issues) recounts some of the frustrations around the time that PROBE and Envirohealth (focused on the health impacts of landfill) split from DARE. This was a time of considerable "*arguing*" within DARE,

MARK (rural, leader): And then we all agreed that the Bolton people had to be part of the executive. So they were voted in. The executive sort of doubled in size and it was roughly 50-50 Bolton people and rural people. And, that was just November, December, January, somewhere in that area, and we continued discussions and had a lot of arguments. (We) argued and argued and argued.

INT: What about?

MARK: Approaches to strategies and how to deal with the IWA and what studies to do and how to approach them. Attacking the IWA process.

INT: I wanted to talk about that, (or do) you want to continue through the chronology?

**MARK:** Yeah (re: continuing chronology). And, there were personality problems between some of the members and there were hidden agendas and it got really bad. In the end there was so much yelling.

Janice speculates on the source of the problems within, and eventually between the opposition groups,

**JANICE (rural, leader):** Whether it was issue-related or personality-related is really... I don't know. I tried to do that... to take the politics out of all of groups working together.

It seems that a combination of personality clashes and philosophical differences about how to approach opposing C34B contributed to the "political" tensions among the groups.

Another source of negative pressure was disputes over funding. These problems occurred subsequent to the splintering of DARE into four. Mark describes how DARE had already acquired much of the available IWA intervenor funding (funding to critically review IWA documentation, hire lawyers, and commission independent research) which put other groups at a disadvantage,

**MARK (rural, leader):** Well DARE had all the participant funding. If this manoeuvre hadn't been taking place and the Bolton people had split and kept the application and been successful with the application they would have had to split the participant funding. This way DARE got it all. And so this is a crucial two weeks in the whole history of this thing. The Bolton people were really bitter, Ron stood up and resigned, you won't meet a more reasonable person than Ron, he's very patient, very quiet, very accurate, he just stood up and said "this is ridiculous, it's a waste of time I resign" and he walked out. And somebody like that's got to be pretty mad to do something like that. And there were others that resigned, Theresa resigned, she's since then come back, interestingly enough. So it fragmented into four groups, it went from one group into four which sounds pretty disastrous.

Not all talk of the relationships between the groups is so pessimistic. In the year after the groups divided they adapted quite well by coming to various agreements since they still had a common underlying purpose - preventing C34B. For example, Martin talks about the sharing of funds between DARE and Envirohealth,

INT: How would you describe your relationship, DARE's relationship with Envirohealth?

MARTIN (rural, leader): We have donated some of our funds to them.

INT: Okay.

MARTIN: To help them out. Up until a little while ago it was, we were to and froing (it was) devastating. (Now) we're letting them do their thing and then when they ask for comments we'll give back our thoughts on what they're doing.

INT: When you say too much "to and froing" do you mean there's sort of, not much communication or a bit of dissension or..?

MARTIN: No comment.

Despite such agreements, many seemed to recognize that considerable damage had already been done. Martin's preference for "no comment" when asked about "dissension", indicates that even talking about past group problems was seen as counterproductive. These problems seemed to have lasting negative impacts on those involved. Ron and Mark comment on their experiences of "wasted time" and being "frustrated" and "mad",

RON (town, leader): What happened to me personally was that I had gone to how many meetings where we just essentially talked about a lot of political issues, change in direction issues, mission statements and I for one was getting a bit frustrated.

MARK (rural, leader): And let's get on with business because right now if you look at my time, all the time I'm spending I bet you 85% of my time is spent on trying to work out the differences, the politics and the lack of clarity of who's doing what. Eighty-five percent of my time and that's really inefficient. And that makes me mad. You know that makes me mad.

Many of these issues arose early in the interview process, raising questions about the potential impact that the inter-group tensions might have had on the overall campaign to fight the landfill. Thus, those residents who seemed to recognize the existence of any community group were probed about their perceptions of these groups. Group *recognition* is reported at the beginning of this section and in Table 6.10. Craig, someone who seemed to follow the issue quite closely, summarizes how distinguishable the groups were,

INT: Did you, as things went on, did you discern the differences between them?

CRAIG (town, non-leader): (shakes head)

INT: So you didn't know what actually separated them.

CRAIG: No. Probably just that they had different names (laughter).

INT: Do you think that was the general, do you think anyone knew the differences between these groups?

CRAIG: Only those who are directly participating in them.

Thus, it is unlikely that the impact of community opposition group problems extended very far beyond the most devoted members and their families. Given the number of groups and estimated memberships this may have affected numerous people directly and indirectly. The nature of the impacts extends beyond the anger, frustration, and constrained familial relationships discussed above. As argued in Section 5.2 and Tables 5.2 and 5.3 the landfill and siting process threatened core values in the community including traditional ways of life which were viewed as not respected by the NDP/IWA process. The following discussions with Theresa serve to reassert and summarize this central argument in the context of individuals who felt forced to oppose the landfill and

were consequently forced to confront how they view their community. Interestingly, these comments are prompted by Theresa herself at the end of her interview,

INT: I don't really have any major topics to cover unless there's anything else you'd like to add about anything you want me to know about.

THERESA (rural, leader): No I don't think so. A lot of the stuff you deal with is very difficult to define, I mean it's hard to analyze the community that you live in. I mean it's just a bunch of people who live their day to day lives and hopefully interact without a great deal of conflict or problems.

INT: Do you think the whole landfill issue changed the community in a positive or negative way?

THERESA: Well in some positive ways I think that sometimes you don't value what you have as much until it's threatened. You know you just sort of take things for granted. We're always going to live here. Life is always going to be like *this* and then you realize that that may not be the case and so I think that it made people appreciate what they had and it made them focus on the things that they like.

INT: They were forced to define it?

THERESA: Yeah. I think there were some negatives. I mean I remember my husband's father saying right at the beginning of this process, "You're going to see people do things that you're not going to like. And you're going to see people act in certain ways that you're not going to like."

INT: So you started to see people act in ways you never expected them to?

THERESA: Yeah. I got to know people in the community that I didn't know before that was a real plus.

While Theresa ends this first exchange on a positive note, further on she explains what her father-in-law meant by "*people acting in ways she wasn't going to like*". In the following passage Theresa talks about a particular event that "shocked" her into reassessing her capacity to be "trusting". The shock involved learning of one community opposition group - after a recently-achieved atmosphere of cooperation and full disclosure between community groups had been established - secretly obtaining funds from the municipal

government. Many had discovered about this transaction just prior to a Thursday night meeting of representatives of all four groups,

**THERESA (rural, leader):** We were paralyzed simply by arguing amongst ourselves. I don't know if you want to get into Thursday night?

**INT:** Sure.

**Theresa:** So no one questions the substance of these proposals but they certainly question the, well the way that people went about it and the motivation for doing it that way. I mean what is the point in calling five groups together for the sole purpose of figuring out who's going to do what and hopefully all mutually agree on who's going to do what and then have two parties go off and decide that this one group is going to do this. I mean it was just completely out of the process and that is, and has been, part of the problem is that there hasn't been enough of that cooperation and I'm speaking of PROBE in particular here I'm not going to pretend. I mean I really, they've pulled a couple of real stunts which has led to a great deal of mistrust.

**INT:** Why do you think that these things are happening?

**Theresa:** I don't know! I'm, very naive and I tend to sort of trust anyone who, I don't mistrust people enough, suspicious people I could very easily be taken in by them and never suspect anyone of an ulterior motive until it's too late.

**INT:** Which makes it all the more frustrating?

**Theresa:** Yeah, I mean I was just shocked when I'd found out about what they'd done.

Theresa now seems to question her capacity to trust others in her community after a long tradition of giving people the benefit of the doubt, something she values about her small rural community.

Theresa's comments demonstrate how the threats of environmental hazards such as landfill extend beyond the direct risk to things like property values, smells, and health from the site itself.



## **6.5 Summary: A conceptual framework for understanding risk at Caledon**

This section summarizes some of the main findings of the study within a conceptual framework which describes how the risk of the preferred site for the landfill was socially constructed in Caledon (see Figure 6.1). The diagram serves largely as a heuristic device for understanding this case study. The framework is not causal in the sense that it may be tested empirically in other settings, it is largely inductively derived and descriptive. It describes why the landfill was seen as such a threat and risk, worthy of vehement community opposition. Nevertheless, the framework is partially informed by the literatures on environmental risk such that it can readily be compared to them. The framework adopts, and in some cases, reconceptualizes concepts in the literature which may be tested deductively in future research (see chapter seven).

What follows is a brief summary of the key elements of each concept (in bold) within the framework and how the concepts are interconnected. The details of each concept have already been discussed throughout the three findings chapters under subheading names that generally match those in this framework. While there are some lines and arrows connecting particular concepts (e.g., siting threatens core values and vice versa; values and expectations/worldviews comprise core values), many more could have been drawn to show the several interconnections

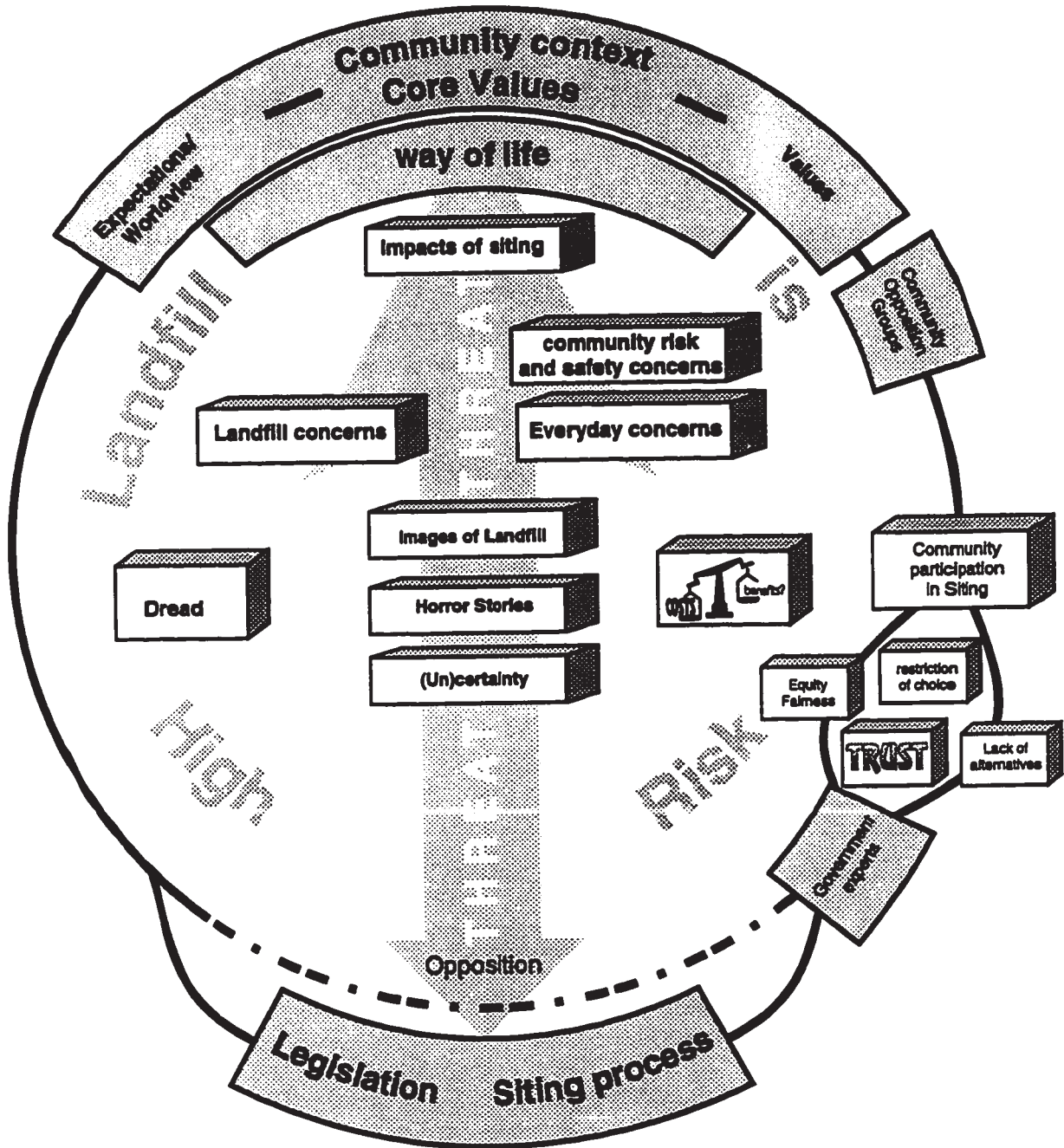


Figure 6.1 Conceptual Framework for Understanding Risk at Caledon

between phenomena at Caledon. Since all boxes are interconnected in various ways, these arrows have been left out for the sake of simplicity, nevertheless key connections will be discussed.

The diagram is roughly circular to represent the community. The main finding is that the proposed landfill and **siting process**, as guided by provincial **legislation** (bottom, curved centre box) were socially constructed as **high risk** since they, threatened **core values** which consist of **expectations** about how the world does/should work and what is **valued** (top, curved centre box). Thus, the circle of community which is comprised of these expectations and values was broken (dotted section of the circle) by the siting process and that process became a central, yet temporary force, in strengthening and sometimes reshaping core values. Opposition to the landfill and siting process was high because the core values which they threatened are deeply held and connected to ways of life that have long histories in the community or have been vigorously sought out and created by residents.

Three central, but not mutually exclusive, **ways of life** (top centre) supported by the core values in the community are rural agrarian family/child rearing, and retirement. That is, many that live in the rural areas are from century-old farm families or feel a strong connection to that way of life while many in the town of Bolton have moved away from the city to a place expected to be safe, quiet, clean and slow growth, for raising children or retiring. The landfill represented the antithesis of many of these things. It was seen as being unsafe, noisy, dirty and unwanted growth and thus, a threat to the type of

environment many wanted for themselves and their families. The siting process itself threatened the values that are held dear like friendliness and trust. The process itself violated these directly, but also created community turmoil which generated considerable frustration, anger, and resentment among those residents most devoted to opposing the landfill. For example, the turmoil surrounding discussions about opposition and the ethical treatment of neighbouring communities seemed to cause some residents to question the very existence of various core values, ones habitually thought to be shared with neighbours.

These core values are argued to underpin residents' expressed concerns about landfill (top left box). Concerns about things like water quality, health, smells, noise, and property values are representative of a broader concern to protect core values. For example, the top expressed concern - threats to water quality - is connected to traditional, rural ways of life such that proposals for having "city water" piped to the community should anything go wrong with the landfill is considered unacceptable. Thus, the removal of well water represents the elimination of a part of some people's way of life. Things like well water and traffic were also viewed to be threatened prior to the proposals for landfill. These **everyday concerns** (top right) in the community were intensified by the introduction of the proposed landfill site, which added to concerns about threats to issues like well water and traffic. That is, landfill concerns and everyday concerns overlapped considerably.

The concerns about landfill are influenced by at least five interconnected phenomena: **dread of landfill, images of landfill, horror stories** about other landfills, **certainty** that impacts will ultimately happen and expectations that the **benefits** are miniscule in relation to the **costs**. Dread of landfill at Caledon is comparable to the dread of nuclear technologies generally (see Slovic, 1987). Landfill is particularly dreaded in the sense that it is feared to have the potential to recreate past horrors (e.g., decayed basements, soil and water contamination) and, as yet, unknown horrors (e.g., large-scale negative health outcomes). Residents draw on images of past horror stories like Love Canal, and problems with various local landfills, to conclude that such problems are imminent near any landfill in Caledon. Landfill itself is a technological pariah associated with such images as decay, chemicals (with unknown human effects), pestilence and an underlying concern that the worst elements of the landfill may invade the body unnoticed and cause sickness or death. For Caledon, landfill represents considerable actual and potential **costs** with few appreciable **benefits** (centre, right). The benefits are deemed minimal partially because the local economy is quite vital, but moreover because the costs are viewed to be so great. That is, costs do not outweigh benefits as much as they overshadow them entirely.

The social construction of landfill as a high risk in Caledon was greatly influenced by the siting context within which resident's **trust of experts** was irreparably eroded early on. In the framework this context is represented by a series of boxes connected on the right side of the diagram. These boxes are placed on the fringes of the community circle

to represent that things like siting processes, government experts and community opposition groups are usually *temporary* elements of any community context. There are at least three interrelated key elements to this erosion of trust: expert **uncertainty** in the prediction of impacts from landfill, differing views on **equity/fairness** in the siting process, and the role of **community participation**. Part of the reason that residents were convinced that the landfill would negatively impact the community is that they recognized that the expert scientists could not predict the potential impacts of landfill. Specifically, experts could not be relied upon to assure that nothing bad would happen in the future. The IWA view of equity, as mandated by the EA legislation, was to keep Peel's waste in the Region while many in the community viewed equity in terms of considering a wide array of **alternative** ways of getting rid of waste, not just landfill. Government experts were distrusted because they failed to involve the community in any decisions about the elimination of alternatives. That is, many alternatives were abolished prior to any community participation in the process which restricted choice, the latter being highly valued in the community. Thus, community participation was seen as a sham whereby residents were asked to weight and rank criteria for only one waste disposal option.

**Community opposition groups** garnered considerable support and sway in the community and became relied upon for news about the landfill siting issue. The community opposition box in Figure 6.1 is closely aligned with the community context box to represent that these groups in many ways *were* the community in the fight against the landfill. However for some, involvement in opposition was associated with some

negative impacts including time away from other life duties and exposure to frustrating and sometimes verbally violent clashes among residents. While *these* impacts did not seem to extend too far beyond the groups themselves, the community generally experienced impacts from siting in the form of emotional shock at various announcements throughout the course of siting, the most prominent being the announcement of preferred site C34B. These residents seemed to deny that any site near them was sensible and so were caught off guard when the announcement happened. Residents may be setting themselves up for future shocks as some consider the issue of C34B to be dead, despite the fact that the Region still has to find a solution for waste disposal.

The coincidence of all of the above phenomena served to generate fervent **opposition** from the community. Opposition, combined with the nature of the siting process, may have contributed to the ultimate demise of the NDP government and the dismantling of the IWA. Residents were provided with unique opportunities for participating in the IWA siting process and the opposition groups orchestrated participation in order that it would slow down the process until a provincial election. Thus, a community participation process which was meant to get the community on-side with the choice of sites (e.g., since residents were personally involved in weighting and ranking criteria for site selection) backfired. The next chapter discusses how situations like the one in Caledon might be explained further by connecting them to broader social processes.

## **Chapter 7:**

### **Discussion: Caledon as a Risk Society**

This chapter links the findings at Caledon, particularly the conceptual framework, with the technological environmental risk literature reviewed in chapter two to broaden understanding of the case study. While there are many parallels between the Caledon findings and various theories of/approaches to studying risk, the focus will be on the risk society theory which is argued, in this chapter, to be the most appropriate for understanding the socially constructed meaning of risk for residents at Caledon. Nevertheless, concepts (in *italics*) from other approaches are invoked, particularly when these concepts seem to parallel or elaborate the characteristics and concepts within the risk society theory. In particular, approaches that include prominent roles for values, beliefs, social context and the social construction of risk are revisited. While no empirical studies were found which are based the risk society as an explanation, empirical evidence is used as argument of the potential transferability of the risk society concepts themselves beyond this case study.

The chapter is organized according to the main concepts outlined in the conceptual framework in chapter six. That is, each component or set of connected components within the conceptual framework for Caledon is described in terms of the risk society and



related theoretical and empirical literature on environmental risk. The discussion starts with a general overview of how the risk society connects to the Caledon case study.

### 7.1 Threats to security and core values

The central theme in the conceptual framework for Caledon is that both the landfill, and the siting process itself, threatened residents' core values which support security in particular ways of life. In this thesis core values are comprised of both values and worldviews. The separation of the two in the findings has been out of convenience for breaking up a large list of core values that emerged in the interviews. That is, elsewhere *values* (what people feel is moral or desirable) are distinguished from *worldviews/beliefs* (what people think the world is like)(Kempton et al., 1995), but here they are so intertwined (e.g., in ways of life) that they are combined within the concept "core values". Nevertheless, ways of life including rural agrarian, child rearing, and retirement are supported by similar sets of values and worldviews (e.g., slow growth, traditional, trusting) and worldviews (e.g., small town, place for family, clean) in the Caledon anyway and were jeopardized either directly and indirectly. This resonates with one of Beck's (1992a) main assertions within the risk society theory - that security as an organizing principle of society is currently being undermined.

Beck's theory refers to the transition from industrialized modernity to a new and unknown (since the process is under way, not complete) form of social organization which is presumed to be based largely on environmental risks. Beck argues that in the industrial

era (also called modernity) *security* is a central, yet rarely recognized, constituent of society whereby people consciously create and presume *safety* from various harms. Safety and security are argued to replace equality (e.g., social economic justice, gender equality) as ideals within the risk society as the centrality of *wealth* as the logic for production and social organization is transformed into the centrality of *technologically created risks* as the logic for production and social organization. A key feature is that neither the poor nor the wealthy can presume safety from *environmental harms* because technological environmental hazards/risks are increasing in number and have insidious and extensive (even global) impacts. As argued in chapter two the idea that security/safety is a key social phenomenon is shared by Giddens (1991) and his notion of the *protective cocoon*, Goffman and the *umwelt*, and Wolpert (1980) who uses of the idea of the *cloak of competence*. However, Beck's is boldest in his claim that in the risk society security/safety becomes more prominent than equality as an ideal in the movement towards a risk society. This may not be the case in Caledon.

The reason that security/safety has become so important in the transition to the risk society has to do with the changing nature of both technological risk and the way industrialized modernity handles risks from hazards. Risks from environmental hazards involve complex, technical, expert-controlled systems that may no longer assure safety from harm precisely because the systems are complex, technical, expert-controlled and therefore uncertain. This is now paralleled by increasing public recognition of the limits of science to be able to predict and control the impacts from hazards and, thus public

deference to experts (scientists and governments) in decisions involving environmental threats is declining. This state of affairs is signalled by profound public *shock* and *anxieties* when confronted with environmental threats directly which motivates political action. Thus, protecting security and reducing anxiety, not striving for equality, are the *main* motivations to political action and social change in the risk society.

Beck's risk society was developed to explain macro-scale changes in Western industrialized society generally, not local-scale societal change. However, Caledon represents a community at the margins of the risk society. That is, this case study represents a microcosm of these macro-scale changes. The residents' core values are the basis for safety/security in Caledon. Many of the residents have moved to Caledon to retire or raise a family or they have lived there all their lives. However, all residents seem to share a desire for traditional ways of life built on classic rural values including trust, respect for the land and the desire for a clean, spacious, healthy environment away from the city. These core values are central to what makes these people feel safe and secure.

The landfill and siting process both threatened Caledon residents' security. The threats were both direct and indirect. The landfill itself was seen as a direct threat to a wide range of things that were valued in the community including quiet, traffic safety and the safety of children (e.g., threatened by dump-truck traffic) as well as the natural aesthetic beauty of the area (e.g., threatened by the offensive appearance, smell and noise associated with landfill itself). Indirect threat to security includes a questioning of trust in neighbours as opposition efforts divided the community group leaders.

These direct and indirect threats/impacts on core values forced residents to confront their ways of life which, to that point had never come under serious threat from a technological environmental hazard. It seems that residents were accustomed to guarding against threats from other realms including safety from risks like crime and traffic. For example, the focus of residents' risk and safety concerns was on issues like crime, traffic, and financial issues not environmental concerns. When asked about community risk and safety (security) concerns, landfill was rarely the first thing people mentioned and/or wanted to talk about. This extends Drottz-Sjoberg's (1991) finding that the way people define risks (they had four definitions from which to choose) is a determinant of the perceived severity of risk from hazards generally. The Caledon case indicates that when given the opportunity to talk about "risk" environmental issues are rarely the first to spring to mind even though the community was highly sensitized to a specific hazard. While this thesis shows how traffic and financial issues *are* also connected to environmental threats, this connection was not readily made by residents in the ways they talked about risk and safety in their community. Nevertheless, residents agreed with the assertion that the landfill threatened their core values through their positive responses to the preliminary findings document (see Section 3.6.2 and Appendix F). This reinforces the value of interpretive social science based on qualitative interview methods for constructing the meaning of concepts like risk and safety for laypeople. While laypeople may not habitually think about risk and safety in terms of threats from the environment or technological

hazards, they can still agree that this is a sensible way to frame their concerns about landfill

The issue of core values is also prominent in recent discussions within policy analysis. Sabatier (1987) and Sabatier and Jenkins-Smith (1993) borrow from Lakatos' (1971) discussion of changes in scientific belief systems, and Converse's (1964) notion that abstract beliefs are very resistant to change, to come up with their own threefold categorization of values: the deep core, policy core and secondary aspects. The deep core consists of the "fundamental normative and ontological axioms that define a person's underlying personal philosophy" (e.g., views on distributive justice and the nature of humankind), the policy core of "basic strategies and policy positions for achieving deep core beliefs" (e.g., views the role of government as opposed to the marketplace), and secondary aspects as, "a multitude of instrumental decisions and information searches necessary to implement the policy core" (e.g., views on the seriousness of a particular problem, like finding a site for waste disposal) (Sabatier and Jenkins-Smith, 1993, 32).

The key to this categorization is that it represents a hierarchy of resistance to policy change based on adherence to social values. That is, the issues that threaten the deep core are the most resistant to change through policy initiatives. Within this thesis the deep core and policy core are combined into the general concept *core values* since the components of each overlap the Caledon residents' values, worldviews, and ways of life (see also Lomas, 1990). The most important parallel is the notion that both deep core and policy core values are resistant to change because they are part of a persons'/groups'

philosophical makeup. This resonates with Beck's and Giddens' notions that threats to these values (i.e., security/protective cocoon) has the potential to produce profound concern and anxiety such that people are likely to fight to protect core values. This issue is taken up again in section 7.7, concerning psychosocial impacts, and 7.8, concerning opposition. While Sabatier is generally concerned with why and how policy changes over time, his ideas are useful here for explaining how the meaning of risk can become socially constructed.

The Caledon case study may be connected with a wide array of theories/frameworks that include a prominent role for values in the social construction of risk including: grid/group analysis, the social amplification of risk, social arenas of risk and risk and social learning. That values are concepts in these theories/frameworks corroborates that understanding values is crucial for understanding how risk is socially constructed in everyday life. For example, the notions of *worldview ideology* and *group solidarity* central to grid/groups analysis are also relevant to the Caledon study.

Wildavsky and Dake (1990) argue that worldviews are actually comprised of deeply held values and beliefs which are the basis for group solidarity (see also Tonn et al., 1990).

The case study actually supports that there were a number of different "groups", defined in terms of ways of life (e.g., rural farming, family/child-rearing, retirement), whose solidarity may have been threatened. These ways of life also share values, so in this sense the solidarity of the community in general was also threatened.

Ways of life are not defined in the same manner as in traditional grid/group analysis (e.g., Douglas and Wildavsky, 1982; Wildavsky, 1991; Wildavsky and Dake, 1990). Traditional grid/group analysis involves ways of life as defined largely by political philosophy (Sabatier and Jenkins-Smith, 1993 call this *policy core*, as opposed to *deep core* beliefs/values which are also a concern of this thesis) - egalitarian groups {border} and competitive individualists - while in this thesis ways of life are determined as much in terms of peoples' views on the relationships between natural and social environments (e.g., quiet/peacefulness, cleanliness, traditional ) which may actually be supported by *either* centrist or border groups. Shrader-Frechette (1991) demonstrates why these traditional characterizations may not be appropriate for describing community reactions to specific technological hazards, through an example first described by Kunreuther et al. (1987). She argues that opposition to Allied Chemicals' pollution of the James River in Virginia was based not on the (egalitarian, border) anti-government, anti-industry sentiments that are usually associated with environmentalist opposition to industrial pollution (see Douglas and Wildavsky, 1982). Rather, opposition appealed to centrist arguments associated with (non)compliance with the law, constitutional "right to know" and democracy (Kunreuther et al., 1987). Similarly, at Caledon it seems that people who have centrist (e.g., conservative) and egalitarian (e.g., liberal) values *together* opposed the landfill at Caledon.

Values are conceptualized in the social amplification of risk framework as filters for risk perceptions and thus, take on a peripheral role in the framework (see Figure 2.5)

(Kasperson, 1992). A key feature is that *institutional values* may conflict with *individual values* which can function as a fulcrum for the delicate balance between risk attenuation (perception of risk minimized) as opposed to risk amplification (perception of risk intensified). But Kasperson conceptualizes institutional values mainly in relation to employment rather than broader institutions like government or even science. It was the latter that were important in the Caledon case since science and government controlled the siting process for the landfill (i.e., risk). Thus, the amplification of risk framework needs to account for broader sets of values to explain the amplification of risk in places like Caledon.

Like Sabatier's work the *social arena* framework (Renn, 1992) and the notion of *risk and learning* (Wynn, 1992) are directly concerned with the analysis of environmental risk and policy. These parallel the Caledon study through the concept of *value commitments* in the former and *tacit models* in the latter. Renn (1992) argues that policy decisions are influenced mainly by the degree to which various *stakeholders* effectively mobilize social resources to favour their position. He asserts that stakeholders try to convincing others of their point of view and that highlighting shared basic *value commitments* is among the most powerful of social resources. In Caledon, opposition organizers focused on the widespread *small town, slow growth* values of residents to ensure community commitment against the landfill.

Similarly, Wynn (1992) appeals to the notion of *tacit models* of the world to describe the role of values and beliefs in social learning. His focus is on the tacit models



of experts as opposed to laypeople and that both have very different beliefs and values about the way the world works, particularly in relation to the constitution of risks from hazards. He argues that all new information is used to preserve the tacit model. All knowledge on the risks from landfill in Caledon was conditioned by the degree to which they fit within the residents' tacit knowledge of the world around them. Thus, there is a direct parallel between Wynn's notion of tacit models and the definition of core values (particularly worldviews) in this thesis.

These latter two frameworks (along with the Sabatier's policy learning framework) focus on the roles for values in explanations of **policy change** rather than **lay constructions of risk**, the focus of this thesis. While values are central to Renn and Wynn's arguments their goal is slightly different. Values need to take on a more central role in explanations of why certain groups are deeply concerned about the risks from a hazard while others are not - that is, how risk is socially constructed through shared meanings. This is the focus of the remainder of the chapter.

## **7.2 Intensification of everyday concerns**

While the concerns about the preferred site for the landfill expressed by residents at Caledon reflect what is reported in the literature (e.g., Baxter et al., 1992), it is important to recognize that similar concerns already existed in the community prior to the landfill. Much has been made of the types of concerns people have about particular hazards with a view to changing the hazards themselves to allay these concerns. This

research reinforces that there were concerns about how the landfill might affect such things as water contamination (Edelstein, 1988; Fitchen et al., 1987; Rydant, 1988), traffic safety (Rydant, 1988; Stoffle et al., 1991), property values (Rydant, 1988; Sorensen et al., 1987), and health (Edelstein, 1988; Gibbs, 1986; Goss et al., 1987). However, focussing on expressed concerns alone may hide at least two deeper issues. First, these expressed concerns are not easily mediated since they represent deeper core value concerns in the community which are not readily minimized through basic remediation strategies (e.g., truck traffic diversion or seagull canons). Second, these concerns intensified existing threats to core values in the community from general growth pressures in the area.

The landfill issue reinforced some residents' existing concerns/fears about living in Caledon that highlights the importance of context on the social construction of risk. For example, some residents had existing concerns about *ever* having to receive "city water" piped from Lake Ontario, a real problem as Caledon continues to grow and stretch the limits of the local well water supply. A landfill, with the potential to leach toxins into this local well water supply, added to these concerns and threatened to speed up the switch to city water. While clean drinking water is an issue common to everybody, it has a particular meaning for the residents of Caledon - it is symbolic of their rural, small town values.

In terms of the risk society, Caledon was already experiencing threats to their security in various traditional ways of life which is tied to a reverence for things like fresh well water. But, before the landfill issue, threats came more from uncontrolled residential

growth and not from any specific technological environmental hazard. It was the landfill that brought these threats into focus and prompted large-scale action as community opposition.

Concern intensification resonates with the notion of the social amplification of risk, but also extends it. Kasperson's amplification of risk framework might view preexisting concerns as part of either the *portrayal* of the hazard (site *and* siting process) process or the residents' *interpretation* and *risk perception* processes (see Figure 2.5). Thus, the framework would explain that concern was amplified in the community because of the way the issue was negatively portrayed in the local media. The local media on the landfill issue itself were controlled by opposition leaders who either wrote or were quoted in the articles. The residents were also prone to trusting the local media for their information about the landfill as both shared the same view - landfill is high risk (see Section 4.3.1.3). However, neither *portrayal*, *interpretation*, nor *risk perception* adequately capture the powerful role of the existing social context at Caledon, in particular, the impact of preexisting everyday community concerns. While intensification of these everyday concerns is tied to core values and beliefs, and the latter are secondary considerations in the amplification framework (discussed in section 7.1) the former deserves separate consideration. That is, values and community context are not always linked together in any predictable way from one place to the next. For example, clean well water may not be as symbolic of traditional rural values in other places that, on the surface, seem similar to Caledon. Background/pre-existing concern intensification might be considered as a

separate element in frameworks like the social amplification of risk. This notion of intensification also provides one means for giving abstract notions like core values more practical (operationalized) grounding in the every day.

### **7.3 Objects of dread: Images of landfill and the loss of core values**

The environmental risk literature, and psychometric work in particular, contain many references to the concept "dread" as a key element in lay perceptions of risk (see chapter two), yet little has been written about exactly what people dread about particular hazards (e.g., nuclear power). Landfill seems to be dreaded in the context of local everyday life much like nuclear power is dreaded generally (see chapter four). However, the nuclear power is dreaded largely because of the threat of catastrophic deaths while there is little support for such an argument in Caledon. What residents in Caledon dreaded about the landfill were the images they have of landfill as well as the loss of core values (i.e., loss of objects and people who support/share particular core values and ways of life). Symbolically, residents were concerned about the death of a community which is dominated by particular sets of values. Core values at the individual level are highly resistant to change, so individuals' values were unlikely under threat of change. Yet, residents were concerned that valued aspects of the community might dissipate (e.g., destruction of the natural environment) and that growth would attract new groups who may support different sets of core values (e.g., associated more with city or suburban life, rather than rural, small town life) which would change the community generally. Thus,

dread may be re-conceptualized in the risk society theory to represent the fear of a loss of security in a way of life not just death itself.

There is more to dread than fear of catastrophic deaths. In the factor analysis studies of the perceived risks of a wide range of hazards, *dread risk* is used to describe one of the two clusterings of factors which emerged. Dread risk is a combination of 11 characteristics, whether a hazard is: uncontrollable, dreaded (the degree to which the hazard makes one feel uneasy at the gut level), global catastrophic, fatal, not equitable, catastrophic, high risk to future generations, not easily reduced, increasing in risk, involuntary, and suspected to effect somebody personally (Fischhoff et al., 1978; Lichtenstein et al., 1978; Slovic et al., 1982; Slovic, 1987). However, these characteristics focus on the hazard and pay little attention to the relationship between hazards and local, everyday life.

Since these landmark studies, one of the main areas of attention has been the relationships between dread, perceived risk, and mortality (see chapter two). For example, some suggest that what people actually dread is death (personal/family, immediate/future mortality) from the hazard (Gregory and Mendelsohn, 1993). While fear of death does seem to play a role in what is dreaded about environmental hazards generally (as demonstrated in Gregory and Mendelsohn's findings), for the people in Caledon there were no mentions of death as a concern, even in the discussions of health. For example, there is no theme about death and a NUDoIST text search of the words *death*, *dying*, and *dead* produced no finds which could be labelled as concerns about the

landfill. Nevertheless, the residents seemed to have gut-level uneasiness about living close to the landfill.

While the residents did not talk directly about the potential for landfill pollution to cause death it may be implied in the images people had of landfill. Images of decay, rot, pestilence, and stench are symbolic of death. Another prominent image of landfill is that of invasion of the body - that somehow the bad things that are (temporarily) contained in a landfill will eventually find their way into people. Thus, there may be a vague fear (dread) that the decay, rot, etc. will become transferred onto individuals which would signal their death either physically (e.g., in the form of debilitating disease) or metaphorically (e.g., the stigma of these images passed on to their households and community). These images seem symbolic of deeper concerns which residents may have found difficult to express.

Douglas (1966) writes about the centrality of images and symbols to social group cohesion, whereby groups select certain symbols as fundamental for protecting their group identities. In Caledon the landfill may represent the antithesis of symbols like rural beauty, the family farm, and natural cleanliness that are seen as essential for individual, family, and community well being. In the residents' view, the landfill and siting process violated these central community symbols. The power of such symbols is reflected in the Town of Caledon Logo which contains three hills representing conservation and recreation, agriculture, and in the background, industry (Figure 3.1). While the latter hill indicates a some commitment to modern progress the foreground is dominated by the things which support the symbols small town, rural, nature-oriented life.

These images of landfill are also connected to horror stories of mishaps at landfills in other places. Both may be linked to the *availability* and *vividness* heuristics described by decision researchers (e.g., Plous, 1993). Such heuristics are used by laypeople to simplify complex problems in order to make decisions and these simplifications are claimed to lead to decisions which do not maximize utility (e.g. maximum monetary value). The availability heuristic involves the idea that people make decisions based on the images available to memory and vividness has to do with the degree to which past images are etched in peoples' minds. In Caledon some residents drew on vivid images of horror stories like Love Canal or local landfill mishaps for deciding to be highly concerned about the landfill. Thus, experts may claim that the residents are not making rational (utility maximizing) decisions since they make use of such heuristics. However, for these residents utility itself may be comprised of core values not just monetary concerns.

The relationship between images, symbols and heuristics resembles Wynn's (1992) notion of *technological spectres*, that people condense complex technologies like landfills into simplified symbols. This may be connected to the risk society in terms of the implications of such symbols.

Wynn argues that one of the reasons that technology is viewed negatively is that it is generally hidden from the majority who benefit from it. These ghost-like technologies are controlled by equally invisible and distant experts. Being distanced from largely expert-controlled and complex technologies like landfill is a characteristic of the transition

risk society. The transition itself is distinguished by realizations that these complex technological systems are uncertain and potentially dangerous. People are frightened by spectres as they, are becoming more visible to the public, sometimes in the form of shocking disasters within systems that go wrong (see Perrow, 1984).

What the people of Caledon dreaded was the negative images of landfill which are linked to the potential dilution of traditional core values in the community generally. But these images are grounded in experience, either directly or indirectly of a complex technology that can fail, with potentially disastrous results. These disastrous results may include changes to the nature of the community including cleanliness, agriculture and natural beauty which support traditional core values. In Caledon therefore, people particularly dreaded the thought that they could not be protected from a technology perceived to be uncertain. The role of uncertainty in relation to threats to core values is elaborated in the next section.

#### **7.4 Expert *uncertainty* translates into perceived impact *certainty***

Residents at Caledon viewed landfill as a technology with impacts that are, in many respects, unknown to experts (see chapter five). The perceived uncertainty of experts translated into considerable resident concern and certainty that impacts would eventually happen in the community. Public recognition of expert uncertainty is a characteristic of the transition from modernity to the risk society. This agrees with a recent study which finds that Americans generally hold mental models (simplifications of the world in order to



make form opinions/make decisions) of the relationship between technology and the environment as complex, interdependent and unpredictable (Kempton et al., 1995). In Caledon this recognition was accompanied by feelings of distrust in expert opinion and a general sense that such people cannot protect the residents from landfill harms. Without this assurance of protection, concerned residents feared certain future impacts which were bolstered by lay knowledge of the fallibility of complex technological systems.

The link between recognition of uncertainty and perceived certainty of future impacts is supported by at least three concepts, Slovic et al.'s (e.g., 1982) *unknown risk*, Vyner's (1988) ideas about *invisible trauma* and Perrow's (1984) related notions of *tight coupling* and *complex interactions*. Slovic et al. (1982) argue that a hazard which rates high on the unknown factor tend to have some combination of the following characteristics: not observable, unknown to those exposed, effects are delayed, new hazard, unknown to science. At Caledon all of these seemed to play a role since the proposed landfill was seen to have the potential to leach harmful chemicals into the local water supply unobserved and remain undetectable to both experts and residents for some time. The key parallel though between Caledon and Slovic et al. is the concern that effects would be delayed and are unknown to science. Section 5.4 concerning residents' uncertainty reports that many residents claimed that impacts were *immanent* and that the experts had no reliable way of knowing what these impacts might be or how to detect them. This is reflected in residents' desire to have *more research* into such issues. The main difference between the findings and Slovic et al is that landfill was not seen to be a

new hazard since many reported direct or indirect experience with landfill and its impacts. However, there were concerns about new, and potentially more dangerous, chemicals being deposited into landfill which may increase both uncertainty and risk.

Vyner (1988) argues that an important aspect of the uncertainty is that people often have difficulty adapting to it (coping) and this can be traumatizing. When faced with a threat, most people try to understand the nature of the threat so that they can make a decision about what to do in order to minimize the impact of the threat (see also Lazarus, 1966). When the threat itself is fraught with uncertainty, people often find it difficult to make decisions about (i.e. cope with) the threat. Vyner provides a twelve-fold typology of uncertainties, all of which can hamper efforts to cope. But most of these have to do with situations involving *acute* environmental events (e.g., the discovery of leachate near Love Canal) and therefore tend to focus on the invisibility of chemicals and nature of dose-response uncertainty. For example, Vyner talks about *latency uncertainty* which has to do with the time period between exposure to a chemical and the onset of a negative health outcome. Vyner (1988, 61) comments on the psychological impact of latency uncertainty,

It is the experience of knowing that you have been exposed to an invisible contaminant, but of not knowing whether that exposure has already caused biological damage that will result in the appearance of contaminant-caused disease in the future.

The impacts of the landfill were certainly latent in Caledon since there was no acute event (other than siting), no chemicals, and no specific dose-response relationship to ponder, yet latency uncertainty does not fully capture this meaning of such a situation.

The Caledon situation involved a unique form of uncertainty, which may be added to Vyner's list of called *site latency uncertainty*. In Caledon the exposure was the threat of landfill combined with the siting process itself so site uncertainty concerns whether a facility, which has the potential to produce invisible contaminants and eventually negative health impacts, will itself ever exist. Thus, exposure at Caledon had added invisibility in the sense that there was uncertainty about whether C34B would be approved along with latent concerns about all of the potentially invisible chemicals that may have contaminated the water if it was approved. Vyner's model explains the high levels of concern in any exposed community as a function of the level of uncertainty, both of which were high at Caledon. This has to do with both the nature of the landfills and the type of siting process. The latter had built-in uncertainty over the duration of site selection and approval which according to IWA estimates was to take over four years. Ironically the residents themselves slowed down the process which increased uncertainty by extending the process. This issue will be re-visited in sections 7.6 and 7.8, while the impacts of uncertainty will be elaborated in section 7.7.

Residents think causally (if A ever was connected to B, it has a 100% chance of occurring in the future) (see also Slovic et al., 1993) not probabilistically (based on the number of times A has been connected to B, A has an x% chance of being connected to B

in the future), a manner of thinking about the risks from landfill which was criticised by at least one of the IWA experts (section 6.3). This expert view is supported in much of the risk literature which presumes that laypeople do not think rationally about the potential impacts from technological environmental hazards which are usually low probability risks (e.g., Burger, 1988)(see also section 7.6). However, researchers like Perrow challenge this expert view and lend some credibility to the residents' points of view. The basis of his argument is that various segments of technological systems are so *tightly coupled* that if something goes even remotely wrong in one segment (e.g. from human error) it can lead to far-reaching system-wide failures. This is similar to arguments forwarded by Caledon residents who cite coupling scenarios like technical malfunctions in the landfill liner and human error in detecting toxic chemicals in household garbage. Similarly, Perrow claims that complex technological systems may be comprised of *complex interactions* which are unintended and therefore are not accounted for in the design of the system. These complex systems and interactions increase the likelihood of negative impacts. Caledon residents are concerned that experts do not have a reasonable grasp of the nature of landfill and its impacts since it involves the complexities of technological, natural and human systems which may interact in ways which cannot be calculated probabilistically.

The residents at Caledon seemed to feel that the experts could not make reasonable assurances about the safety of complex waste disposal and waste disposal siting systems. Some were convinced, however, of the reasonable safety of alternate disposal options, particularly incineration. For some residents one of the key differences

between the two is that landfill remains a complex and uncertain system over a much longer period of time than incineration. Thus for the latter, negative impacts from complex interactions are less likely. Waste in landfill remains in the ground forever while it decomposes, however with incineration the complexity and uncertainty are perceived to end once it is burned - at which point it was said to be, as one resident put it, "just ashes and nothing". There seems to be a powerful influence of context on the perceived risk of incineration since many Canadians view it as risky. In one study (Slovic et al., 1993) over 60% of Canadians actually perceived the health risk of waste incinerators to be either moderate or high. The hopes for incineration among some residents in Caledon seems to contradict this popular view. It may be that contextual conditions, like restricting residents' choices by eliminating alternatives like incineration (i.e. the nature of the siting process), contributed to apparently lower concern about this technology in Caledon relative to the rest of the country.

The high level of concern about landfill risks at Caledon was linked to a common view that expert knowledge about the impacts of landfill was limited and inadequate to reassure the safety to which residents had become accustomed. Current research on the relationship between trust in experts and uncertainty is inconclusive (see Johnson and Slovic, 1995) however, when put in the context of other circumstances which foster distrust, as in Caledon, the relationship seems negative. While distrust in expert knowledge is linked to other forms of distrust (e.g. lack of alternatives) it is also connected to the fact that landfill and landfill siting involve technological systems which are complex, invisible

and uncertain. Beck (1992a, 155) explains his own view of distrust of experts in terms of two phases of the relationship between science and the public,

The developmental logic of the first phase relies on a truncated scientization, in which the claims of scientific rationality to knowledge and enlightenment are still spared from the application of scientific scepticism to themselves. The second phase is based on a complete scientization, which also extends scientific scepticism to the inherent foundations and external consequences of science itself. In that way both its claim to truth and its claim to enlightenment are demystified.

The landfill siting issue at Caledon forced residents into this second phase which is characterized by scepticism about science. At Caledon residents were suddenly confronted with technological systems (landfill and landfill siting) which had remained largely invisible to their lives until the advent of the IWA siting process. This confrontation led to recognition of the range of uncertainties associated with these technologies (based on science) which had been similarly invisible. It is such confrontations which prompt people to actively cope with such uncertainties and which marks the transition from modernity to the risk society. The traumatic nature of confrontation may have contributed to claims about the certainty of impacts.

### **7.5 Costs overshadow benefits**

A common way to frame risk decisions concerning environmental hazards is to weigh *costs* (hazard risks) against *benefits*. In Caledon few acknowledged any benefits from having a local landfill, and those that did, felt the benefits were so low that they were not even worth considering. This may be explained partially by the idea that the costs of

landfill were viewed to be so high that they overshadowed the value of benefits entirely. The overwhelming role of costs may be related to the fact that they included threats to deeply held core values and ways of life which residents fought hard to achieve and maintain even prior to the landfill issue.

Prospect theory (Kahneman and Tversky, 1979) is one of the most progressive theories of decisions involving costs weighed against benefits since it asks people to value risk choices relative to current wealth not in absolute terms (see chapter two). One of the major findings from early prospect theory studies - that losses loom larger than gains (the S-shaped value function in Figure 2.2) - seems to apply to Caledon. However, the negative value of losses (costs) on the left side of the graph would likely be considerably steeper since the costs of landfill at Caledon were considered to be so great. A limitation of prospect theory for explaining what happened at Caledon is that it is based on value or utility expressed in monetary terms. However, when (negative) utility is expressed in terms of loss of conditions which support core values, as in the case of Caledon, losses are higher and the curve is considerably exaggerated on the left side. The other major finding of early prospect theory studies, that people overweigh small probabilities, is difficult to ascertain since the probabilities of impacts are themselves associated with considerable uncertainty.

When considered in the context of everyday life at Caledon costs and benefits had much to do with social values, not just economic issues. Gardener and Gould (1989) recognize this in a study which disaggregates overall benefits to include *economic*

*benefits, basic needs, safety and security, and pleasure.* Gardener and Gould's notion of benefit is linked to the risk society theory in the notion that *safety and security* is a benefit. In the study the non-economic aspects like *safety and security* benefits did not account for as much variation in perceived risk as economic benefits, however, overall benefit itself (all four types combined) actually accounted for very little variation in perceived risk. This agrees with the findings of Flynn et al. (1992) that economic benefits are not statistically significant predictors of community support or opposition to the Yucca Mountain nuclear waste repository proposal. These parallel the Caledon situation whereby benefits seemed to play a small role in the perception of risk. Further, this claim is supported by Lawrence (1996, 178) who actually studied a number of Canadian siting process including the IWA's, "local political and public resistance was often strongest within urban fringe areas, especially where rural lifestyle and quality of life were a *higher priority than employment and economic opportunities (emphasis added)*. It is more appropriate to consider qualities like safety and security as components of the *cost* side of the cost-benefit equation, as in Caledon safety and security in particular ways of life, rooted in common sets of core values, seemed to be intensely threatened. In relation to the risk society theory, safety and security represent key social organizing principles of modernity (and Caledon) which are increasingly being threatened by environmental hazards like the C34B landfill in Caledon. If reactions to environmental hazards continues to involve issues of safety and security from (non-financial) harms, definitions of *cost* and *utility* may have to be expanded to include these concerns.



## **7.6 The lay-expert interface and the erosion of trust: Language, rationality, equity and the refusal of deference**

Trust in experts was eroded on several fronts during the landfill siting issue in Caledon. While the erosion of trust was linked to technological uncertainty (described in section 7.5) it was also a function of at least two other phenomena: residents and experts seemed to speak very different languages of risk tied to different views of rationality and equity, and the residents felt expert restricted choice too early in the process.

Trust is now regarded as one of the essential elements of any successful risk communication effort (Covello, 1996; Flynn et al., 1992; Leiss, 1996; Slovic, 1993; Wildavsky, 1991), yet at Caledon not only was trust eroded very early in the process, community risk communication did not seem as important the siting agency as actually finding and defending the choice of (lowest risk) site. Thus, residents felt that experts were not taking community concerns (e.g., threats to core values) seriously. The low level of trust contributed to an unwillingness on the part of residents to defer to the IWA's choice. The decline of deference to such expert decisions is a central characteristic of the change from modern industrial society to the risk society.

The IWA experts and the residents seemed to speak different languages of risk. Experts centred on issues of rationality while residents focussed on a range of issues which reflected a deeply rooted need to protect their ways of life. What mattered for the experts were *facts, science, and rationality* which reflects a view of risk assessment and communication which has been criticised in the literature for being too narrow. While

technically good science is important for finding appropriate landfill sites it is no longer enough on its own since community opposition has increased in importance. For example, Leiss (1996) reviews some overlapping sets of lessons learned in risk communication over its short history (since the mid 70s) including that: it is problematic to speak of *true* and *perceived* risk, laypeople resent the "technical arrogance" of experts and, lay trust in experts is essential for messages to be respected. The themes associated with expert conversations in this study indicate that some or all of these may have been violated. Lawrence (1996, 181) corroborates that the IWA generally was "perceived to be arrogant or insensitive". That experts considered mainly facts, science, and rationality rather than building trust by avoiding stubbornness and arrogance seemed to play a role in the erosion of trust at Caledon. While experts claimed that extra measures were taken to use non-technical (non-arrogant) language many residents in this study disagreed, accusing experts of being *too technical*, *patronizing*, and *biased*.

IWA experts seemed to support a traditional, scientific view of rationality while the residents adhered to one based on protection of ways of life rooted in particular values. The review of rational decision theories in chapter two concludes that laypeople do not usually make scientifically defensible, utility-maximizing, risk decisions. Instead, they are claimed to employ heuristics and biases for making decisions which simplify the choices to make them more manageable (e.g., Kahneman and Tversky, 1979). This line of argument implies that when scientific and lay views of a hazard disagree, it is because

laypeople are irrational since they do not employ scientific decision rules (e.g. Star and Whipple, 1980).

Shrader-Frechette (1991) argues however, that laypeople faced with risks to their everyday lives may adhere a rationality linked more to values than to scientific decision-making, and neither laypeople nor scientists have privileged access to truths about risks from hazards (see also Wynn, 1992). Thus, she puts rationality on a continuum from *naive positivism* - which assumes that risk can be calculated mathematically, objectively, and independently of value judgements - to *cultural relativism* - which assumes that risks are collectively defined by groups, and are constructed from group values (see also, Douglas and Wildavsky, 1982). According to naive positivism science is the only means of providing rational decisions about risk while under cultural relativism all groups have equal claims to rational risk decisions. At Caledon experts tended towards the positivist view while residents leaned towards the relativist view, but in neither case are the extremes of Shrader-Frechette's characterization evident. For example, experts implicitly recognized that the weighting and ranking of site selection criteria involved *values* about which pieces of information were most important for finding the best site (e.g., protecting hydrogeology versus economic). Similarly, residents recognized the importance of scientific information about risks, but they also recognized that it is fraught with uncertainty. Nevertheless, views of rationality differed in important ways.

Residents at Caledon accused the IWA of not adhering to the rules necessary for ensuring scientific rationality. Scientists involved in the siting research were denounced

not only for producing evidence which could be contradicted by *common sense* (e.g. debates over the nature of the water table), but also for doing *biased/fraudulent* research. This is partially supported by Lawrence (1996, 180) who claims that one of the reasons for the demise of the IWA was, "questionable numerical decision rules". The outcome of such debates is not the issue here, what is important is the idea that residents acknowledged the relevance of scientific knowledge not just their own values. However, when scientific knowledge itself is perceived to rest on questionable research, as it was in Caledon, residents' may feel justified in taking recourse to protect community values using scientific as well as non-scientific arguments.

Residents resorted to non-scientific claims against the landfill partially because the process itself was viewed to restrict choice and violate equity. Residents and experts spoke very differently about equity, as the former focused on *process equity* (including reasonable consideration of all options) and *intra-regional equity* (ensuring regional waste disposal pacts be honoured), while the latter centred on *inter-regional equity* (ensuring the waste stayed in Peel where it was generated). Terms such as these have few parallels in the environmental risk literature. Environmental equity is a general term which refers to the equal sharing of risks across groups (Cutter, 1995), with attention to both social (Harvey, 1973) and distributive justice (Rawls, 1971). This version of equity resembles the NDP/IWA's - insistence that the waste be disposed of in the region - and is reinforced

by Lawrence (1996) who gives it a different label - *substantive fairness*<sup>21</sup>. Some residents clearly had not thought of this principle until forced to through interview questions and few believed that this should be the main principle to guide waste siting in Peel. Thus, Beck's suggestion that equity as a goal of society is now giving way to the protection of security as a goal, appears to exist at Caledon. Some residents seemed most concerned with keeping the site out of Caledon<sup>22</sup>. However, many residents seemed to react less to the spirit of the principle of inter-regional equity and more to the groups that supported it. That the NDP and IWA were in favour of such a view seemed reason enough for some residents to dismiss it.

The NDP and IWA were distrusted because they set up a process deemed unfair since it foreclosed on a number of waste disposal alternatives without the involvement of the community and they bypassed regional agreements about waste disposal. The former is analogous to Lawrence's (1996) notion of *procedural equity* which pertains to fairness in the planning process by ensuring that traditionally under-represented groups are involved in decision-making. While the NDP and IWA did involve the community in the weighting and ranking of site-selection criteria and provided funds for reviewing IWA documentation, residents felt excluded and frustrated by the fact that some alternatives

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<sup>21</sup> Lawrence equates the terms equity and fairness. The same is done in this thesis since while "equity" is a term used largely in the literature the "fairness" is more readily understood by laypeople and was therefore used within the context of interviews.

<sup>22</sup> This issue will be re-visited in the conclusions, chapter eight, in relation to reflexively induced, unintended, institutionalized structural changes.

were, excluded from consideration up front. Some residents acknowledged that these alternatives may have proved unfeasible over time, nevertheless they wanted the option to have some community representation on such a decision.

Lawrence agrees that procedural equity - specifically exclusion of alternatives through legislation and procedural inertia (i.e., it pressed ahead despite recognized problems) was one of the main reasons for IWA siting problems. He attributes both the exclusion of alternatives and procedural inertia to the institutional arrangement which restricted choice,

In another example (IWA), choices and political involvement were artificially constrained through special legislation (e.g., the Waste Management Act)(Lawrence, 1996, 182).

The Waste Management Act also superseded the regional agreement that it was Brampton's turn to take Peel's waste. The provincial NDP government was viewed to be needlessly forcing its will on a group of communities which felt that they had a reasonable, fair, and proactive solution to their waste problem.

Language differences, divergent views on rationality and equity, restriction of alternatives and failure to acknowledge regional government waste management efforts all contributed to residents' lack of trust in experts. The involuntariness of the landfill siting process, a key construct in the risk literature (e.g., Slovic, 1987; Starr, 1969), was the main determinant of many of the residents' concerns. Yet, while residents at Caledon are likely exposed to a variety of involuntary risks from hazards (e.g., crime) the landfill is what mobilized residents to act, perhaps because core values were most threatened by the

landfill and siting process and/or because a specific culprit could be blamed for the problem (i.e., the IWA and NDP). Regardless, public abhorrence of involuntarily imposed hazards fits with the risk society theory, particularly the notion that the public is increasingly unwilling to defer to expert decisions about environmental hazards (see also Laird, 1989). The risks from imposed, complex and uncertain technologies are increasingly scrutinized by publics (Beck, 1992a). These same publics voice their unwillingness to allow experts to make unilateral decisions by way of vehement opposition - such was the case in Caledon. Further, both siting and the opposition to it were accompanied by impacts on residents which is the topic of the next section.

### **7.7 Psychosocial impacts from siting and opposition**

The residents at Caledon experienced psychosocial impacts from the siting process directly and indirectly through the community opposition process. A psychosocial impact may be defined as, "The complex of dysfunction, distress, and disability, which are manifest in a wide range of psychosocial and social outcomes in individuals and groups" (Taylor et al., 1989; Elliott et al., 1993). In both cases residents reported shock, concern, anxiety, worry, as well as changes to the way they view the community (i.e., worldviews). All of these were destabilizing and were influenced by the length, complexity and particularly uncertainty of the siting process as well as the particular coping strategies employed by residents. These impacts acted as signals of the threats to deeply-held core values which were needed for residents' security and stability. Psychosocial impacts are

connected to Beck's (1992b, 1987) notion of *anthropological shocks* (what Giddens (1991) terms *fateful moments*) since it was not until critical events happened that people's worlds were shaken up.

Complexity, uncertainty, and the long duration of the siting process contributed to psychosocial impacts. It took three years of the process to narrow numerous possibilities for IWA preferred sites a long list of 21 to a short list of five and finally the preferred site (see Table 3.2). This exposed residents to a process which opened up room for considerable speculation about which were the most appropriate sites, let alone alternatives that were not even being considered by the IWA. Section 5.1 reports that many residents preferred to assume that the site(s) closest to them would not be picked - for example, because of the proximity to large-scale (family) agricultural operations. Residents experienced emotional shocks subsequent to the announcements of the long list, short list and preferred site because they could not imagine that their local sites would *ever* be picked. Thus, despite considerable forewarning of the potential for having a potential preferred site in their neighbourhood these residents experienced sudden, and potentially destabilizing emotional shock. What were at one time only thought of as *potential* impacts (because site presumed inappropriate) had suddenly become one step closer to *actual* impacts after each siting announcement.

This phenomenon of emotional shock in the wake of these announcements can be explained using Lazarus' (1966) theory of stress and coping (see also Lazarus and Folkman, 1984). Lazarus asserts that stress is the outcome of two appraisal process,



appraisal that a hazard poses threat of harm, and appraisal of inadequate resources to cope with that threat. The two most common coping strategies (ways of minimizing stress) are problem-focused coping - taking actions to reduce the threat by actually changing it; and emotion-focused coping - making changes to the way one thinks about the hazard to reduce the threat cognitively. The residents who experienced the emotional impacts from site announcements seemed to employ emotion-focused coping strategies by convincing themselves that their site would not ever be chosen. This set them up for future shock and forced them to reappraise both the hazard and their resources to cope with it after subsequent announcements. Within this reappraisal threat seemed to outweigh the ability to cope which may have sustained emotional impacts for the remainder of the siting process. Thus, emotion-focused coping alone was not sufficient for some to deal with the threat of a long and dynamic siting process.

Emotion-focused coping seemed to give way to problem-focused coping, in the form of active opposition, for some residents, but the latter unearthed new threats in the form of dilemmas within/among opposition groups. Once residents became convinced of the gravity of having a site in their neighbourhood (i.e., emotion-focused coping strategies proved inadequate) some were motivated to take action against the landfill generally by joining opposition efforts (i.e., problem-focused coping<sup>23</sup>). Residents who became heavily involved in community opposition were exposed to frustration, anger, and anxiety as the

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<sup>23</sup> Other problem-focused measures included information-gathering and attendance at community meetings (cf. Elliott et al., 1993)

community groups struggled with the strategies they would use to fight the landfill (see sections 5.1 and 6.4 ). In particular, certain groups were criticised by fellow residents for wanting to off-load the landfill on nearby communities and disagreements erupted over the sharing of opposition funding. For some this raised questions about whether the community did in fact operate in the friendly, cooperative, and trusting manner that they thought it did. Thus, emotion-focused coping based on involvement in opposition led to some turmoil and may have exacerbated psychosocial impacts. This is similar to the way residents coped near the recently-approved Halton regional landfill whereby those who were unconcerned about the site seemed to employ emotion-focused coping strategies while those who engaged in problem-focused coping tended to be the most concerned (Baxter, 1992; Elliott and Baxter, 1994).

Psychosocial impacts from siting and opposition are tied to both issues of trust and the nature of siting itself which together exposed the community to what Edelstein and Wandersman (1987) call *environmental turbulence*. In both cases security was based at least partially on implicit trust which appeared to be misgiven. The residents near the potential sites trusted that the government, scientific experts generally, and the IWA in particular would eventually eliminate local sites presuming that the sites were not appropriately located. Similarly, opposition group members trusted that neighbours would pull together rather than be "back-stabbers" in the opposition process. Both sets of impacts are linked to the fact that the threat had remained invisible for much of the early part of the siting process and was charged with uncertainty (Vyner, 1988). Edelstein and

Wandersman (1987) claim that uncertainty and invisibility contribute to environmental turbulence characterized by negative community changes including disruption to social networks, community solidarity, and community conflict. Their arguments, however, are based on acute contamination events involving actual chemical leaks (Edelstein, 1988; Fowlkes and Miller, 1982; Gibbs, 1983). The fact that Caledon residents were not exposed to a contamination episode indicates the power of environmental threats alone to destabilize individuals and communities.

Within the risk society theory the capability of risks to destabilize is conceptualized as anthropologic shock (or fateful moments, Giddens, 1991) which involves the notion that everyday life is increasingly susceptible to anxiety-producing changes from distant technological threats. Beck (1987) developed the term to explain the impact of the Chernobyl nuclear disaster on everyday life in European communities. However, people set themselves up for such a shock in the face of uncertain risks. As Beck (1987, 161) puts it, "In the end, no one wants to know about things they cannot change and which turns their way of life upside-down". The irony is that it is because of efforts to cope with risk, the "not wanting to know" or emotion-focused coping, that people are so shocked when something actual *does* happen. Nevertheless, shocks were not experienced uniformly in Caledon. For some it took the announcement of the long list of sites to suddenly increase concern, for others it took the short or preferred list announcements, and for some shocks remain only potential, pending future developments (e.g., possible re-consideration of C34B as the region re-grapples with what to do with its waste).

Beck (1992, 153) summarizes some of the implications of general social shocks in the transition from industrial society to risk society :

The shock that strikes people is a double one. They are set free from the apparently naturally ordained ways of life and certainties of industrial society, and this end of 'post-history' coincides with the loss of historical consciousness in their forms of thinking, living and working. Traditional forms of coping with anxiety and insecurity in socio-moral milieus, families, marriage and male-female roles are failing. To some degree, coping with anxiety and insecurity is demanded of the individuals themselves. Sooner or later, new demands on social institutions in education, counselling, therapy and politics will arise from the associated social and cultural shocks and upsets.

Shocks are connected to coping with the attendant anxieties which are also connected to broader social institutional changes. Thus, psychosocial impacts may be characterized as signals of impacts to security in ways of life and also the potential for social change. The latter is the focus of the next section.

### **7.8 Opposition, individualization, coping and reflexivity**

The landfill and siting process at Caledon threatened core values. Efforts to cope with this threat included ardent opposition to both which may be connected to two central concepts within the risk society theory *individualization* and (the broader notion of) *reflexivity* (Beck, 1992). These concepts comprise an explanation for how threats to everyday life from risks translate into institutional structural changes. One example from the Caledon study is explored - the structural changes to waste siting in the regions surrounding Toronto.

Individualization refers to the, "subjective-biographical aspects of of the civilization process" (127) and is comprised of three sub-processes: removal (disembedding or liberation), loss of traditional security (loss of stability), and re-embedding (re-integration) (Beck, 1992). The first involves the liberation from traditional forms of dominance and control (e.g. class, family, government, science), the second to a disenchantment with guiding social norms and practical knowledge (e.g. scepticism about science), while the third refers to a re-integration of individuals into society. Reflexivity encompasses the idea that all three processes occur alongside changes in society itself - social structural changes are intimately tied with changes in individuals' behaviours (see also Giddens, 1991).

Beck (1986) argues that individualization is characterized largely by a removal from traditional life through an increasing integration within the market system and dependence on institutionalized forms of external control. Beck uses television as an example since it both isolates people, but at the same time, ties them to the market through things like advertising. Thus, while people used to meet at the village centre in feudal society, they now meet at the *village green of television*. The main institutionalized external structures which controls risks from hazards are usually government and science and Beck (1992, 154) asserts that both, particularly the latter, are undergoing pressure from publics who now question their decisions,

The risks emerging today are distinguished firstly from all the earlier ones by their society-changing scope, and secondly by their particular scientific constitution.

Such was the case at Caledon involving the NDP, IWA, (institutionalized decision makers) and the residents (public).

The *removal* at Caledon was induced by threats to core values from the NDP/IWA siting process. Residents questioned the authority of these (overlapping) institutions to make appropriate decisions regarding waste disposal. In the process the residents lost their *traditional sense of security* that these institutional structures would protect their welfare, and particularly, would not threaten the core values on which security is based. Shaken security was signalled by psychosocial impacts in the form of emotional shock, and anxiety about the future. Re-embedding involved the use of coping mechanisms to deal with the psychosocial impacts to security which included fervent opposition efforts. Opposition had at least two reflexive effects on siting - opposition slowed down the NDP/IWA process and likely played a role in dismantling both.

Beck (1992, 153) asserts that one of his central points is that, "Structural social conditions are radically transformed in the wake of reflexive modernization". Section 6.4 reports how such a transformation occurred in Caledon. One of the main opposition strategies was to slow down the IWA process by becoming highly involved in it, partially because the process was set up specifically to include community participation. The IWA experts admitted that residents actually slowed down their efforts. A community participation process which was meant to include residents and get them on-side with the decisions, served mainly to hamper IWA siting efforts.

At the same time that the IWA was being overwhelmed by community participation, influentials in the community politically lobbied the provincial Liberals and Progressive Conservatives to ensure that they would include platforms against the IWA process in the upcoming election. The Conservatives were elected, replacing the NDP in most of the areas of north of Toronto affected by the IWA process, and immediately dismantled the IWA as one of its first orders of business. It is difficult to establish a cause-effect relationship between opposition, the election and the dismantling of the IWA, but there is no doubt, based on the interview testimony in this study, that the former played at least some role in the latter. Thus, in their efforts to quell the threats to core values and the attendant psychosocial impacts, residents reflexively changed the social structure of waste siting in the region and maybe even the other two regions surrounding Toronto. The alteration of siting in the wake of opposition has been reported elsewhere in places like British Columbia and Alberta (both involve siting for hazardous waste treatment facility) where plans for the facility had to be stopped in the former, and an environmental suitability approach (like IWA's) had to be replaced by a voluntary siting approach in the latter (Lawrence, 1996). Reflexive social institutional changes connected to individual and group reactions to environmental risks, however, can have effects that are either unintended or undesired or both. The actions of residents at Caledon may have implications for how/where the waste eventually gets disposed of, which has equity, particularly distributive justice, implications. This is discussed further in the conclusions chapter.

## 7.9 Summary

This chapter links the findings of the case study to the literature on environmental risks and argues that the risk society theory is appropriate for explaining what happened at Caledon and for connecting a wide variety of concepts with the literature. A common thread throughout the chapter is that core values played a more central role at Caledon than is accounted for in many existing frameworks used to explain why laypeople assess the risks from a hazard to be high when experts do not. Vyner (1988, 143) summarizes the problem addressed by this chapter,

We do not know why some people are deeply traumatized by an invisible exposure while others are not. We do not know why some people construct belief systems that portray an exposure as dangerous while others portray the same exposure as being safe.

It is argued that people do not socially construct these "belief systems" only in relation to the hazard itself, but also relation to core values. Local context is important, not only for the construction of values prior to a risk event, but also for helping to shape, or in this case protect, values as the risk event unfolds (e.g., a siting announcement). The risk society accounts for context and values by explaining how risk is connected to wider social phenomena like laypeople's faith in science and government, threatened social security, and the reflexive changes to institutionalized social structures through individualized social actions. While the risk society was developed to explain broad social changes in the face of risks from *global hazards*, the Caledon case demonstrates that



these same phenomena are reflected at the *local* level. Next, is a summary of the main implications of these arguments in the conclusions.

## Chapter 8: Conclusions

This thesis concerns the socially constructed meanings of risk in a community sensitized to a specific environmental issue. The research involves a case of a community that was once the preferred site for a regional solid waste landfill. The research was guided by the environmental risk literature generally, and in particular, the social and cultural theories of risk. These theories suggest more focus on values and beliefs as central to the meaning of risk and that risk is socially/culturally constructed in the context of everyday life. The research involves a qualitative exploratory case study of mainly residents and some scientific/government experts under three main research objectives:

- i) to explore the **meanings** of risk and uncertainty for residents in an environmentally sensitized community;
- ii) to investigate the effect of **context** on risk perceptions/constructions; i.e., how stakeholder groups (e.g., government, scientists, community opposition groups) interact to influence meanings of risk for individuals and the community and;
- iii) to develop a **conceptual framework** for understanding risk at Caledon and compare this to existing frameworks for understanding environmental risk.

The research makes substantive, theoretical, and methodological contributions to the literature on environmental risk and suggests several directions for future research.

## **8.1 Substantive contributions**

There are at least three main substantive contributions to the literature on siting environmental hazards. First, this thesis describes why the siting process for the landfills was long, costly, and did not succeed (in the sense that the process was dismantled). It is argued in this thesis that vehement opposition slowed down and contributed to halting the siting process because it threatened deeply held core values. While community opposition is a familiar topic in the siting literature, the recognition of the role of core values in opposition is relatively rare. Much of this literature does focus on involving communities in siting decisions, but most efforts at community participation do not specifically recognize the notion that core values are sometimes at risk and must be addressed explicitly in the participation process. This is likely a symptom of claims by communities that participation is often a sham and does nothing more than fulfil siting agency mandates (e.g., Petts, 1995).

Second, this research demonstrates that expressed concerns may be indicators of more fundamental concerns, like threats to ways of life and the core values. Technological environmental hazards are so complex that identifying specific concerns about them can be difficult for laypeople to articulate. Therefore, even if expressed concerns (e.g., water quality concerns) are dealt with appropriately through community participation (e.g., offers of "piped" water) this does not ensure that the underlying concerns will also be addressed (Lynn and Busenberg, 1995). Community participation and siting generally must recognize the role of deeply-rooted core values in the social construction of risk and

opposition and address it explicitly. This idea of unearthing potentially obscured layers of concern is explored further in sections 8.3 and 8.4.

Third, the case study raises questions about equity in relation to the ultimate location of the region's waste. When core values are largely ignored, as they were perceived to be in the IWA/NDP siting process, opposition is more likely to be high and effective at halting siting if the process does not adapt to address community concerns. The NDP mandate for the IWA was sufficiently inflexible to prevent consideration of alternatives that would have respected the community's desire to have more choice in the participation process. This raises questions about where the waste will eventually end up. Current proposals favour extending the existing site and rail haul to remote communities in northern Ontario or the U.S.. Relative to these communities Caledon is considerably more wealthy, and arguably more powerful in their use of knowledge to prevent local siting. The communities which often end up with the waste tend to be in financial jeopardy and are attracted to siting proposals for job creation and related compensation schemes, but at the same time take on risks which are not produced locally (Lawrence, 1996). While communities which "accept" environmental risks may merely have sets of core values which are not threatened by environmental hazards the role of wealth and power and the ability to protect values warrants further study (see section 8.4).

## **8.2 Theoretical contributions**

Since this thesis involves an exploratory study with the explicit objective of expanding existing concepts/frameworks, the main contributions are theoretical. Few studies of risk in the context of everyday life make use of conceptual frameworks for understanding the social construction and meaning of high risk (Edelstein, 1988). While this study is informed by specific literatures, it was only semi-structured to allow for the emergence of phenomena that may not be accounted for in the literature. There are at least five sets of theoretical contributions from this case study which may be used to inform future work.

First, core values may play a more important role in the construction of high risk and high opposition than much of the literature currently acknowledges. While several existing frameworks do recognize that values and beliefs are involved, this research points to the centrality of such issues in the conflict over C34B. The landfill and siting process were viewed to be major threats to the ways of life that residents had worked so hard to maintain. These ideas are connected to the policy literature in this thesis. Ways of life and core values are linked with Sabatier and Jenkins-Smith's (1993) notion of policy learning and change whereby values and worldview are particularly resistant to change. This points to the need for closer attention to these issues than most current frameworks for understanding risk allow.

The notion of core values in this thesis is different from definitions of social/cultural values (biases) discussed in cultural theories of risk and hazards. Cultural

theory views environmental values as being closely connected with political values and the role of big industry (e.g., Douglas and Wildavsky, 1982). In this thesis core environmental values are concerned more with the nature of community, natural aesthetics, and the connection between natural and human-made systems rather than politics. While both political (or near policy core) values and core values are both resistant to change it is the latter, according to Sabatier and Jenkins-Smith, which are the *most* resistant to change.

Second, the risk society theory is useful for understanding risk in the context of everyday life and for describing how individual effects and actions may be tied to social institutional change. The concepts of *security* (in particular ways of life) and *reflexivity* have only recently been applied to notions of social institutional change and environmental risk (e.g., Giddens, 1991; Wynn, 1992) and they are corroborated in this study. Thus, threats to security are what link community opposition and the perception of high risk from a variety of hazards assessed by experts to be low risk. This research supports that, if security in a highly valued way of life is threatened by an environmental hazard, individuals have the potential to effect extensive social institutional changes through opposition. For example, opposition at Caledon influenced the nature of waste management in the regions around Toronto which may affect other communities within and outside Ontario if waste is sold outside the region of Peel. Further, the study by Ali (1996) is the only other study found in the literature which incorporates the risk society theory explicitly to explain the social implications of local-scale, as opposed to global-

scale, technological environmental hazards. Nevertheless, Ali's findings are consistent with those in Caledon.

Third, new concepts for understanding the meaning of risk in context emerged in this study including: concern intensification, and site latency uncertainty. In places like Caledon, where background/everyday concerns are exacerbated by the threat of an environmental hazard, residents are more likely to assess high risk. While the concept of *concern intensification* is consistent with the social amplification of risk framework it is not described explicitly within it. The social amplification framework focuses on how an environmental *event* is portrayed and interpreted and less on the characteristics of the *community* that is involved in portrayal and interpretation.

Site latency uncertainty may be added to Vyner's twelve-fold categorization of uncertainty in relation to environmental contamination and psychosocial impacts. While most cases of environmental risks from hazards involve existing (potential) contamination sites, in Caledon there was no such site. The exposure at Caledon was the *threat* of the site and the siting process itself, yet this increased the level of uncertainty. Site latency uncertainty provides an additional level for concern and speculation about potentially hazardous technologies. That is site latency uncertainty concerns whether a site will ever exist. Further, uncertainty around siting adds to the likelihood of emotional shocks as people convince themselves a site will not be located locally and are subsequently proven wrong.

Fourth, several concepts that exist in the environmental risk literature are reconceptualized/refocused in this thesis to understand the construction of risk at Caledon including: risk and safety, dread, uncertainty, trust, equity, costs weighed against benefits, and psychosocial impacts. The concepts of *risk* and *safety* are central in the environmental risk literature (e.g., Krinsky and Golding, 1992), however, laypeople may not routinely think of hazards, like landfill, as risk or safety issues. Despite the fact that interviewing was done at a time when the landfill siting issue was very prominent in the community, and residents knew this to be part of the reason for their interview, residents relatively rarely mentioned the landfill as a risk or safety issue. Residents were as likely to mention financial, traffic, and crime when asked about these topics. This reinforces that experts and laypeople talk about technological hazards differently and that seemingly straight forward concepts must be considered potentially problematic when doing risk research.

Dread and uncertainty are two pivotal concepts within the psychometric risk literature yet they did not seem to take on the same meanings as they do in this literature. While laypeople tend to assess hazards in terms of *dread* and experts in terms of mortality, some argue that what people actually dread is mortality (e.g., catastrophes) (e.g., Gregory and Mendelsohn, 1993). Death was not mentioned by residents in Caledon in relation to the landfill, but they did dread the landfill in the sense that they were highly concerned about and opposed to it. While the residents find landfill generally abhorrent, what residents really seemed to dread was the loss of particular sets of core values and ways of



life in the community (as opposed to individuals) as the landfill signalled the potential for unwanted, large-scale community development and change.

Dread may also be linked to *uncertainty* in the sense that residents seemed to dread that experts were making key environmental/social decisions based on evidence perceived to be uncertain in combination with inappropriate community consultation. While uncertainty in the psychometric literature generally has to do with whether a hazard is: (un)observable, has delayed effects, unknown to those exposed, new, or known to science; this research points to the centrality of *scientific* uncertainty in lay perception of high risk. This prominence of uncertainty is also described in the risk society theory which claims that continued lay recognition of uncertainty in complex, expert-controlled systems will be an increasingly powerful force for shaping society (Beck 1992a, 1992b).

Scientific uncertainty is further connected to the level of *trust* between laypeople and experts. This link is well recognized in the literature (e.g., Covello, 1996; Leiss, 1996), but trust was also threatened in Caledon because experts were perceived by residents to restrict community involvement by too narrowly defining choice options. Institutional inflexibility was a contributing factor since the government closed off the various waste disposal alternatives through legislation which constrained the expert siting options. While trust is a function of scientifically uncertain, technically-oriented and arrogant experts, it is also a function of the flexibility of the institutional structures within which scientific experts must operate.

Lack of expert-resident trust was also influenced by different views on *equity*.

While the government and siting agency adhered to conventional concerns with distributive justice - interregional equity - the residents were more concerned with intraregional equity and siting process equity (i.e., due consideration of alternatives). Thus, the two groups spoke different languages of equity/fairness. However, the literature focuses on whether environmental equity and justice exist, not how it is defined (Bullard, 1990a; United Church of Christ, 1987). While the literature mentions different definitions of equity and environmental justice (e.g., Cutter, 1993), there is little mention of how adherence to particular principles of equity/fairness varies by group in conflicts over risk. Failure to come to agreements on such fundamental issues severely hampers trust, and the success of the siting efforts.

The notion that risk concerns weighing costs against benefits does not seem to apply to how residents assessed the risk of C34B at Caledon. Residents rarely mentioned benefits of a local landfill for the community and tended to focus solely on the costs. While prospect theory accounts for an imbalance between perceived costs and benefits in risk decisions (i.e., losses loom larger) this is based on the presumption that benefits are at least considered. In cases like Caledon, where benefits are deemed so small that they are not considered in lay decisions about risk, framing risk communication/siting in terms of costs weighed against benefits is problematic. This research points towards refocusing definitions of costs and benefits in non-monetary terms since risks in the context of

everyday life also have to do with issues of safety, security and values (see also Gregory and Mendelsohn, 1993).

Psychological theory and sociological theory are linked in this thesis within the risk society theory whereby *psychosocial impacts* from environmental hazards are viewed as signals of social change (Beck, 1992a). Psychosocial impacts accompany the anthropologic shocks/fateful moments described in the risk society theory. Further, this research describes how the nature of the siting process can contribute to multiple shocks or single, profound single shocks. Over the three years between the announcement of the siting and the announcement of the preferred site many used emotion-focused coping schemes to cognitively allay or deny worry/concern (Lazarus and Folkman, 1984). However, this set some up for future, more serious emotional impacts once something happened (e.g., siting announcement, community meeting) to shake their confidence that the system for siting the landfill would choose an "appropriate" site - that is, *not* nearby. Psychosocial impacts may involve more than just appraisal of a hazard {primary appraisal} (threats of harm) and coping resources {secondary appraisal} (capacity to deal with threats), but also the appraisal of institutional, expert systems to manage the hazard appropriately (*institutional appraisal*). While Lazarus and Folkman's theory generally describes individual-level processes, the notion of *systems appraisal* makes the connection between the individual and broader social institutional structures that is characteristic of Beck's risk society theory.

Fifth, the theoretical contributions of this thesis may be summarized in their support for reconceptualizing conventional notions of rationality. The mainstream risk literature has long recognized that it is unproductive to talk about real/true versus perceived risk (e.g., Covello, 1996), but some still view people like those in Caledon as acting irrationally since experts assess the risk of landfill to be relatively low (e.g., Whipple, 1988). Shrader-Frechette (1991) argues for defining rational decisions, not in terms of the degree to which they conform to science, but in terms of the degree to which they represent agreement with particular sets of values. However, she expands little on the types of values that guide lay groups who oppose technological hazards deemed low risk. This study corroborates that the resistance to the landfill was consistent with sets of core values and was therefore rational. Further, the research shows that lay values are linked to place/community context. Not only do people come to places like Caledon to share common values, the events within that place (e.g., the landfill siting process) serve to collectively shape and reaffirm those values.

### **8.3 Methodologic contributions**

There are at least two major methodologic contributions of this thesis: it demonstrates the utility of interpretive qualitative research for the study of technological environmental risks, and it is explicit about the strategies used to enhance the trustworthiness (qualitative "rigour") of the findings. Qualitative methods are relatively rarely used for studying environmental risk partially because the dominant approaches

(e.g., econometric, psychometric) are more amenable to quantitative methods.

Approaches which are traditionally more likely to employ qualitative methods (e.g., sociologic, anthropologic) have been ~~more~~ focused more on theoretical development, through the criticism of dominant approaches, rather than through empirical qualitative research (e.g., Krinsky and Golding, 1992). Some notable exceptions include: Douglas and Wildavsky (1982), Edelstein (1988), Fitchen et al (1987), Fowlkes and Miller (1982), Stoffle et al. (1991).

This thesis is one of few environmental risk studies that is explicit about both the rationale for using a qualitative methodology and the details of how it was carried out. Few qualitative environmental risk studies detail their methodology, although qualitative research has no standard practices, and thus demands explicit detail about the rationale for its use. For example, Edelstein (1988, 18) explains his rationale for using face-to-face interview methods in only three lines in his book,

In asking questions and in analyzing the data, I sought to understand how residents interpreted events, rather than to test hypotheses quantitatively. The number of times a given response occurred was, therefore, less important than the depth of each response and the contribution of the response to elucidating the overall picture. Using this qualitative approach, I was able to reconstruct respondents' residential expectations and to chart many of the impacts of the pollution incident.

This thesis includes explicit detail about why and how qualitative, in-depth face-to-face interviews were used. In particular, the interviews allowed the reconstruction of lay meanings of risks both explicit and implicit in what was said in the conversations. This was important for unearthing values and worldviews that are generally difficult for

individuals to express since they are tacitly understood in everyday life. The analysis of the interview data is also explicit and details the rationale for choosing quotations for presentation and how the data were transformed into concepts in the theoretical framework.

Few qualitative studies within social geography point out the strategies used for enhancing the trustworthiness of the findings such that they are worthy of attention (Baxter and Eyles, in press). This thesis is explicit about the use of the following strategies: source and investigator triangulation, member checking, prolonged engagement, low-inference descriptors, and autobiography. Further, the research is unique in its use of a contextualized thematic analysis. Like most interview-based studies the focus of the data presentation is quotations, yet these are "contextualized" in the sense that the themes they represent are situated within sets of sub-themes as well as the entire data set. This is facilitated through the use theme and respondent frequencies which indicate the relative prominence of themes.

#### **8.4 Directions for future research**

There are many directions for future research suggested by this thesis that will be discussed in terms of substantive directions, theoretical directions, and methodological directions. The main **substantive** issues which arise from this case study concern the uses of the findings for developing policies to both decrease lay concern and prevent/resolve technological hazard siting disputes. One of the main reasons for conflict over waste

siting at Caledon was that experts and residents spoke different languages of risk (see also Wynn, 1992). Future research should seek ways to encourage the negotiation of common languages on such issues as equity, rationality, and the meaning of uncertainty since these lie at the heart of conflicts over risk. While the need for such negotiation is acknowledged in the literature (e.g., Leiss, 1996) there are few studies which address this issue explicitly.

The research on community participation is promising in this regard. The goal of this research is generally to investigate how to meaningfully involve communities in complex environmental risk decisions like finding a regional waste site. However, the findings of recent studies reveal more about failures in expert-lay interactions than they do about successes. This is due partially to fundamental disagreements between the groups on what actually defines *successful* community participation in hazards siting (e.g., Lynn and Busenberg, 1995). Risk negotiation success stories need to be sought and researched.

Wynn (1992) points out that one of the keys to success will be institutional flexibility and the ability for institutions to reflect on their implicit assumptions about risks and hazards. A similar challenge will be to encourage people to reflect on the potential implications of their own views/actions. This is particularly relevant to the social distribution environmental hazards/risks whereby certain groups may have the means to protect their ways of life and core values from environmental threats while others may not (e.g., economically disadvantaged communities). While Kempton et al (1995, 13) argue that people are already starting to acknowledge the implications of individual action,

People who may otherwise be preoccupied with short-term self-interest are now concerned about long-term environmental change;

others are not so convinced. Beck (1987, 163-4) warns that people continue to act as if their views and actions are inconsequential,

Politics is no longer the only or even the central locus for deciding about the determination of the social future. The same is true for the various realms of sub-politics. The economy, science, the family, the public sphere, etc. can no longer behave as if they weren't doing what in fact they do - making policy with their particular means.

The challenge for policy will be to convince people that this is the case.

Directions for future **theoretical** development should include further exploration of the roles played by ways of life and core values in the social and cultural construction of risk in everyday life. This study notwithstanding, there remains a paucity of research into these issues. In particular, a variety of different contexts should be studied to determine the extent to which ways of life and core values are involved in assessments of risk and the motivation for action/opposition. While it is argued that ways of life and core values are central to the assessment of high risk and opposition at Caledon this may not be the case in other contexts. For example, are the ways of life and core values in communities which "voluntarily" accept hazards in their area very different from places like Caledon? If their values are similar, this may raise questions about the extent to which communities are able to protect their core values since places like Caledon are more likely to avoid environmental risks.



Further, future theoretical investigations should explore the utility of the risk society theory as it applies to local-scale as opposed to global-scale hazards. This theory is promising by its inclusion of a link between individual action regarding environmental risks and social institutional change. Investigations should specifically address Beck's central tenet, that the organization of society is increasingly based on reactions to environmental *risks* rather than on the distribution of *wealth*. The accompanying methodological challenge is to simultaneously trace three social phenomena: individual-level perception, meaning, and action; changes to the social institutional structures in which individuals are embedded, and the extent to which the first two are linked.

Directions for **methodological** development in the study of environmental risk should include ways of operationalizing some of the key concepts in this *intensive* study for doing more *extensive* research. While more in-depth, inductive, case studies will be useful for addressing some of the substantive and theoretical research suggested above, these should also be investigated in larger populations through survey research. However, concepts like core values, worldviews, ways of life, and trust are difficult to operationalize since they are tacitly understood. The challenge for survey research in this area will be to account for the context-contingent nature of these phenomena as they relate to lay views on the risks from technological environmental hazards.

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## Appendices

### Appendix A: Residents Selected But Not Interviewed

#### Residents Sampled But Not Interviewed

	RURAL			TOWN			SITE			totals
	R	CPP	NC	R	CPP	NC	R	CPP	NC	
MEN	5	2	1	3	0	3	2	0	1	17
WOMEN	1	0	2	2	1	2	5	0	0	13
<b>totals</b>	<b>6</b>	<b>2</b>	<b>3</b>	<b>5</b>	<b>1</b>	<b>5</b>	<b>7</b>	<b>0</b>	<b>1</b>	<b>30</b>

R - participation refused

CPP - continued postponement OR did not show up at interview

NC - no contact made (e.g., left several machine messages) OR moved out of research area

#### Reasons for Refusal to Be Involved in the Study

##### Too Busy - No Time

- "Too busy with my business."
- "My wife and I are starting up a business and the kids have dance lessons and sports."
- "My daughter has had an operation and I must look after her."
- "I work shift work and am going away in July and August."
- "I have no time."
- "I'm too busy."
- "I'm taking most of the summer off and spending it at the cottage with the kids."
- "I'll do it but I'm away until September."
- "I look after kids all day and night. I'm just too tired."

##### Conflicts

- "I'm already part of an asthma study."
- "I belong to the environmental assessment board for the Town of Caledon so should be disqualified. People didn't have any concern for the environment here until the dump issue arose."

##### Suspicious of Motives

- "I'd rather not have a strange man come to my home. I have to go to Europe to see my grandmother for most of the summer, she is ill."
- "I'm a little suspicious of people who call me up wanting to come into my house."

##### Miscellaneous

- "...so it costs us tax dollars down the line then. No thanks!"
- "This (study) doesn't seem constructive. It's of no use to me or you."
- "I am sick and tired of answering questions about the dump. The government will buy us out anyway."
- "I'm not much interested in the environment and don't have much time."

**Appendix B:**  
**Interview Checklist for Community Opposition Group Leaders**  
October 4, 1994

**Purpose:**

To obtain baseline information/terms of reference concerning what has happened so far with each of the major stakeholder groups with a view to tracing how these terms of reference evolve over time.

**Questions:**

- 1) Why are you involved in this issue?
- 2) When did you first become involved?
- 3) How did you become involved with \_\_\_\_\_ (group)?
- 4) Describe the history of the group to date (probe: important membership changes, events, issues)
- 5) How is this group linked with others in the community?
- 6) What do you think will be/have been the impacts on the community? (siting process/actual dump)
- 7) What are the main issues?
- 8) What do you think will happen in the near future (weeks/months) and distant future (years)?
- 9) Would you be willing to be re-interviewed; and/or share community contacts?

## Appendix C:

### Community Resident Interview Checklist (Round 1): Measuring the Language of Risk and Uncertainty in an Environmentally sensitized Community

June 12, 1997

#### **Purpose of checklist:**

The purpose of this checklist is to get to people talk about the places in which they live; what is important about these places; and what threatens these places. The data will be used to address the following general research question from the SSHRC research proposal:

*To discover, describe and compare the perceptions, meanings and language of risk among selected populations in specific environments.*

Because the focus is on the *language* of risk, issues concerning values, risk, safety, uncertainty, concern, future, lay versus expert language, coping, and trust are all probed separately. While the checklist may seem repetitive, this is necessary to determine how these things are interrelated and if people actually distinguish between these concepts.

#### **Preamble/Reminder:**

As you know I am a (PhD.) student working with a group at McMaster University who is studying the ways people think and talk about the places in which they live and the types of things which may threaten these places. The interview will take about 1 hour. Everything we say will be kept confidential, in the sense that a pseudonym (fake name) will be associated with any quotes from this interview which are presented in the findings. In order to accurately reflect what we say, is it o.k. with you if I record the interview on tape?

Topic/Rationale	Questions	Probes
<b>Values/Community</b> - this is intended to tap core values re: Edelstein. 1988. Tonn et al.. 1990 - question about "feeling at home" from Connerly and Marans. 1985 cited in Eyles 1990 - hopes-wishes/fears-concerns questions come from Russ-Eft. 1979	How would you describe the <b>area/place</b> where you live?  What is it that you <b>value</b> about this place/area?  Why did you move/stay here?  Is it what you expected?  Can you see you and your family <b>staying here indefinitely?</b>	- why do you say that? - what makes a place good/bad?  - <b>environment</b> - quality of life? - work (e.g. proximity, availability) - services (e.g. proximity) - family and friends - neighbours - for your children - for your future

<p><b>Stigma</b>  - comes from Risk group in Oregon - Robin Gregory  - see <u>Risk Analysis</u></p>	<p>* <sup>24</sup>Transition: <i>So generally you have a (good/positive or bad/negative) view of this place; What about what others think of this place...</i></p> <p>Do you think that this place is seen differently by others in nearby/other communities?</p> <p>How does this affect the way you live?</p>	<p>- how do you know?  - i.e. can you give me an example?</p>
<p><b>Environmental Issues</b>  - allows interviewer to ascertain the degree to which the participant wants to talk about e.g. the potential landfill (allows them to direct the interview towards any of the topics in the remainder of the guide, otherwise continue with values/community...)</p>	<p>What are some of the main environmental issues in your community?</p>	<p>- tell me more about...</p>
<p><b>Safety</b>  - Robin Gregory (6th Annual Medical Geography Symposium)  - see <u>Risk Analysis</u> for papers</p>	<p>Transition: <i>More and more people are looking for "safe" places to live...</i></p> <p>In terms of safety, how would you describe this place?</p> <p>What makes a place safe/unsafe to live in?</p> <p>Assuming there is a place that is completely safe, what would such a place be like?</p>	<p>- why do you say that?</p> <p>- is safety more than just... [e.g. freedom from crime (often mention in Tim's Milton interviews)]</p>

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<sup>24</sup> Transition sentences are intended to shift the focus of the conversation to a new (although usually related) issue. Each transition sentence is worded on the basis of the order of the topics in the guide. However these are only an examples, since it is the interviewer's responsibility to adapt the "transition" according to the sequence in which the topic(s) are actually discussed. Without directing the response entirely, these are worded in order to get the participant thinking along the same lines as the interviewer. "Transitions" decrease the likelihood of the conversation "rambling" too much, at the same time, preventing it from being too "choppy" whereby the questions (and responses) may seem unrelated to each other.

<p><b>Risk</b></p> <ul style="list-style-type: none"> <li>- Fisher et al. 1991</li> <li>- Kahneman and Tversky (lay perceptions of risk)</li> </ul>	<p>Transition: <i>All places seem to involve some sort of "risk"; while this may not be something we like to think/talk about...</i></p> <p>Are there any risks related to living here?</p> <p>What are the risks which most concern you and your family now/future?</p> <p>How are you defining "risk"</p>	<ul style="list-style-type: none"> <li>- environment</li> <li>- health</li> <li>- neighbours</li> <li>- social problems</li> <li>- livelihood</li> <li>- children</li> <li>- future</li> <li>- Is it more than that...?</li> <li>- Why do you say that...?</li> </ul>
<p><b>Concern</b></p> <ul style="list-style-type: none"> <li>- comes from original MAC dump work</li> <li>- distinguishes past from future from present concerns as per conversations between JDE and JWB</li> <li>- <b>relative importance of concerns</b> (how high up the list is the landfill) and the manner in which and reasons for shifts in priorities (variation on question in Taylor et al., 1993)</li> </ul>	<p>Do you have any other concerns/worries about living here?</p> <p>To the extent that it is possible to do so...</p> <p>What is the <b>relative importance</b> of the concerns you mentioned (repeat them)[where do concerns about the landfill fit in]?</p> <p>How have your concerns changed over, say, the last year?</p>	<ul style="list-style-type: none"> <li>- environment</li> <li>- health</li> <li>- neighbours</li> <li>- social problems</li> <li>- livelihood</li> <li>- children</li> <li>- future</li> <li>- other</li> <li>- would you tell me more about why that is?</li> </ul>

<p><b>Trust</b></p> <ul style="list-style-type: none"> <li>- comes from Risk group in Oregon, see Robin Gregory</li> <li>- see also Neutra;</li> <li>- closely linked to coping</li> </ul>	<p>Transition: <i>Now I'd like to talk a bit about the people you trust for getting information and generally. When it comes to the landfill...</i></p> <p>Who do you feel is on your side?/Who do you trust?/Who do you turn to?</p> <p>Who is <b>not</b> on your side?/ Who don't you trust?</p> <p>Who do you <b>believe</b> when getting information about the landfill (or a related issue)?</p> <p>When it comes to issues like this, how would someone <b>gain your trust</b>? What <b>type of person</b> could/do you trust for...</p>	<ul style="list-style-type: none"> <li>- information <ul style="list-style-type: none"> <li>- media</li> <li>- family/friends</li> <li>- local politicians</li> <li>- community groups</li> </ul> </li> <li>- managing issues</li> <li>- dealing with/resolving problems</li> </ul> <p>(these questions can be specific to the landfill, or any other environmental issue that they have raised)</p>
<p><b>Community Groups</b></p> <ul style="list-style-type: none"> <li>- to build on issues surrounding trust</li> <li>- to determine the relationship between the four groups and the rest of the community</li> <li>- to determine credibility/effectiveness of such groups in the community</li> <li>- to determine whether people actually distinguish the groups</li> </ul>	<p>What do you have to say about the community groups opposed to the landfill?</p> <p>How would you describe their <b>credibility</b>?</p> <p>How would you describe their <b>effectiveness</b>?</p>	<ul style="list-style-type: none"> <li>- does any <b>one group stick out more than another....why?</b></li> </ul>

<p><b>Lay versus Expert</b>  - to ask directly about "expert" opinion/language and how it compares with the way they think and talk about risk, uncertainty...  - relates directly to trust</p> <p>- want to probe what would count as "proof" for these people, as well, to distinguish the role (if any) for "prudence" regarding the landfill siting</p>	<p><b>View of Experts</b>  Transition: <i>We've talked about (e.g.) what may threaten (pose risk, is a source of concern regarding etc.) this place. Now I want to get an idea of what you think of expert opinions [and the language they use] regarding such issues (esp. landfill site) and how this may differ from your own.</i></p> <p>Who do you see as the experts?</p> <p>Who says that they are the experts? (i.e. different from above?)</p> <p>Is one group of experts more believable than another?</p> <p>How do the <i>experts</i> think?</p> <p>How does this differ from the way you think?</p> <p>What problems (if any) does this create?</p> <p><b>Evidence: Proof vs Prudence</b>  What would the experts have to do to convince you that a landfill site is acceptable?</p> <p>Is there any way that a landfill in this area would be acceptable to you?</p> <p>What would it take to convince you...?</p> <p>How prudent/careful have the experts been regarding issues such as the choice of C34B (preferred site)?</p> <p>How much confidence do you have in their "facts"?</p>	<p>- see all-purpose probes (below)</p> <p>- believability of independent environmentalists versus consultants versus the government...</p> <p>- what about the "facts" in the form of figures, charts, maps which may show you that no problem with the site? Why?</p>
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<p><b>Uncertainty</b>  - to explore the role that uncertainty plays in dealing with concerns/worries (Vyner, 1988)</p>	<p>Transition: <i>It seems that there may be a certain degree of uncertainty regarding the safety/risk associated with landfills.</i></p> <p>How certain are you that the things you mentioned (i.e. responses to safety...concerns esp. re: landfill) <b>will/may happen?</b></p> <p>How certain are you that your concerns will be <b>addressed?</b></p>	<p>- why do you say that?</p> <p>- by whom?</p>
<p><b>Coping</b>  - probes come from Taylor et al., 1993  4 mediators between stress and coping  - emotion as opposed to problem focused coping (Lazarus and Folkman, 1984)</p>	<p>Transition: <i>We've talked a fair bit about (e.g.) the information that experts provide in relation to some of safety/risk concerns you and others like you have. Now I'd like to talk (more) about how you manage deal with these concerns worries.</i></p> <p>How do you <b>deal (cope/manage)</b> with these concerns?</p> <p>How could these concerns be <b>minimized (by you or someone else)?</b></p>	<p>- personal perceptions/tricks/strategies  - social networks:  - friends  - family  - activities (e.g. join community group)</p>
<p><b>Future</b>  - distinguishes what they want to happen from what they fear might happen  - this links directly to the questions about values in the sense of what they hope for/expect</p>	<p>Transition: <i>The things you have mentioned (e.g., risks, safety issues, values) may be of immediate concern, but I would like to step back (look ahead?) a bit and talk briefly about the future...</i></p> <p>What are your <b>hopes/wishes</b> for the future here?</p> <p>What concerns you regarding the <b>future?</b></p>	<p>- self  - family  - community  - children  - safety/risk  - landfill site</p>



<p><b>Anything to add?</b></p> <ul style="list-style-type: none"> <li>- to facilitate a "smooth" exit from the conversation and to leave them feeling that some closure has been reached on all of the issues</li> <li>- remind them of what they said as quick initial validity check</li> </ul>	<p>Transition: <i>So we have been discussing some of the things you like and dislike about this area and some of the things which "threaten" this place. It seems that... (perhaps review some of the main issues they raised to corroborate preliminary interpretations)...</i></p> <p>Is there anything that you would like to add to this?</p>	
<p><b>Accurately Representing What You Have Said</b></p>	<p>Transition: <i>I want to ensure that I accurately represent the meaning of what of what you have said. While tape recording assists in this I would also like to give everyone the opportunity to comment on my analysis. I will be sending you something to comment on in the months to come in order to double check my interpretations.</i></p>	<p>- <b>verify address</b> (esp. Rural Route)</p>
<p><b>All-Purpose Probes</b></p> <ul style="list-style-type: none"> <li>- these probes are to be used at every opportunity throughout the interview</li> <li>- these are intended to probe deeper into the "language issues" by helping/encouraging participants to articulate <i>exactly</i> what they mean</li> </ul>		<ul style="list-style-type: none"> <li>- Why do you choose those (particular) words?</li> <li>- Why do you say that?</li> <li>- Is it more than that...?</li> <li>- Do you think that everyone sees it the way you do?</li> <li>- Can you give me an example (allows them to "tell a story.")</li> </ul>

### Appendix D:

## Interim Waste Authority (IWA) - Key Communicator Interview Checklist: Measuring the Language of Stress, Risk and Uncertainty

### Purpose of checklist:

To get the impressions from key people in the IWA of their role in the siting process, risk, risk communication, language and the community's response. While this will be used, in part, to validate (or not) what those in the community say about the siting process, it will also be used to explore the *language* and *meaning* issues from the point of view of "experts".

Topic/Rationale	Questions	Probes
<b>Role of IWA</b> - description of the siting process and some of the perceived problems encountered in the "community"	1) What does the IWA do/what role do they have?	
	2) How does the IWA map into/compare with <b>traditional frame</b> of (provincial) government)?	
	3) How linked with:	a) the region of Peel? b) the town of Caledon c) community groups
	4) Has the process worked as planned/i.e., have things gone <b>smoothly</b> ?	
	5) What <b>problems</b> have you encountered?	
<b>Community Involvement</b> - to determine the form of community participation and the potential implications of this	6) How is the " <b>community</b> " involved?	
	7) <b>Who exactly</b> is the "community"?	
	8) Did you find it hard to engage/involve <b>certain groups</b> ?	

	9) Are there any you feel still <b>need to be involved</b> (or should not be involved who are)?	
<b>Trust</b> - to determine if and how trust is built in the community and with what success	10) How would you describe the IWA's <b>relationship with the community</b> ? Adversarial? Supportive?	
	11) Do you feel that <b>trust</b> has been built?	Only with specific people? With anybody?
<b>Communicating Information/Risk</b> - to determine the types of information that are being given to the community and in what manner - to determine perceptions regarding "lay" and "expert": language; concerns; notions of safety and risk;	12) What <b>types of information</b> are communicated to the community?	
	13) <b>How</b> is information given/communicated to the community?	Different strategies for different <b>types of information</b> ?  Different strategies for different <b>parts of the community</b> ?  Please <b>elaborate/explain</b> what you mean?
	14) Do you feel that you <b>speak the same language</b> ?	How are they <b>different/same</b> ?
	15) What are you doing to <b>convince</b> the community of :	<b>Need</b> for the landfill? <b>Safety</b> of the potential landfill?
	16) How differently do the IWA and the community see <b>risk</b> (e.g. those involved with the landfill)?	
	17) How does the IWA deal with any <b>unknowns</b> or ambiguous information?	e.g. unforeseen impacts

	18) How do you feel experts should <b>communicate risk</b> /siting issues to the community?	How <b>balance</b> lay and technical languages?
<b>Alternate Approaches</b> - to determine what might be done differently to deal with any of the problems listed above	19) What are the <b>alternatives</b> to the current process?	
	20) How might this/these <b>address some of the problems</b> /issues you addressed above?	

## Appendix E:

### Community Resident Interview Checklist (Round 2): Measuring the Language of Risk and Uncertainty in an Environmentally Sensitized Community

July 2, 1996

#### **Purpose of Checklist (reminder for interviewer):**

The theme of this checklist is to ask much more direct (open-ended) questions about the concepts which commonly surface in the risk literature. These concepts are in the far left "Topic" column. The questions are worded to acknowledge two important aspects of the research context: i) the themes represented in the "feedback" document can be used as reference points for the conversation and; ii) C34B is not currently the focus of attention for managing Peel's waste - attention is now focused on proposals to extend the life of the Britannia site.

#### **Purpose of Interview (to participant):**

It has been about a year since I last spoke with you (in person). I am here again for two reasons: i) to go deeper into some of the issues related to risks of landfills and ii) to make sure what we have interpreted so far makes sense to you.

Topic/Rationale	Questions	Probes
<b>1) Accurately representing what you have said?</b>	Before we talk further about some of the issues I'm most interested in do you have any questions or comments about the document (feedback) you received __ months ago?	
<b>2) Risk</b> - Kraus, Malmfors and Slovic (1992) find, in the context of chemicals contamination, that laypeople think in terms of "all or none" while experts think in terms of dose-response - why is this?	What picture comes to mind when you think of a landfill?  How would you describe a risk-free landfill.	Smell, hear, taste  Describe your mental image of contamination scenario (if appropriate).  Please elaborate
<b>3) Benefits</b> - economic researchers presume decisions are based on weighing the costs(risks) against the benefits - are there any perceived benefits? are they thought of as benefits or civic responsibility?	What are the (potential) benefits of having a landfill in this community?	How do you think others in Caledon feel about this?

<p><b>4) Threat</b>  - prompt them directly about "threats"  - do they recognize that it is their values (may point up the importance of "interpretation" in this type of research)?</p>	<p>In your view what did the, then preferred site for the landfill, threaten the most.</p>	<p>Why do you say that?  Any thing else?</p>
<p><b>5) Values/Community</b>  - check directly the idea that it is the values\expectation of community life that are threatened</p>	<p>What about living here do you value most.    What is your image of the ideal community environment?    How were these things (see above) threatened (or not) by the prospect of having a landfill.</p>	<p>Why do you say that?    Please expand on that.</p>
<p><b>6) Stigma</b>  - we have the unsolicited version, now ask them directly</p>	<p>When Caledon\Bolton was the preferred place for the landfill how did the image outsiders have of Caledon\Bolton change.</p>	<p>How do you know?  Can you give me an example?</p>
<p><b>7) Equity\Fairness</b>  - gain insight into how people are defining fairness</p>	<p>Based on the idea of fairness, what should be done with Peel's garbage (that portion that is not 3R'd) now?</p>	<p>Why?    What do you know about _____?</p>
<p><b>8) Community Participation</b>  - what's their opinion on the issue</p>	<p>How should communities be involved in difficult environmental decisions like waste disposal and finding landfill sites?</p>	<p>Why is this important?</p>
<p><b>9) Trust in Experts</b>  - the main problem here is that many people don't even know who the "experts" were (i.e. they don't know who the IWA were)</p>	<p>Please describe how you felt about the role experts (IWA and their consultants) played in the site selection process for C34B.    Many people didn't seem to trust the IWA experts to chose an appropriate site  - Why do you think that is?</p>	<p>Please explain</p>

<p><b>10) Trust for information</b>  - asked mainly about "trust" in terms of getting information in the first round  - why are people so ready to believe the local papers? (good lead-in to brief media analysis)</p>	<p>Most people seemed to get their information mainly from the local papers  - why is that?</p>	<p>Other sources preferred?</p>
<p><b>11) Uncertainty</b>  - Jenkins-Smith and Bassett (1994) find that the more certain people are in their beliefs about a risk (nuclear waste) the higher the perceived risk  - they also find new information usually serves to increase perception of risk even when it was initially low</p>	<p>How certain are you that the things people mentioned (re: table in feedback document) would have happened?   How do you react when you get new information (e.g. read in the paper etc.) that says these things won't happen?</p>	<p>Why?</p>
<p><b>12) Anything to add?</b>  - to facilitate a "smooth" exit from the conversation and to leave them feeling that some closure has been reached on all of the issues</p>	<p>Is there anything that you would like to add to what we've talked about?</p>	
<p><b>All-Purpose Probes</b>  - these probes are to be used at every opportunity throughout the interview  - these are intended to probe deeper into the "language issues" by helping/encouraging participants to articulate <i>exactly</i> what they mean</p>	<p>Why do you say that?   Is it more than that...?   Do you think that everyone sees it the way you do?   Can you give me an example (allows them to "tell a story")</p>	

**Appendix F:  
NUDoIST Theme Index System  
for Understanding Risk at Caledon**

- (1) /landfill site
- (1 1) /landfill site/public forums
- (1 1 1) /landfill site/public forums/how useful?
- (1 2) /landfill site/concerns
- (1 2 1) /landfill site/concerns/water quality
- (1 2 1 1) /landfill site/concerns/water quality/wells=preferred source
- (1 2 2) /landfill site/concerns/mistrust in current technology
- (1 2 3) /landfill site/concerns/effects on children
- (1 2 4) /landfill site/concerns/toxic waste & toxins
- (1 2 5) /landfill site/concerns/traffic - trucks
- (1 2 6) /landfill site/concerns/smell
- (1 2 7) /landfill site/concerns/health
- (1 2 8) /landfill site/concerns/too big
- (1 2 9) /landfill site/concerns/property values
- (1 2 10) /landfill site/concerns/forced vs voluntary
- (1 2 11) /landfill site/concerns/leaks-leachate
- (1 2 12) /landfill site/concerns/other people's garbage
- (1 2 13) /landfill site/concerns/pests
- (1 2 14) /landfill site/concerns/the unknown
- (1 2 15) /landfill site/concerns/imminency of effects - concerns for future-R2-11
- (1 2 16) /landfill site/concerns/farmers-agriculture
- (1 2 17) /landfill site/concerns/because it's there
- (1 2 18) /landfill site/concerns/expropriation of land
- (1 2 19) /landfill site/concerns/economic - compensation
- (1 2 20) /landfill site/concerns/noise
- (1 2 21) /landfill site/concerns/waste money
- (1 2 21 1) /landfill site/concerns/waste money/who benefits?
- (1 2 22) /landfill site/concerns/debris
- (1 2 23) /landfill site/concerns/ground contamination
- (1 2 24) /landfill site/concerns/pollution (unspecified)
- (1 2 25) /landfill site/concerns/people not disciplined
- (1 2 26) /landfill site/concerns/community stigma?-R2-6
- (1 2 27) /landfill site/concerns/mismanagement
- (1 2 27 1) /landfill site/concerns/mismanagement/no guarantees
- (1 2 28) /landfill site/concerns/accountability
- (1 2 29) /landfill site/concerns/top concern?



- (1 2 30) /landfill site/concerns/feigning concern
- (1 2 31) /landfill site/concerns/coping with concerns
- (1 2 32) /landfill site/concerns/unconcerned
- (1 2 32 1) /landfill site/concerns/unconcerned/run safely
- (1 3) /landfill site/impacts
- (1 3 1) /landfill site/impacts/health - depression
- (1 3 1 1) /landfill site/impacts/health - depression/respiratory/asthma
- (1 3 1 2) /landfill site/impacts/health - depression/stress
- (1 3 1 3) /landfill site/impacts/health - depression/emotional responses
- (1 3 2) /landfill site/impacts/threats to QOL
- (1 3 3) /landfill site/impacts/way of life
- (1 3 4) /landfill site/impacts/shattered dreams
- (1 3 5) /landfill site/impacts/community-level impacts
- (1 4) /landfill site/images of dumps & garbage-R2-2
- (1 4 1) /landfill site/images of dumps & garbage-R2-2/community vs mega-dump
- (1 4 2) /landfill site/images of dumps & garbage-R2-2/positive images
- (1 4 3) /landfill site/images of dumps & garbage-R2-2/horror stories about similar landfills
- (1 4 4) /landfill site/images of dumps & garbage-R2-2/expected mishaps
- (1 5) /landfill site/alternatives-R2-7
- (1 5 1) /landfill site/alternatives-R2-7/vs incineration (waste-to-energy)
- (1 5 3) /landfill site/alternatives-R2-7/future technology?
- (1 5 4) /landfill site/alternatives-R2-7/recycling & composting & source reduction
- (1 5 5) /landfill site/alternatives-R2-7/avoid quick fixes
- (1 5 6) /landfill site/alternatives-R2-7/rail haul to the USA-exporting
- (1 5 7) /landfill site/alternatives-R2-7/let Region of Peel decide
- (1 5 8) /landfill site/alternatives-R2-7/remote areas-Kirland Lake
- (1 5 9) /landfill site/alternatives-R2-7/NIMBY
- (1 5 10) /landfill site/alternatives-R2-7/voluntary siting (willing host)
- (1 5 11) /landfill site/alternatives-R2-7/Brampton's turn
- (1 5 12) /landfill site/alternatives-R2-7/industrial area
- (1 5 13) /landfill site/alternatives-R2-7/only for Caledon-Bolton
- (1 5 14) /landfill site/alternatives-R2-7/user fees
- (1 6) /landfill site/information
- (1 6 1) /landfill site/information/trust?
- (1 6 2) /landfill site/information/media coverage
- (1 6 2 1) /landfill site/information/media coverage/balanced & fair?
- (1 6 2 2) /landfill site/information/media coverage/local papers R2-10
- (1 6 3) /landfill site/information/"didn't follow it"
- (1 7) /landfill site/not part of fight
- (1 7 1) /landfill site/not part of fight/no time

- (1 7 2) /landfill site/not part of fight/what's the use - governemnt will do what it wants
- (1 7 3) /landfill site/not part of fight/apathy?
- (1 7 4) /landfill site/not part of fight/drop out of the "fight"
- (1 7 5) /landfill site/not part of fight/moral obligation to fight
- (1 8) /landfill site/died down?
- (1 9) /landfill site/major political issue
- (1 10) /landfill site/risk-free? R2-2
- (1 11) /landfill site/benefits? R2-3
- (1 12) /landfill site/threats R2-4
- (2) /community description
- (2 1) /community description/small town
- (2 1 1) /community description/small town/town vs city
- (2 1 2) /community description/small town/oldtimers vs newcomers
- (2 1 3) /community description/small town/rural vs town
- (2 2) /community description/accessibility to city
- (2 3) /community description/change-growth
- (2 3 1) /community description/change-growth/more affluent-prestigious
- (2 3 2) /community description/change-growth/urban encroachment
- (2 4) /community description/worry free-low stress
- (2 5) /community description/healthy
- (2 6) /community description/place to raise kids (family)
- (2 7) /community description/farming-agriculture-gardening
- (2 8) /community description/clean - pristine
- (2 9) /community description/dream place
- (2 10) /community description/friendly - everybody knows everybody
- (2 11) /community description/space
- (2 12) /community description/nature-environment
- (2 13) /community description/fresh air
- (2 14) /community description/recreational opportunities (proximity)
- (2 15) /community description/descriptions of ideal community R2-5
- (2 16) /community description/everyday concerns
- (2 16 1) /community description/everyday concerns/water
- (2 16 2) /community description/everyday concerns/health = well-being
- (2 16 3) /community description/everyday concerns/accessibility to city
- (2 16 4) /community description/everyday concerns/traffic - accidents, congestion
- (2 16 5) /community description/everyday concerns/protecting investment(s)
- (2 16 6) /community description/everyday concerns/politics
- (2 16 6 1) /community description/everyday concerns/politics/waste money
- (2 16 6 2) /community description/everyday concerns/politics/picking on the little person

- (2 16 6 3) /community description/everyday concerns/politics/loss of faith in government
- (2 16 7) /community description/everyday concerns/high taxes
- (2 16 8) /community description/everyday concerns/isolated
- (2 16 9) /community description/everyday concerns/maintaining income (lifestyle)
- (2 16 10) /community description/everyday concerns/dealing with rural life
- (2 16 11) /community description/everyday concerns/local restrictions - due to complainers
- (2 16 12) /community description/everyday concerns/lack of amenities
- (2 16 13) /community description/everyday concerns/other environmental concerns
- (2 16 13 1) /community description/everyday concerns/other environmental concerns/farm smells
- (2 16 13 2) /community description/everyday concerns/other environmental concerns/wild animals
- (2 16 13 3) /community description/everyday concerns/other environmental concerns/noise pollution
- (2 16 13 4) /community description/everyday concerns/other environmental concerns/water pollution
- (2 16 13 5) /community description/everyday concerns/other environmental concerns/sewage
- (2 16 13 6) /community description/everyday concerns/other environmental concerns/pollution (general)
- (2 17) /community description/community values
- (2 17 1) /community description/community values/trusting
- (2 17 2) /community description/community values/devotion/give something back
- (2 17 3) /community description/community values/law-abiding/orderly
- (2 17 4) /community description/community values/good property maintenance
- (2 17 5) /community description/community values/rootedness?
- (2 17 6) /community description/community values/traditional way of life
- (2 17 7) /community description/community values/hard-working
- (2 17 8) /community description/community values/quiet-peaceful-relaxing
- (2 17 9) /community description/community values/direct-aggressive
- (2 17 10) /community description/community values/anti-growth?
- (2 17 11) /community description/community values/independence-self-sufficiency
- (2 17 12) /community description/community values/proud
- (2 17 13) /community description/community values/respect for privacy
- (2 17 14) /community description/community values/lifestyle over wealth
- (2 17 15) /community description/community values/conservative
- (2 17 16) /community description/community values/laid back
- (2 17 17) /community description/community values/respect the land
- (2 17 18) /community description/community values/values shared with neighbours?

- (2 17 19) /community description/community values/stick together?(community spirit)
- (2 18) /community description/as seen by outsiders
- (2 19) /community description/safety
- (2 19 1) /community description/safety/traffic
- (2 19 2) /community description/safety/crime
- (2 19 4) /community description/safety/water quality
- (2 19 5) /community description/safety/health
- (2 19 6) /community description/safety/personal safety
- (2 19 7) /community description/safety/landfill
- (2 20) /community description/risks
- (2 20 1) /community description/risks/financial
- (2 20 2) /community description/risks/traffic
- (2 20 3) /community description/risks/risk=safety
- (2 20 4) /community description/risks/to kids
- (2 20 5) /community description/risks/proposed landfill
- (2 20 6) /community description/risks/water quality
- (2 20 7) /community description/risks/crime
- (3) /community groups
- (3 1) /community groups/history
- (3 1 1) /community groups/history/PROBE origins
- (3 1 2) /community groups/history/DARE origins
- (3 1 3) /community groups/history/CLEAN origins
- (3 1 4) /community groups/history/EnviroHealth origins
- (3 1 5) /community groups/history/frustrations (esp. early DARE)
- (3 2) /community groups/strategies for fighting dump
- (3 2 1) /community groups/strategies for fighting dump/separate politics and science
- (3 2 2) /community groups/strategies for fighting dump/adversarial
- (3 2 2 1) /community groups/strategies for fighting dump/adversarial/protests
- (3 2 2 2) /community groups/strategies for fighting dump/adversarial/polite confrontation
- (3 2 2 3) /community groups/strategies for fighting dump/adversarial/anger
- (3 2 3) /community groups/strategies for fighting dump/re-consider old sites-technically oriented
- (3 2 4) /community groups/strategies for fighting dump/political lobbying
- (3 2 5) /community groups/strategies for fighting dump/slow down the process
- (3 2 6) /community groups/strategies for fighting dump/reviewing IWA documents
- (3 2 7) /community groups/strategies for fighting dump/ethically-responsibly
- (3 2 8) /community groups/strategies for fighting dump/media attention
- (3 2 9) /community groups/strategies for fighting dump/letter writing

- (3 2 10) /community groups/strategies for fighting dump/petitions
- (3 2 11) /community groups/strategies for fighting dump/no dump period!
- (3 3) /community groups/mixing of group membership
- (3 3 1) /community groups/mixing of group membership/too many "leaders"
- (3 3 2) /community groups/mixing of group membership/uniting in crisis?
- (3 4) /community groups/involvement in IWA-EA process
- (3 5) /community groups/funding (town, participant, intervenor)
- (3 5 1) /community groups/funding (town, participant, intervenor)/fund raising
- (3 6) /community groups/personal sacrifice
- (3 7) /community groups/perceived by community
- (3 7 1) /community groups/perceived by community/effectiveness
- (3 7 2) /community groups/perceived by community/credibility-trust
- (3 9) /community groups/ongoing group activities
- (3 10) /community groups/commitment to public process
- (4) /experts-R2-9
- (4 1) /experts-R2-9/commonsense?
- (4 3) /experts-R2-9/limits to knowledge-incompetence
- (4 4) /experts-R2-9/hired guns-just a job
- (4 5) /experts-R2-9/patronizing
- (4 6) /experts-R2-9/cooking results?-biased
- (4 7) /experts-R2-9/overwhelming amount of information
- (4 8) /experts-R2-9/too technical
- (4 9) /experts-R2-9/more research & testing needed
- (4 10) /experts-R2-9/stalemate
- (4 11) /experts-R2-9/more accountable
- (4 12) /experts-R2-9/good expert =...
- (5) /TWA
- (5 1) /TWA/mandate
- (5 1 1) /TWA/mandate/equity
- (5 1 2) /TWA/mandate/convince board vs community
- (5 1 3) /TWA/mandate/protect environment
- (5 2) /TWA/communication
- (5 2 1) /TWA/communication/accomodation
- (5 2 2) /TWA/communication/addressing public concerns-risk  
communication-R2-11
- (5 2 3) /TWA/communication/inadequacy - inappropriate
- (5 2 4) /TWA/communication/community involvement
- (5 2 4 1) /TWA/communication/community involvement/too abstract
- (5 2 4 2) /TWA/communication/community involvement/stacking the deck
- (5 2 4 4) /TWA/communication/community involvement/participation on IWA's  
terms

- (5 2 4 5) /TWA/communication/community involvement/participation on the community's terms-R2-8
- (5 2 5) /TWA/communication/risk comparisons
- (5 3) /TWA/scientific solutions
- (5 3 1) /TWA/scientific solutions/fact vs rhetoric
- (5 3 2) /TWA/scientific solutions/science vs politics
- (5 3 3) /TWA/scientific solutions/fact vs values
- (5 4) /TWA/access to properties
- (5 5) /TWA/instead of IWA-EA?
- (5 5 1) /TWA/instead of IWA-EA?/have things changed?
- (5 6) /TWA/problems in the process
- (5 6 1) /TWA/problems in the process/lengthy
- (5 6 2) /TWA/problems in the process/costly
- (5 6 3) /TWA/problems in the process/unfair siting process
- (5 7) /TWA/how IWA is perceived
- (5 7 1) /TWA/how IWA is perceived/intimidating-confusing
- (5 7 2) /TWA/how IWA is perceived/trust?
- (5 8) /TWA/how IWA perceive laypeople
- (5 8 1) /TWA/how IWA perceive laypeople/feudal mentality
- (5 8 2) /TWA/how IWA perceive laypeople/rational vs irrational
- (5 8 3) /TWA/how IWA perceive laypeople/not knowledgeable
- (5 8 4) /TWA/how IWA perceive laypeople/looking for compensation
- (6) /respondent information
- (6 1) /respondent information/site (location)
- (6 2) /respondent information/rural (location)
- (6 3) /respondent information/town (location)
- (6 4) /respondent information/group leader
- (6 5) /respondent information/expert
- (6 6) /respondent information/lay-resident
- (6 7) /respondent information/round 1
- (6 8) /respondent information/round 2
- (98) /miscellaneous language
- (98 1) /miscellaneous language/environmental nightmare
- (98 2) /miscellaneous language/body defilement (clean vs dirty)
- (98 3) /miscellaneous language/disgust...
- (98 4) /miscellaneous language/time-bomb - immanence
- (98 5) /miscellaneous language/sustainable development
- (98 6) /miscellaneous language/risk - risk society
- (98 7) /miscellaneous language/environmental conciousness
- (98 8) /miscellaneous language/safety
- (98 9) /miscellaneous language/trust

- (98 10) /miscellaneous language/unknowns-uncertainty
- (98 10 1) /miscellaneous language/unknowns-uncertainty/fate-luck
- (98 11) /miscellaneous language/healthy environment = human health
- (98 12) /miscellaneous language/home
- (99) /misc. research
- (99 1) /misc. research/explaining our study
- (99 2) /misc. research/confidentiality
- (99 3) /misc. research/reinterview?
- (99 4) /misc. research/suggested respondents
- (99 5) /misc. research/feedback R2-1

**Appendix G:**  
**Exploring the Language of Risk and Uncertainty Associated With**  
**Preferred Landfill Site C34B in Caledon:**  
**Preliminary Findings for Participants**  
(June 7, 1996)

Jamie Baxter and John Eyles  
Environmental Health Program, McMaster University, Hamilton, Ont.

**What are some of the findings so far?**

Most people feel that Caledon is a "quiet", "peaceful", "clean" "small town" which is ideal for "raising kids" and is "spacious" enough to have a small "garden". It is a place that allows people to follow a more "traditional way of life" which includes a respect for "farming", "friendliness", "independence" and "privacy" (see Tables 1 and 2). For many, the area has provided a good alternative to city living and most would rather not see Bolton or Caledon develop/grow too quickly. It was expected that residents would be concerned about things like health, safety and excessive spending of tax dollars (see Table 3), however, the threats to *values* and the *type of place residents expect their community to be* perhaps better explain the often intense opposition to the landfill and landfill siting process.

When asked directly what concerns people had about the preferred site for the landfill the responses were not specifically about *values* and *what people expect from their community*. Table 3 shows the top 8 concerns for the 30 residents who were interviewed. People were largely concerned about the possibility of "contaminated leachate" making its way into the "drinking water" and leading to various "health problems". There was also concern that this leachate will cause problems for farmers, who may grow crops and graze animals on potentially contaminated soil. There was a general consensus that "property values" would likely drop because of the landfill, particularly for those close to the site. This anticipated drop was attributed to a combination of things including the "smell", and the "noisy", dusty truck "traffic" that was expected. All of these concerns are indirectly related to community characteristics residents value/expect. For example, truck traffic no doubt threatens the "quiet/peaceful" image of Caledon while "leachate" and "water contamination" threatens images of Caledon as being "clean" and "farming"-oriented.

Many people liked to talk about "alternatives to landfill" as indicated by the various themes in Table 4. A large proportion of the residents feel that landfill is an outdated means of getting rid of household garbage and that more attention needs to be paid to alternatives ways of dealing with garbage - options which may be less expensive and in fact safer in terms of human and environmental health. The fact that the Interim Waste Authority (and the NDP government) did not consider alternatives heightened



opposition to the siting process which was seen by many to force an unnecessary environmental problem on the community. While several mentioned shipping waste to "remote areas" like "Kirkland Lake", and "incineration" as options worth considering most agreed there should be a continued focus on the "3 R's and composting".

The following tables and background provide additional information about the study.

## Tables

The following tables include more detailed information on some of the key topics in the findings:

**Table 1:  
Things People Value in Caledon**

<b>Theme</b>	<b>How many times was this topic mentioned?</b>	<b>How many of the 34 people mentioned the topic (as a % of the 34)?</b>	<b>What percentage of the interviews is devoted to this topic?</b>
quiet/peaceful	31	17 (50)	2.8
anti-growth	23	17 (50)	1.7
respect for privacy	18	13 (38)	1.8
friendly	17	11 (32)	1.7
rooted	15	11 (32)	1.8
independence	15	10 (29)	1.4
traditional way of life	12	7 (21)	1.7

**Table 2:  
How People Describe their Community (What They Expect it to be Like)**

<b>Theme</b>	<b>How many times was this topic mentioned?</b>	<b>How many of the 34 people mentioned the topic (as a % of the 34)?</b>	<b>What percentage of the interviews is devoted to this topic?</b>
small town\town vs city	55	20 (59)	6.1
place to raise kids \family	31	15 (44)	2.9
farming\agriculture\gardening	15	10 (29)	1.6
clean\pristine	15	9 (26)	1.7
space	13	10 (29)	1.6
nature	12	7 (21)	1.6

**Table 3:  
Concerns About Preferred Landfill Site @Caledon**

<b>Theme</b>	<b>How many times was this topic mentioned?</b>	<b>How many of the 34 people mentioned the topic (as a % of the 34)?</b>	<b>What percentage of the interviews is devoted to this topic?</b>
water quality\contamination	42	27 (79)	5.1
health	36	21 (62)	4.2
smell	27	17 (50)	2.5
property values	27	13 (38)	2.0
traffic\trucks	24	16 (47)	2.3
farmers/agriculture	22	13 (38)	2.2
pests (esp. seagulls and rats)	21	10 (29)	1.9
waste of money	20	12 (35)	1.8

**Table 4:  
What People Have to Say About Alternatives to Landfill**

<b>Theme</b>	<b>How many times was this topic mentioned?</b>	<b>How many of the 34 people mentioned the topic (as a % of the 34)?</b>	<b>What percentage of the interviews is devoted to this topic?</b>
recycling, composting and source reduction	32	18 (53)	4.5
incineration	30	22 (65)	3.8
remote areas	22	11 (32)	1.9
Kirkland Lake	21	13 (62)	2.0

### **A Note on Reading the Tables**

For the most part the findings presented here are in the form of tables rather than quotations from the interviews. It is important to keep in mind that while the tables are important for summarizing the themes they do not portray the full meaning of what many of you said (quotations are best for this, and will be included in the final report). We chose to present the tables for two reasons: 1) they are the most efficient way to convey a lot of information; and 2) they portray several related themes in order to ease comparison of the relative importance of various topics.

The tables include three types of information: i) the number of times the topic (theme) was mentioned in all 34 interviews (includes expert participants from the IWA); ii) the number of you (34) who actually mentioned the topic (this is also expressed as a % of the 34); and iii) the amount of the interviews that were taken up with this topic (that is,

when converted to interview transcripts the number of lines of interviews devoted to the topic as a percentage of the total number of lines in all interviews). For example, in Table 1 the topic "quiet\peaceful" was mentioned a total of 31 times in all of the interviews by a total of 17 different people (17 = 50% of the 34), and 2.8% of all interviews were devoted to this topic (891 lines of text = 2.8% of 37124 total lines of text).

It is important to keep in mind that although some of these findings may not appear particularly earth-shattering for you this is, in a sense, our intention. What may seem obvious to you may not be obvious for others interested in risk (those who are not as close to the situation as you are), but what is most important is that you recognize some of the things mentioned here in the way you interpret(ed) the situation at Caledon. If you do not - we would like to know about it, since it is our intention to best represent how things were perceived by you (see attached form).

### **Why is this study being done?**

The purpose of this study is to develop an understanding of how people think and talk about environmental risks like community landfills. Since very few studies have been done on this topic we could not assume too much. We presume that, since opposition to the landfill is very high something very dear is being *threatened*. What we want to understand better is exactly what is threatened, as well as why and/or how these things seem threatened.

### **Who is being studied?**

We chose Caledon as a study area because from Nov. 1993 to June 1995 the community contained the preferred site for Peel's future municipal waste. This was the "environmental risk" around which we talked with people. We spoke with 3 different groups of people, those from: community groups opposed to the site, the community who were not actively involved in the community groups, and experts from the Interim Waste Authority (IWA - the government agency responsible for finding the site). We suspected that each group may think and talk in their own ways about the preferred site for the landfill. A total of 34 interviews have been done and the following table shows the breakdown.

**Table 5:**  
**Groups Interviewed**

<b>Group Leaders</b>	7
<b>Community</b>	23
<b>Experts</b>	4
<b>Total</b>	<b>34</b>

### **How are the interviews analyzed?**

All of the interviews were typed-out from the audio tapes to make interview transcripts which form the basis of the analysis. The 34 interviews translate into over 700 pages of text which has been managed using a computer software package specifically designed for handling interviews.

The basic strategy for interpreting the interviews is to keep track of themes/issues which keep coming up over and over from transcript to transcript. In order to do this each transcript was cut into bits of text with themes attached to them. Your own transcript, for example, may have 30 themes associated with it or only 10 themes depending on how many issues you and I focused on and for how long. It has taken us the better part of the winter to read through the transcripts looking for themes and we have come up with over 300 themes.

### **Next Steps**

Analysis continues and more interviews will be done to explore some of these issues more fully. It is apparent that many of the over 300 themes are not discussed here. Some of the themes yet to be incorporated into the analysis include: resident versus expert assessments of the risks posed by the landfill, the form of community consultation in the IWA siting process, the influence of community groups opposed to the site, and the influence of the media on residents' images of risks associated with the proposed dump.

One academic journal article has already been drafted and others are likely to follow. While we feel these articles are a more thorough way to present findings than what is written above we prefer to make them available only after they pass the editorial process. My dissertation, which is likely to contain the most complete analysis of the interviews, will likely be completed in the summer of 1997.

### **How do I get more information about the study?**

We have refrained from sending you an overwhelming amount of information about the study in order to give you a (relatively) straight-forward summary of what has happened so far. If you would like more information (e.g. a copy of your own transcript or a complete list of themes) please feel free to contact Jamie:

**phone:** (905) 525-9140 ext.27559 **fax:** (905) 524-2400

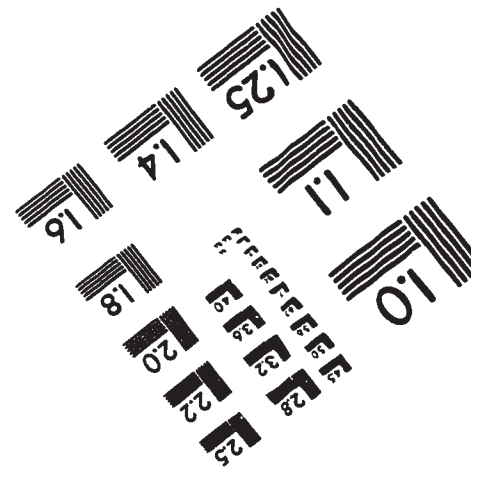
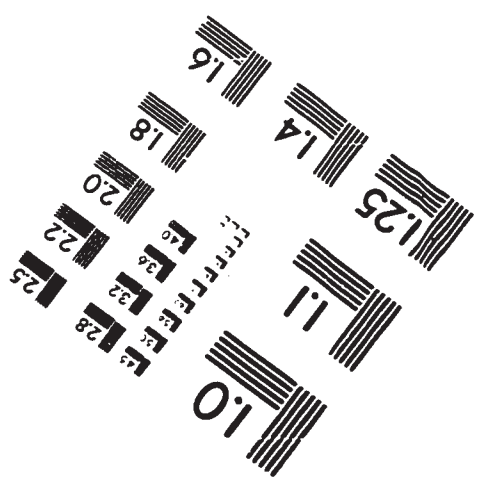
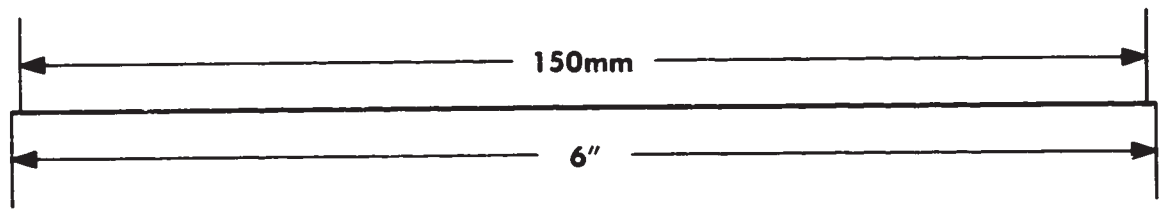
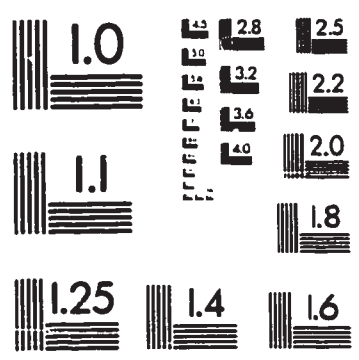
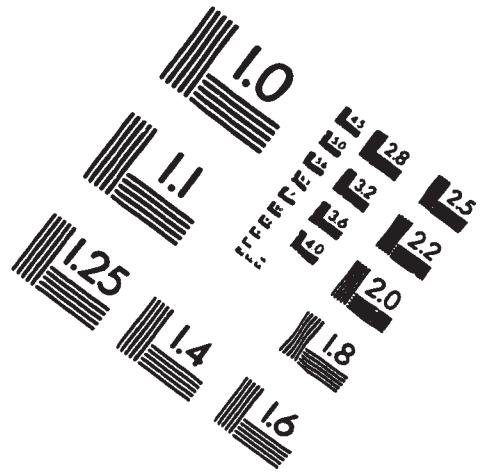
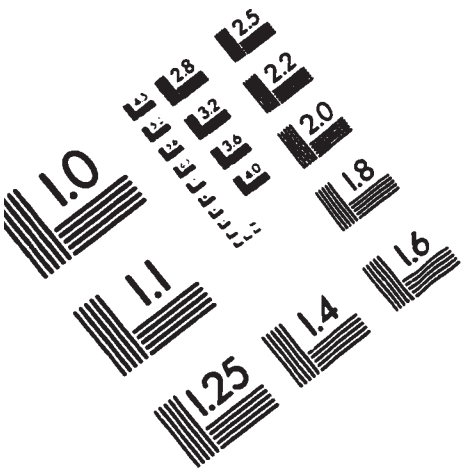
**e-mail:**

[jbaxter@mcmaster.ca](mailto:jbaxter@mcmaster.ca)

## **Appendix H: Feedback From Participants Regarding Preliminary Findings**

- Janice:** Congratulations on the review of your work. In Caledon, as all communities, we still struggle to use responsible waste practices and final disposal. We have a series of meetings coming up to determine what should be done in Peel once Britannia closes. You are welcome to join us here in Caledon for the next steps in community response meeting.
- Giselle:** Your initial findings provide a very clear concise introspective of Caledon. I will be interested to see how you develop the relationship between the language of risk and uncertainty to the landfill issue. I feel that the risks you identified are the most relevant. I am interested to see your final findings to see if they can help us with a better understanding of utilizing public process that is more relevant and workable. Thanks and good luck.
- Christine:** Your analysis is a perfect picture of our town. Excellent use of tables showing results.
- Vickey:** Interpretations and analysis was well done and accurate. Report was interesting and informative to read.

# IMAGE EVALUATION TEST TARGET (QA-3)



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