CONNECTING EXPERIENTIAL AND ETHICAL ISSUES IN INTERDISCIPLINARY RESEARCH:
A CASE STUDY WITHIN "COASTS UNDER STRESS"

by

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Abstract

The focus of this study is on experiential and ethical issues in interdisciplinary research. Data from participant observations and five qualitative interviews with West coast researchers in "Coasts Under Stress" are analyzed using a case-study design. The study describes the following content categories involved in interdisciplinary research: Project Administration, Research Design, Research Contexts, Interpersonal Dynamics, and Knowledge and Translation. Experiential, process, and ethical dimensions of these categories were analyzed and expanded upon from within a constructivist and feminist theoretical framework. Findings discuss the valuing of interdisciplinary research, the negotiation and centrality of relationships within interdisciplinary contexts, and the emergence of paradoxical tensions in the practice of interdisciplinary research. Recommendations for future research highlight the need for further in-depth study of ethical issues relating to power dynamics, translation of knowledge, links between experiences and ethics, and developmental processes of interdisciplinary projects.

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Chapter One

Introduction

> The *we* does not exist, but consists of I and You in an ever changing boundary where two people meet. And when we meet there, then I change and You change (Perls, as cited in Hacher and Himelstrin, 1976, p. 24).

One tenet of existential philosophy is the irreducible bond of the I-thou relationship. This transformation and change at the boundary between two individuals, or between two worldviews, could be seen as a metaphor for interdisciplinary research. Research has often been conducted within the narrow and specialized confines of one's discipline. However, with interdisciplinary research, the boundaries of these disciplines come together, and both disciplines and researchers are changed as a result. Interdisciplinary research involves multiple relationships, often including researchers from a variety of worldviews and disciplines.

Play with this idea of interdisciplinarity as relationship for a moment. Consider this question: What do interdisciplinary research and therapeutic relationships have in common? One goal of the therapeutic relationship is the creation of a safe environment based on trust, in order for the client to risk new ways of being and doing. A parallel task could be said to exist in an interdisciplinary research team. Just as safety and trust are needed in the therapeutic relationship for the client to risk in order to learn, so too are safety and trust needed amongst researchers in order for them to be able to risk leaving the comfort of their own disciplinary niche and risk learning about, and accepting, different epistemological and methodological worldviews. The demarcations defining academic disciplines, and the attendant value of specialized knowledge, are challenged by interdisciplinary research. A "unity of knowledge" ideal, inherent in

interdisciplinarity, sees things as an organic whole, likening the various components of human knowledge to pieces in a panoramic jigsaw puzzle (Nissani, 1997, n.p.). It is this ideal that drew me to the study of interdisciplinarity.

Interdisciplinarity as a methodology for academic research is increasingly supported, as evidenced by the increasing financial provisions given to these types of projects. Yet interdisciplinarity, unlike disciplinary methodologies, is not well defined. Nor is standardization necessarily desirable. As an emerging process conducted in ever changing contexts, interdisciplinary research is often an unrepeatable experience. As such, existing ethical guides and decision-making models provide little insurance for the ethical dilemmas that potentially arise. Ethical considerations in the practice of disciplinary research are often complex and nuanced, without the addition of multi-disciplinary differences in epistemological beliefs and methodological practices. Therefore, if research ethics are to reflect the realities of interdisciplinarity, to identify the ethical issues that are generated from this methodology would contribute to both scholarship and practice. It is with this intent that I have undertaken to study ethical issues emerging in the process and practice of interdisciplinarity in the collaborative research project entitled: "Coasts Under Stress: The Impact of Social and Environmental Restructuring on Environmental and Human Health in Canada" (CUS).[1]

Research Focus

This study is concerned with experiences, process, and ethical issues arising in the practice of interdisciplinarity, as experienced by several researchers in Coasts Under

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[1] See the website: http://www.coastsunderstress.ca/

Stress[2]. CUS is a major collaborative research initiative (MCRI), funded by two federal granting agencies, the Social Sciences and Humanities Research Council of Canada (SSHRC) and the Natural Science and Engineering Research Council of Canada (NSERC) over a period of five years, involving over 70 faculty researchers from the natural sciences, social sciences, and humanities. The focus of the research project is on environmental and human health of coastal communities in Canada. Within CUS, there are considerable epistemological and methodological variations among the researchers. Studies of complex environmental and social problems have grown in volume over the past twenty years, and increasing numbers of them draw on both the natural and social sciences. All of these studies have to contend with the problems of interdisciplinarity (Mendes, 1992). Coming to terms with the differences and difficulties in interdisciplinarity is a necessary task, both for the management of the project, as well as for the researchers involved. Therefore, exploring the ways in which this diversity is experienced, how relationships and understanding are fostered, the emergence of problematic issues, and the ways in which these challenges are addressed offer valuable insight to the study of interdisciplinary scholarship.

Similarly, the ethical considerations that team members face are fraught with complexities. While researchers may agree on certain fundamental principles in research, such as protecting participants from harm or alleviating suffering, they often differ in how they understand the application of these goals. Reconciling these different understandings of what constitutes "harm" or "good", while at the same time considering researchers' understandings of these concepts, can create serious tensions. Generalized

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[2] For a more comprehensive description of CUS, see Chapter Three.

rules, while important starting places, often do not consider the particularities of a situation that can help to determine an ethical response (Holstein, 1995). The generality of codes of ethics, as guides to research practice, allows researchers and practitioners to mask their differences in opinion and interpretation about them (Alistair & Sim, 1998). Although there may be consensus about what constitutes the "good," there is no consensus about how to go about doing so. Collaborative research across disciplines necessitates finding common ground, and respecting the diversity of opinion and ways that researchers try to do so.

Purpose of the Study

One of the goals of this study is to explore connections between experiential aspects of interdisciplinary research and ethical discourse - to demonstrate that experiences and issues raised by participants have ethical dimensions worthy of articulating. I began this study from the assumption that the experiences and issues relating to interdisciplinary research (such as challenges, learnings, values, etc.) had a link to ethics, and set out to demonstrate the credibility of this assumption. Therefore, the emphasis of this study is on *both* experiential and ethical aspects of interdisciplinary research.

There is very little scholarship pertaining to the ethics of interdisciplinary research. The overall purpose of this study is to redress this absence of an ethical discourse relating to large-scale collaborative interdisciplinary research initiatives. The first objective of this study is to identify ethical issues emerging from the process and practice of interdisciplinary research. The second aim of this study is to explore, in-depth, the context and implications of these ethical issues. Ethics in research has

traditionally drawn upon modernist documents and institutions, such as consent forms, codes of ethics, decision-making models, applications for research with human (and animal) subjects, and institutional review boards. As interdisciplinary ideals and tasks (such as teaching, research, and scholarship) do not fit neatly into the demarcations of professions or departments, these ethical constructs are insufficient when it comes to working collaboratively across disciplines.

Definition of Terms

Discipline: Any comparatively self-contained and isolated domain of human experience that possesses its own community of experts (Nissani, 1997). Disciplines are both categories of knowledge and a way of controlling or protecting those categories (Salter and Hearn, 1996).

Interdisciplinary Research: Two or more persons from different disciplines who agree to study a problem of mutual concern, and who design, implement, and bring to a consensus the results of a systematic investigation of that problem. An embedded assumption in this definition is that most interdisciplinary research occurs in teams (Bruhn, 2000). Interdisciplinary research requires an understanding of the disciplines as well as understanding how to connect disciplinary knowledge. Interdisciplinary research falls between disciplines, between the bodies of knowledge defined by the theories and methods of the established disciplines. It can signify a gap and a lack of connection to be closed by additional means not yet available within the disciplines themselves (Karlqvist, 1999).

Epistemology: A theory of knowledge "concerned with the nature and scope of knowledge, its presuppositions and basis, and the general reliability of claims to

knowledge" (Hamlyn as cited in Harding, 1987, p. 23). The contours of modern epistemology have been designed and redesigned in response to the thought of Copernicus, Galileo, Newton and later natural and social scientists (Harding, 1987).

Methodology: A theory and analysis of the "special ways in which the general structure of theory finds its application in particular scientific disciplines" (Caws as cited in Unger, 1987, p. 22). Methods of inquiry can not be regarded as independent of the general theories and assumptions that guide research.

Ethics: Ethics is the general enquiry into what is good (Moore, as cited in Wittgenstein, 1965). Ethics need not be defined in exact terms in order to use the concept meaningfully (Davidson & Smith, 1999). Indeed, it is this very vagueness that allows for a variety of experiences and descriptions of the "ethical" as it is the circumstances in which these words and concepts are used that give meaning. Wittgenstein (1965) emphasizes that there is no common property to which the word "good" (ethical, right, etc.) refers. Wittgenstein explains that when we are using the word right or good in an ethical sense, we do so by some sort of analogy or simile, and that no statement of fact can ever be, or imply, a judgment of absolute value (Heaton & Groves, 1994; Wittgenstein, 1965).

My understanding of ethics is that it is not distinguishable from the everyday interactions within which we are always engaged. As Francisco Varela (1999) proposes in his book, *Ethical Know-How: Action, Wisdom, and Cognition,* ethical behaviour and actions do not spring primarily from judgment and reasoning alone, but from immediately coping with what is confronting us. In our daily, normal life, these immediate, rather than deliberate, ethical actions represent the most common kind of ethical behaviour. Not only is this a contextual and relational model of understanding

ethics, in that who we are at any given moment cannot be divorced from our interrelationships with other things and people, it also points to a relationship between experiences and ethics. It is this assumption that is imbued in both the design and objective of this study.

Assumptions

Of Study

1. That there may be agreement upon ethical principles (like consent), yet there are differences in interpretation of how to obtain those goals.
2. That understandings about what is ethical (right, good, of value, or moral) is partially dependent upon context, personal history, familiarity with ethical standards, cultural beliefs, family values, etc.
3. That the questions asked about experiences and issues will relate to ethical issues emerging from the process of doing interdisciplinary research.

Of Researcher

1. That the researcher can accurately understand and present the participants' perspectives about experiences and their ethical implications.
2. That the researcher will be able to conduct interviews in an atmosphere of trust.
3. That the research relationship can act as both a facilitator and a restraint, and has an effect on the participants, on the research and on the research design (Maxwell, 1996).
4. That the researcher as a human instrument possesses "adaptability" and will be sensitive to the tension about ethical issues in people's stories and will competently inquire about them when they arise (Lincoln & Guba, 1985, p, 198).

Of Participants

1. That the participants will respond to the interview questions truthfully.
2. That participant's responses will relate to ethical issues involved in interdisciplinary research.
3. That faculty researchers will be informed about and sensitized to ethical issues and standards in doing research related to their discipline.

Summary

In this chapter I have proposed similarities between interdisciplinary research and a therapeutic relationship in which change and transformation occur for those involved. Interdisciplinarity, as a methodology for addressing complex social and environmental problems, unlike disciplinary-based methodologies, does not adhere to a standardized method for achieving its aims. In addition, there is no well-established ethical discourse within which interdisciplinary research is grounded. The focus of this study is to explore experiences and issues in interdisciplinary research in the context of an ethical analysis. My aim is to contribute to the scholarship about ethics in interdisciplinary research and to create an opportunity for those interested in interdisciplinarity to identify important questions that need to be asked and explored.

Chapter Two

Literature Review

Prior to beginning this study, I identified several aspects of interdisciplinary research that would potentially be fruitful in a discussion about ethics. These areas included research ethics in general, ethical theory, team and group dynamics, interdisciplinary methodology, and community-based social science research ethics. Identifying these sections of the literature review was an emergent process stemming from my own interests and situatedness in the Department of Educational Psychology and Leadership Studies.

Awareness of post-modern discourse that challenged traditional ethical documents and institutions led me to explore the problematic assumptions embedded in human ethics review forms, professional codes of ethics, and institutional review boards. This led me to the philosophical backdrop of ethical theory, in order to sensitize myself to the concepts and issues surrounding the topic of ethics. In addition, as a research assistant with CUS, I was curious about similarities that might exist between cross-cultural and group counselling contexts and an interdisciplinary research team that had cross-disciplinary components. Therefore, I reviewed literature pertaining to groups and intercultural teams. Finally, as this study revolves around ethical issues within the context of an interdisciplinary research project, interdisciplinarity as a methodology is a major focus in this literature review.

The presentation of the literature is not organized around this developmental process. Rather, it is organized for the sake of flow and coherence. The subsequent sections present a selected review of the following topics: history of research ethics,

philosophy of ethics (normative, feminist, post-modern, relativist), teams and group process, interdisciplinary methodology, and ethical issues in selected contexts (qualitative, community-based, cross-cultural, and funded research).

History of Research Ethics

The possession of a code of ethics (or a code of professional conduct) is often regarded as a key characteristic of an occupational group, particularly if that group aspires to the status of a profession, for which a code of ethics is often seen as a necessary condition. The functions of codes are various. The manifest function of the code is to provide explicit, if general, guidance about legally and ethically appropriate conduct within a profession. Codes of ethics for professional and academic associations are the conventional format for moral principles. By the 1980s, each of the major scholarly traditions had adopted its own code, with an overlapping emphasis on four guidelines for directing research (Christians, 2000). These four common guidelines revolve around issues of informed consent, deception, confidentiality, and accuracy.

In reviewing the codes of ethics across three health-related disciplines, Alistair and Sim (1998) found that the codes included within them directives towards co-operation and collaboration, key elements in interdisciplinary research. Yet the idea of cooperation and collaboration run counter to one of the main barriers of inter-professional working – the notion of "professionalism as demarcation" (Hugman, 1991 as cited in Alistair and Sim, 1998). This is characterized by a focus on the uniqueness of the profession and a concern for the public image of the individual occupational group concerned. This in turn implies a greater concern with the idea of professional self-interest than with those of collaborative interdisciplinarity. Similar to each profession and

discipline having distinct codes of ethics, each academic field has its own values (e.g. profit, growth, sustainability, life, health, goodness, truth, beauty, etc.). The authors suggest that codes of ethics should be promoted within the professions within the context of critical analysis and reflection, so that they become more than tokenistic, and so that they act as an instrument for critical debate, and "not final dogmas" (Kultgen as cited in Alistair and Sim, 1998, p. 316).

Glenn Greiner, a University of Alberta ethicist and Tri-council policy advisor, in a lecture presented at the University of Victoria, discussed ethical conflicts arising from the nature of the expectations of the professions. He proposed that the expectations of professions – service to clients, expert knowledge, research based – immediately sets up conflicting expectations in the realm of research ethics. For example, the professional is expected to focus on the interests of the client, but is also expected to advance the field through research (as opposed to excellence in clinical practice). The professional, by nature, is caught in a web of competing interests – of the client, of the professional, and of the research. Similarly, situating his discussion within the field of psychology, McBurney (1994) comments on the dilemma inherent in the decision to do research. He notes that, in general, the conflict is between the commitment to expand knowledge, the potential benefit the research may have to society, and the cost of the research to the participants. Furthermore, he suggests that it is not possible to resolve this conflict in terms of moral absolutes or by a set of prescriptions that will cover all the cases.

As well as professional conduct and research that is accountable to professional regulatory bodies, a fair number of research initiatives are overseen by Institutional Review Boards (IRBs). These boards are responsible for reviewing and monitoring

research involving human subjects. However, exactly what their role should be, who should hold board positions, and what scientific role they should play in the research community remain to be worked out (Berg, 2001).

From a philosophical perspective, IRBs, with their broad ethical principles that serve as a basis for moral standards in research with human subjects, embody a utilitarian agenda in terms of scope, assumptions, and procedural guidelines. With IRBs, utilitarianism is institutionalized in that ethical standards are evaluated through rational procedures controlled by academic institutions from an impartial perspective. Similarly, codes of ethics as guidelines for moral conduct emerged from within the ideological context of the Enlightenment. Christians (2000, p.133) argues that the deepest root embedded in the Enlightenment era was a "pervasive autonomy" of individual self-determination. This modernist view of ethics upholds the primacy of individual autonomy and is embedded in professional codes, IRBs, and human subjects applications. As such, it is an insufficient paradigm. Rather, there is a need for a "new model of research ethics in which human action and conceptions of the good are interactive" (Christians, 2000, p. 149). The next section highlights the backdrop of these normative ethics as well as presents alternative perspectives on ethics and moral philosophy.

Philosophy of Ethics

There are limits to a positivistic philosophy, with its insistence on neutrality, regarding definitions of the good about social inquiry. Christians (2000) states that this worldview of positivism and neutrality has been discredited. This restrictive definition of ethics, as embodied in utilitarianism, accounts for notions of minimal harm. However, factors falling beyond that of a utility calculus, such as emotion and intuition, are

excluded from consideration. This worldview no longer addresses adequately the complicated issues facing social scientists. "Neutrality," Christians asserts, "is not pluralistic but imperialistic". The presupposition of moral neutrality and objectivity inherent within IRBs is hierarchical, biased toward patriarchy, and ignores power relations associated with "gender, sexual orientation, class, ethnicity, race, and nationality" (Denzin, as cited in Christians, 2000, pp. 141-142).

Research ethics, as canonized through consent forms, review boards, and professional codes, could be considered artifacts of a modernist worldview. However, contemporary feminist and post-modern ethical paradigms have challenged the limits and assumptions embedded in normative ethics. The following section describes the backdrop of modernist moral philosophy from within which these normative guiding principles emerged. I briefly discusses aspects of feminism, post-modernism, and ethical relativism that question the universal applicability of modernist ethical principles.

Normative Ethics: Utilitarian, Deontological, and Contractarian Theories

The purpose of ethical theory is to introduce clarity, substance, and precision of argument into the domain of morality (C. M. Macleod, personal communication, October 28, 2002). Comprehensive ethical theories attempt to provide a normative framework for understanding and responding to problems in living a moral life. Usually such a framework takes the form of a theory of right action, but may also take the form of a theory of good character. The term morality, in contrast to ethical theory or moral philosophy, is used to refer to conventions in society about right and wrong human conduct. These beliefs are expressed through terms such as "good," "bad," "virtuous," "right," "wrong," "ought," etc. (Dworkin, 1978, p. 4). Morality consists of what persons

"ought" to do in order to conform to society's norms of behaviour, whereas ethical theory concerns the philosophical reasons for or against the morality that is stipulated by society or by some social group (Dworkin, 1978).

Normative ethics and moral theory study the nature of morality and aim to illuminate answers to the question of "How ought I live?" There is concern with three fundamental issues: the nature of the good life; the nature of our obligation to others or what is right; and the nature of the relationship between what is right and what is good. These problems can be addressed at either an abstract theoretical level or in an applied context. A grand aim of much abstract normative moral theory is to answer these problems systematically through the articulation of a theory that identifies the ultimate principles of morality (C. M. Macleod, personal communication, October 28, 2002).

There are three basic approaches to normative ethics that dominate modern moral theory: Utilitarianism, Kantianism, and Contractarianism. Utlitarianism is a moral theory initially developed by Jeremy Bentham (1748-1832) and John Stuart Mill (1806-1873). This theory has two basic elements: an account of the good as utility or happiness and a standard of rightness as the maximization of utility. According to classical Utilitarianism, utility is pleasure and rightness consists in the maximization of overall pleasure (C. M. Macleod, personal communication, October 28, 2002). The main principle of utility is that "an action is morally right if, and only if, it produces at least as great a balance of value over dis-value as any available alternative action" (Dworkin, 1978, p. 17).

Kantianism is a moral theory derived primarily from the works of the German philosopher Immanuel Kant (1724-1804). Kantian, or deontological, theories reject the

idea that morality requires maximization of goodness. Unlike Utilitarianism, there is no simple statement of the basic tenets of Kantian moral philosophy. There are, however, a number of important and interconnected principles and themes that animate Kantian moral philosophy: the categorical imperative (never treat another person merely as a means to your own end), respect for persons, autonomy, and inherent dignity of persons. Moral rights impose inviolable constraints on how individuals can be treated by others. From the Kantian perspective, if individuals have rights, then it is wrong to violate them simply in order to maximize utility (C. M. Macleod, personal communication, October 28, 2002).

Social contract theory is the view that morality is founded solely on uniform social agreements that serve the best interests of those who make the agreement (Cudd, 2003). Contractarianism emphasizes the importance of reciprocity and is closely associated with the works of English philosophers Thomas Hobbes (1588-1679) and Jean Jacques Rousseau (1712-1778). The theory of contractarianism claims that moral norms derive their normative force from the idea of contract or mutual agreement. Contractarians are thus skeptical of the possibility of grounding morality or political authority in either divine will or some perfectionist ideal of the nature of humanity (Cudd, 2003).

Utilitarianism, Kantianism, and Social Contract theories emphasize reason, autonomy, impersonal duty, contracts, the harmonization of competing interests, and the calculation of costs and benefits. As guides to research practice, these theories have been shown to be limited, as evidenced in the following section.

Feminism and Ethics

Feminists have identified several male-biased assumptions that have infused the above liberalist tradition of thinking about moral justification (Jagger, 2000, p. 233). Ethics, or moral philosophy, as a field of intellectual inquiry developed for well over two thousand years with minimal input from women. The absence of female voices has meant that the moral concerns of men have preoccupied traditional western ethics, shaping both its methods and concepts. Many mainstream moral philosophers have previously held that justification in moral reasoning requires such features as impartiality and universalizability (Friedman, 2000). In these theories, the concerns of private life – the realm in which women traditionally dominate – are almost wholly absent. Yet, the basic state of human beings in the world is one of connectedness and relationship. Once the primacy of relationships is recognized, rather than that of autonomy, the nature of morality looks quite different (Grimshaw, 1991). From the perspective of an ethic of care, rather than an ethic of justice, attention is given to one's distinctive history, embodiment, relational embededness, network of social relationships, desires and emotions. It is a moral perspective that acknowledges its own partiality, particularity and irreducibility (Friedman, 2000).

Held (1990) presents three gender-biased aspects in the traditional history of ethics: The split between reason and emotion, the public/private distinction, and the concept of self as constructed from a male point of view. First, in the split between reason and emotion, the primacy of rationality in guiding responsible human action has a long and influential history. Furthermore, reason and clarity of thought were early associated with maleness, which was associated with active, determinate, and defining

form. Femaleness, was seen as passive, indeterminate, and inferior matter. The associations between reason, form, knowledge and maleness, have permeated what has been thought to be moral knowledge as well as what has been thought to be scientific knowledge (Held, 1990).

Second, the public/private distinction has generally led to privileging the points of view of men in the public domains of state, law, and marketplace, while discounting the experience of women in the private domains of the household, including friendships and family relations. The act of mothering, as experienced by women, has not been included as a source of moral insight in traditional moral philosophy. Yet this activity of creating new social persons is potentially the most transformative human activity of all. Instead of seeing human relationships in terms of the impersonal ones of the "public" sphere, as liberal political and moral theory has so often done, ethical theories should be concerned with human relationships in terms of those experienced in the spheres of "private" or "social" communities (Haraway, 1988; Held, 1990). Relationships between embodied persons and the particulars of a given context is a central aspect in feminist ethics. Concerns with relationship include attention to feelings of empathy and caring, rather than simply upon abstract rules of reason. Held (1990) maintains that many feminists contend that the commitment to justice is as likely to demand both relational feelings as well as a rational recognition of abstract principles.

The third contested concept from traditional moral theory rests upon the depiction of human nature and the self in masculine terms of autonomy and independence. The starting point of modern moral theory is the isolated individual, separate from everyone else and seemingly independent (See Hobbes' *The Citizen*). However, some feminist

moral philosophers have pointed out that this picture is very much removed from reality (Grimshaw, 1991). Other feminist psychologists, such Miller (1997) and Jordan (1991) theorize the self, not as an autonomous individual, but as constituted through relationships. For example, Gilligan (1982) found that women tended to interpret their moral responsibilities in terms of their relationships with others. Taking the self-in-relation theory further, the self, as created in the context of the mother-child interaction, is a relationship of mutuality in which self and other both express intersubjectivity. Maintaining this larger relational unit then becomes a goal, and maturity is seen not in terms of individual autonomy but in terms of competence in creating and sustaining relations of empathy and mutual intersubjectivity (Held, 1990). It has been suggested that the most promising metaphor for autonomy is childrearing as it is here where we learn about becoming autonomous through relationship with others and that interdependence is a constant component of autonomy (Nedelsky, as cited in Held, 1990, p. 695).

Similar to these feminist arguments contesting traditional moral dichotomies and assumptions, post-modern thought also challenges these notions of self and universalism. This next section explores post-modern and constructivist contributions to ethical theory.

Postmodernism, Constructivism and Ethics

Two features of postmodernism – the collapse of the credibility of the unitary subject and the end of the grand narratives – have a profound bearing on how we might apprehend morality. The greater part of moral theory seems firmly wedded to these two assumptions that are now so radically called into question (Kitwood, 1994). According to Bauman (1993), the essence of the postmodern approach to ethics lies not in the abandoning of characteristically modern moral concerns, but in the rejection of the

typically modern ways of responding to moral challenges, such as normative regulation and the philosophical search for absolute and universal foundations in theory.

Whereas ethical codes are founded on the proposition that morality is absolute and universal, postmodern ethics suggest that the condition of morality is essentially ambivalent and not universalizable. The institutionalization of moral rules and regulations in an ethical code is characteristic of morality in modernity, which permits the substitution of a code of ethics for the moral self (Van Meijl, 2000). Bauman (1993, p. 31) sums up postmodern ethics as "morality without ethical code." If human reality is messy and ambiguous, then so too are moral decisions. Caputo (2000) adds that ethical rules are provisional and limited in that they cannot address the singularities of experience, nor are they adequate in guiding us through unforeseeable future terrain. Postmodernists understand the world as a historical and a geographical pastiche: unlike cultures before us, we weave bits and pieces of all times, all cultures into something new. We live not in a place or a time, but in a process. Postmodernists suggest a governance based on the idea that "no discourse is privileged " - that is, that the cultural foundations that all of us rely on - religion, faith in science and technology, reason, environmentalism, etc. - are only contingent, not absolute. It is this sensitivity of the postmodernists to cultural imperialism, to the silencing of those who may be different, that is valuable, both for ethical reasons and pragmatic ones (Allenby, 2003).

Constructivist perspectives of ethics are similarly partial, particular, and contextualized. Constructivism allows for a multiplicity of belief systems of what is "right" and "good" (Mahoney & Neimeyer, 1995). In addition, constructivism includes aspects of feminist ethics in that the relational aspect of ethics is valued and understood

in terms of compassion and nurturance. Rather than search for neutral principles to which all parties can appeal, constructivist ethics are rooted in the primacy of particular human relationships.

Ethics from a constructivist perspective are also an embodied and locally contextualized enterprise. Abram (1996) suggests that our ethical sense is an embodied mode of awareness that precedes our literate intellect. This embodied ethic is a way of thinking that strives to be faithful, not to a written set of principles, but to the sensuous world itself – the bodies and beings that surround us. This sensuous world is the world of our direct and unmediated interactions, and therefore it is always local and immediate. Contributing to the conceptualization of ethics as embodied and local, Varela (1999) suggests that our actions more often spring from immediately coping with what is confronting us in the situation at hand, rather than through rational deliberation and reasoning.

There are tensions between the moral camps previously highlighted. While each redresses some lack in the other, there is no one totalizing ethical narrative that can answer all critiques. Kitwood (1990) questions whether or not there is a position that recognizes the postmodern predicament while still holding firm to the ideal of respect for persons, which he sees as the bedrock of morality. This brings us to a discussion about concerns around ethical relativism.

Ethical Relativism

From this perspective, morality is relative to the norms of one's culture. Moral rightness varies from place to place or person to person, without any absolute or universal moral standards that could be applied to all persons at all times (Carroll, Schneider, and

Wesley, 1985). As contemporary society is saturated by diversities of belief and lifestyle, the same action may be morally right in one social context or society but be morally wrong in another. For example, in one culture it may be the custom for a husband to offer his wife as a sex partner to a male visitor, while in another culture this practice may be condemned. However, the principles underlying the practice, such as respect and consideration for others, may be upheld by both cultural communities. The only moral standards against which a society's practices can be judged are its own. From the perspective of ethical relativism, a moral standard is simply a cultural product. There can be no common framework for resolving moral disputes or for reaching agreement on ethical matters among members of different societies (Carrol, Schneider, and Wesley, 1985).

Philosophical counterarguments claim that while the moral practices of societies may differ, the fundamental moral principles underlying these practices do not. Perhaps the strongest argument against ethical relativism comes from those who assert that universal moral standards can exist even if some moral practices and beliefs vary among cultures (Andre and Velasquez, 1992). In other words, we can acknowledge cultural differences in moral practices and beliefs and still hold that some of these practices and beliefs are morally wrong. For example, that there is at least a universal set of human needs and that we all inhabit the same earth, leads to the adoption of similar moral principles in all cultures, however differently they may be interpreted and practiced. Despite criticisms of it, the theory of ethical relativism raises important issues. Ethical relativism reminds us that different societies have different moral beliefs and that our beliefs are deeply influenced by culture. It also encourages us to explore the reasons

underlying beliefs that differ from our own, while challenging us to examine our reasons for the beliefs and values we hold (Andre and Velasquez, 1992).

In the next section, I move away from the broader philosophical backdrop of ethical theory informing the process and practice of research ethics and towards expanding on the theme of relationships raised in this section. The next part of the literature review covers aspects of relationships in the context of intercultural teams and group process.

Teams and Group Process

A group or team is more than the sum of its parts – it is a social system with its own structure and culture (Dimock, 1987). The factors in the composition of teams, especially intercultural or interdisciplinary ones, that affect the team dynamics and performance can be divided into cultural and organizational factors. Cultural factors include: 1) the degree of difference or similarity that exists between the cultural norms of the individuals within the group; 2) the degree to which individuals might manifest their cultural norms; 3) the level of fluency in the common language; 4) the different expectations about what constitutes effective group behaviour with a team; 5) different communication styles; and 6) culturally different leadership styles. Organizational factors include: 1) the status of different cultures within the organization; 2) the geographic spread of team members; and 3) the similarity or difference between functional and professional 'cultures' (Davison, 1996).

The factors that need to be addressed in multicultural team-building sessions include self-understanding, understanding others, interacting with others, as well as two general skills, tolerance of ambiguity and persistent patience. Before members of a team

can appreciate and interact with co-workers representing the diversity of the workforce, they need to have an awareness of their own culture. That is, they need to recognize that their every behaviour is influenced by some basic cultural assumption, value or belief and this awareness needs to be personalized to the extent that their construction of reality is personal and different from the constructs of others (Casse, as cited in Wigglesworth, 1996, p. 136).

The success of intercultural or multidisciplinary teams partially rests upon each person's unique and different contribution and perspective within a team. This includes one's life stage, family constellation, ethnic background, knowledge base, cognitive styles, interests, personality, and worldview of abundance or scarcity (Dew, 1998, pp. 38-41). Furthermore, the strength or solidarity of a group is determined chiefly by the personal need satisfaction it provides members or by the expectation of that need satisfaction. The more members are attracted to a group because of what it can or does offer them, the higher will be its cohesion. The size of a group is another factor of group functioning, with smaller groups being more cohesive than larger ones. Geographical location and physical proximity also tend to increase interaction and can contribute to group strength. Groups where members are working towards a common goal on a cooperative basis are usually more cohesive than groups in which the members are in competition with one another. Additionally, anything that helps a group to feel unique can contribute to group strength (Dimock, 1987).

Effective communication is another key factor of group cohesion. Good listening is the key to cooperation, mutual respect, and conflict resolution. Effective communication means making sure that your information got through to the other person,

was understood, and was acted upon (Dew, 1998). Cooperation requires communication, which is a major problem for inter-institutional groups. Not only is there the problem of physical separation across towns and even countries but there is also a wider than average professional gap between the scientists, technologists, politicians and administrators (Epton, Payne, and Pearson, 1983).

As mentioned above, the dynamics of teams will be affected by the personalities, levels of knowledge and experience, differing levels of status, motivation and attitudes of the individuals involved, as well as by the team and organizational characteristics, and the nature and structure of the task. Leaders need to know something about all of these in advance (Davison, 1996). The success of an interdisciplinary research project rests on a key individual's capacity to foster communication and interaction among the team members. This forms the most critical ingredient in keeping the group and its work on course. Equally important are efforts of the research team to maintain open communication with formal reporting within the group and outside (Saxberg & Newell, 1983). Effective group leadership: fosters a climate in which rigorous but non-judgmental evaluation is the norm; supplements services normally provided by the disciplinary communities, such as reward, recognition, information exchange, evaluative feedback; and recognizes the importance of opportunities for group members to know each other well enough professionally to overcome disciplinary prejudices and to regard each other as more than representatives from each other's disciplines (Gold & Gold, 1983). Similarly, leadership style has a considerable impact on group strength - with facilitating, participative-oriented leadership encouraging interaction and relationship building. The more that members participate in making the decisions which affect them, have a clear

picture of the goals of the group, and a recognized part to play in helping the group reach those goals, the higher will be the group's cohesion (Dimock, 1987).

Teams and groups are commonly the format within which interdisciplinary research is carried out. Interdisciplinary collaborations face similar challenges as those involved in working cross-culturally. Given the challenging nature of practicing interdisciplinarity, the next section considers the rationale for such research, including the purpose, challenges, and benefits.

Interdisciplinary Methodology

In reviewing the literature related to interdisciplinary methodology, it is not uncommon to read articles that use terminology without providing the authors' accepted understandings of the meaning of the concepts (Nicholson, 1998). Although there were many variations in defining and describing multi- and interdisciplinary research, there seemed to be much more consensus in identifying the benefits and challenges associated with this type of research (Nissani, 1997; Brewer, 1999; Hansson, 1999). Many articles supported the idea and practice of multidisciplinary and interdisciplinary research, while fewer considered arguments against the value of it. Furthermore, none of the articles reviewed explored any of these challenges in depth and so understanding how to transcend these hurdles is difficult (Jewitt & Gorgens, 2000). Similarly, many more articles (Brewer, 1999; Hansson, 1999; Bruhn, 2000; Nissani, 1997; Paproski and Haverkamp, 2000; Brewer and Lovgren, 1999) suggested the need to enhance the practice and process of doing interdisciplinary research, than those that described ways to do so. There were a few exceptions to this: Petrie's (1976) use of metaphor to bridge differences in understandings of concepts; Gershon's (2000) architectural description of a

facility designed to foster interdisciplinary connections amongst faculty; Suk and Anderson's (1999) description of a unifying framework and model for interdisciplinary research; and Brier's (2000) trans-scientific conceptual framework for a non-reductionist view of diverse ways of knowing.

Interdisciplinary work has been used to accomplish a broad range of objectives, such as addressing complex and broad issues, exploring disciplinary and professional relations, solving problems that are beyond the scope of any one discipline, and promoting a unity of knowledge ideal, whether on a limited or grand scale (Klein, 1990 as cited in Nicholson, 1998). In terms of the benefits of interdisciplinarity, authors have cited the following: creative breakthroughs or solutions, greater credibility, the importance of context, the potential for problems to designate theory and methods rather than the other way around, the testing and application of specialized theories and tools by bringing them into interaction with those from different fields of inquiry, the multiplicity of perspectives on a problem, increased flexibility, the detection of disciplinary errors by those familiar with two or more fields, the bridging of communication gaps in academic institutions, the mobilization of enormous intellectual resources in the case of greater social rationality and justice, the contribution to the defense of academic freedom, and the emphasis on a unity of knowledge ideal in which the various components of human knowledge are understood to be pieces in a panoramic jigsaw puzzle (Brewer, 1999; Hansson, 1999; Policansky, 1999; Nissani, 1997).

In order to highlight the value of interdisciplinary research, Brewer (1999) contrasts this with the costs of disciplinary research. He considers disciplinary research as fragmented, applied to realistic problems only with great difficulty, and as not capable

of guiding policy, or even informing and enlightening political debate. Nissani (1997) argues that with intellectual life becoming increasingly specialized and compartmentalized, academics run the risk of becoming alienated from the context and consequences of their research and of potentially committing socially irresponsible action.

There are few articles written about multidisciplinary and interdisciplinary research that present arguments in opposition to it (other than that interdisciplinary research is an inappropriate method for short-term projects) . However, there are many articles that cite the difficulties and challenges of cross-disciplinary research. Hansson, (1999, p.340) suggests that at times, interdisciplinarity can be hard to achieve and parasitical. Hard to achieve in that no matter how desirable, interdisciplinary research involves difficulties in working together, in understanding each other, and in personal chemistry. Parasitical in that interdisciplinarity draws on the common resources of disciplines without contributing directly to any one of them: interdisciplinary research is "a sink in the intellectual system, while traditional disciplines are the sources." A further remark by Policansky (1999, p. 388) wryly attests to the range of views making consensus difficult: "including social scientists as well as natural scientists in the multidisciplinary mix is a sword with two sharp edges." That natural and social scientists speak different languages and that different disciplines have different cognitive maps, making communication and understanding difficult, is a view shared by many authors (Brewer, 1999; Hansson, 1999; Jewitt & Gorgens, 2000; Petrie, 1976; Policansky, 1999).

Petrie (1976) comprehensively discusses this problem of communication by suggesting that two people from different disciplines can look at the same thing and yet not see the same thing. He argues that one of the primary obstacles to be overcome in interdisciplinary research is that these differing "cognitive maps" may get in the way of successful interdisciplinary inquiry. Cognitive maps are the basic concepts, modes of inquiry, definitions of what counts as a problem, observational categories, representation techniques, standards of proof, types of explanation, and general ideals of what constitutes the discipline. Petrie (1976, p. 38) particularly emphasizes that the extent to which disciplinary categories of observation are theory and discipline related is often overlooked: "...when different disciplines look at the same thing they *observe* different things."

In addition to the above challenges, the following difficulties in the practice of interdisciplinary research were identified by Brewer (1999), Jewitt and Gorgens (2000), and Nissani (1997):

1. Differences in goal setting and establishing a shared vision
2. Understanding where everyone's piece fits in the whole
3. Ownership of research; budgets and funding (centralized or separate)
4. Communication problems in timing and geography
5. Personality clashes
6. Different data needs
7. Finding common sites of data collection
8. Philosophical differences – within discipline as well as inter-discipline
9. Perceived lack of rigour

10. Limited avenues for publishing multidisciplinary research
11. Pressure to publish in certain disciplines more than others
12. Logistics of group interaction
13. Differing cultures and frames of reference
14. Different methods and objectives
15. Personal challenge of gaining the trust and respect of others working in different fields
16. Institutional impediments in incentives
17. Funding
18. Priorities of disciplinary work
19. Differing levels of commitment of participant researchers
20. Hierarchy of experienced versus newer academics
21. Leadership and administrative structure
22. Institutional and collegial resistance to change
23. Lack of exchange programs for interdisciplinary researchers
24. Superficial and naïve generalism in the research
25. Interdisciplinarians viewed as competitors for funds
26. One field borrowing and applying contested or debated ideas from another
27. Dominant disciplinary and departmental paradigm, where interconnection or looking at the larger picture may be viewed as subversive
28. Interdisciplinary ideology not in harmony with Western tendencies towards competition, excellence, domination and control.

Wissoker (2000) makes an elegant argument highlighting the external pressures that exist for interdisciplinary researchers in trying to please an audience both inside and outside of their own disciplines. He suggests that a double standard exists between scholars as interdisciplinary writers and scholars as interdisciplinary readers: scholars evaluate each other's interdisciplinary work from within their own fields, and although they may borrow theories, concepts and methods from other disciplines for their own work, they often critically evaluate others for doing the same thing.

Given the many challenges facing interdisciplinarians - institutional, ideological, personal, administrative, and group dynamic/process-oriented – it is worthwhile to review the factors that have been identified as leading to effective, dynamic, and successful interdisciplinary initiatives. Petrie (1976) highlights factors that are particularly relevant to the success or failure of interdisciplinary inquiry. These include notions of idea dominance, achievement, psychological considerations, interpretive knowledge, and the key pedagogical tool of metaphor or models. The dominance of a clear and recognizable idea that serves as the central focus for the work is necessary for interdisciplinary success. Closely related to this idea is the need for some kind of achievement or feedback to confirm the clarity and force of the idea as originally received, or doubts as to whether it was properly defined may undermine motivation. Psychological factors related to researchers' contributions to a successful interdisciplinary team require that they must be secure and competent in their disciplinary endeavours, feel that they are achieving something, have an adventurous spirit, be extremely interested in the project, and have interests that are fairly broad. Psychological factors related to group dynamics include learning the different perspectives, biases, attitudes, modes of behaviour and

interests of the individual researchers who comprise the interdisciplinary research team. Thus, learning at least a part of the other disciplinary maps is paramount for integrative work, especially when the maps are as far apart as those of natural and social scientists.

This interpretive knowledge or learning – when the situation is interpreted with the aid of learning – must be made explicit and focal. Petrie (1976) highlights the minimal requirements for this: first, one must learn the observational categories of the other discipline; second, one must learn the meanings of the key terms in the other disciplines. This is sufficient to allow one to interpret the problem in the others' terms, while leaving the responsibility for full knowledge of theory, method, and ideals of that field with the disciplinarian. Franklin (1999, p. 20) also highlights the use of metaphor in communication: "Models and analogies are always needed for communication, and in order to be useful tools for discussion, models and metaphors need to be based on shared and commonly understood experiences." A key pedagogical tool of metaphor (encompassing visual metaphors, theories, and models) can be used to bring people to this minimal level of understanding another's discipline. Metaphor enables us to gain insight by juxtaposing language and concepts familiar in one area with a new area, highlighting the similarities and differences between them.

Suk and Anderson (1999) support the idea of a conceptual model for interdisciplinarity. They discuss how important it is for multidisciplinary researchers to understand the context of their interrelationships, the relevance of the overall problem to the discrete elements within, and the relationship of the parts to each other and to the whole. They assert that the concept of a unifying framework should be considered necessary whenever a multidisciplinary research program is used. Jewitt & Gorgens

(2000) elaborate that it is important for the researchers to take ownership for developing a modeling system, as this can be helpful in depersonalizing criticisms that may arise in the process of doing research. Brier (2000) has similarly attempted to develop a non-reductionistic and transdisciplinary framework for human knowing. He promotes an epistemology that sees science as only one aspect of our knowledge and that sees human knowledge as going beyond language.

Concretizing the idea of metaphor and conceptual models, Gershon (2000), proposes what could be considered an architectural metaphor to house an interdisciplinary initiative spanning three schools (engineering, medicine, and the humanities) at Stanford University. This is a building designed to facilitate and sustain interaction between people in the building and broaden the sense of an interdisciplinary academic community. This practical metaphor of creating an interconnected space attempts to ensure that academics are not insulated within their own discipline. Offices and facilities are distributed throughout the building, increasing chances of random meetings between persons from different disciplines.

This section highlighted aspects of interdisciplinary research methodology. The value of and rationale for interdisciplinarity: its value, the difficulties associated with it, and the factors promoting its success. The next section discusses ethical issues in selected research contexts associated with CUS.

Ethical Issues in Particular Research Contexts

In this section, I review literature pertaining to ethical issues in qualitative community-based, cross-cultural, and funded research contexts.

Qualitative Community-Based Research

Qualitative research poses complex philosophical, theoretical, and ethical issues (Lincoln, 1995) and has no well formulated set of ethical guidelines (Miles and Huberman, 1994). The sociopolitical context of conducting community-based qualitative research raises several ethical dilemmas. Some of the particular challenges attending this method of research stem from its emergent design, and the attendant difficulty in assessing and predicting potential risks to participants (Lincoln and Guba, 1985). Anonymity is another ethical challenge given that inquiry records and signed consent forms have no privileged confidentiality legal status and may be subject to subpoena (Lincoln and Guba, 1985; Price, 1996). Interpretation in qualitative research is also fraught with ethical issues related to ownership of data and authority to speak on behalf of participants (Price, 1996).

According to Denzin (1989), research is a gendered social act existing within a complex web of sociopolitical relationships, such as funding, publication of results, and allocation of rights to data. As ethical guidelines are often used to protect the rights of individual research participants, rather than the rights of the collective entity, special attention must be paid to the application of ethics in community based research. Pollard (1992) and Fontes (1998) emphasize the need for awareness of the impact of research on the entire host community and stress that the guidelines meant to protect individual research participant rights are insufficient because they fail to recognize and protect the rights of the community as a collective entity. They both view the community as the participant in the same sense as an individual, with the same rights to information, consent, benefit, and freedom from harm. Beneficence, benefit, and lack of risk must be

identified by those involved, and not solely by the researchers. Justice includes benefit for each individual and the community as a whole (Sieber and Sorenson, 1992). However, these components of risk and benefit are problematic in that they are impossible to guarantee.

Price (1996) has identified particular ethical problems in qualitative research. She suggests that anonymity is not realistic, that it is difficult to predict risk to the [community and] individual, and points to the dilemma of informed consent and the fallacy of an egalitarian relationship between researcher and participants. Fontes (1998) supports this last assertion in his discussion of power, and states that the researcher is more powerful than the participants. In doing a study on the consequences of poverty on the lives of poor and working-class men and women, Fine et al. (2000, p. 115) discuss the mutual exploitation of the power inequalities by both researcher and participant: "They (and we) knew that we traded on race and class privilege to get a counter-narrative out. And so they 'consented.'" Furthermore, Walsh-Bowers (1993) evidenced concern over the self-serving nature of social scientists who also promote their own products, a process which strengthens psychologists' role as expert and citizens' role as passive recipient. Further ethical concerns in qualitative research arise over the ownership and publication of data (Atkinson, 1993), the possibility of cooption by the bearers of local political power (Walsh-Bowers, 1993), confidentiality and trustworthiness (Price, 1996), sensitivity to the community needs and interests, gaining access to and cooperation of subjects, and respecting the culture of gatekeepers and subjects. Special problems arise regarding privacy and confidentiality due to the gossip grapevine that exists within many communities (Sieber and Sorenson, 1992).

Informed consent is a particular difficulty, with multiple considerations such as trust, confidentiality, and privilege in the act of securing it. According to Fine et al. (2000), the consent form sits at the contradictory base of the institutionalization of research and became a crude tool to remind the researchers of their accountability and position of power inequality in the interview process. Price (1996) emphasizes the possibility that signed consent forms may actually jeopardize confidentiality. Not only do they identify and link individuals to a study, these forms may be subject to subpoena. Sieber and Sorenson (1992) indicate that collaboratively designed research with gatekeepers and some community members is a means of establishing two-way communication that facilitates truly informed consent. As communication is critical in establishing and maintaining consent and trust, they suggest keeping the lines of communication open with gatekeepers, research assistants, and participants in order to learn of problems as early as possible. Grafanaki (in McLeod, 1996) advocates for process consent at all stages of the study. McLeod suggests allowing the participants to read pre-publication drafts, which helps to ensure that the participant's identity has been concealed. Continually informing those involved in the study helps to protect the study from excessive scrutiny and ensure continued access to the community (Marshall and Rossman, 1995).

Ethical guidelines are not static doctrine easily applied. Ethics are dynamic considerations that are influenced by a myriad of contextual factors. One of the more fundamental factors are the researchers themselves. The researcher is the "instrument" - bringing a range of strategic, ethical, and personal issues to the study that do not attend quantitative approaches. Establishing trust is a prerequisite to good research, yet many

people will not respond to or trust someone who will not take a stand (Marshell and Rossman, 1995). Maxwell (1996) understands the researcher as the instrument of the research, and the research relationship as the means by which the research gets done. This relationship can act as both a facilitator and a restraint, and has an effect on the participants and on the research and on other parts of the research design. The relationship between researcher and participant is therefore both an ethical and strategic consideration in qualitative research.

Price (1996) and Darou et al. (1993) encourage qualitative researchers to look to varied fields and draw information, knowledge and methods from other social sciences to inform their practice. This is a fitting recommendation because qualitative research ethics emerged from the convergence of biomedical research and the social science methodologies of anthropology and sociology. Certainly, when working across disciplines, ethical codes of conduct particular to each field may set different standards and conditions of acceptable practice. Lincoln (1995) outlined several criteria to assess, what she considers to be, ethical and rigorous qualitative research practice. These emerging criteria are relational, recognizing and validating relationships between the inquirer and those who participate in the inquiry. The emphasis is on the importance of fairness or reciprocity – that participants learn as much as the researcher, that there is open and democratic sharing of knowledge, that social action is fostered, and that alternative voices are heard.

Cross-Cultural Research

In cross-cultural research, ethical standards are subject to additional complexities. Although fraught with questions concerning exclusivity and rights to conducting cross-

cultural research, Atkinson (1993) advocates for ethnically diverse research teams, review boards, ethics committees, journal editorial boards, and research funding agencies to minimize dominant cultural biases. Furthermore, Atkinson calls for an awareness of racial/ethnic bias inherently present in behavioural research, and that given the same research, different conclusions can be drawn along racial/ethnic lines. Jenkins and Parron (1995) warn that a legacy of mistrust remains in the field of cross-cultural research stemming from past research endeavours. Darou et al. (1993) cite feelings of exploitation and mistreatment among the Cree of northern Quebec as a result of a history of insensitive psychosocial researchers. A particular dilemma in cross-cultural research is the tendency to draw cultural comparisons. Comparative research is at times inappropriate or problematic, with differences often being equated with oppression, pathology, or deficits (Darou, et al., 1993; Jenkins and Parron, 1995; Pollard, 1993). In addition to racial and ethnic descriptors of culture, Jenkins and Parron (1995) consider class as a cross-cultural category, stressing the socio-economic descriptors of income, education, and occupation as cultural signifiers. Sieber and Sorenson (1992) elaborate on this theme in their discussion of cross-class research. They warn that middle-class researchers who seek to explain the behaviour of non-middle class people, but who lack actual knowledge of those populations or of their perspectives, typically misrepresent or blame that population.

In cross-cultural research, to promote nonmaleficence, Atkinson (1993) suggests reporting the ethnicity of the person collecting the data, and citing this as a potential limitation of the study. Pollard (1992) suggests that the publication and dissemination of research must be modified or not released if the information may be shameful to the host

community. He also asserts that the reliability and validity of the interview or assessment technique must be evaluated. Beneficence includes evaluating the participant's ability to give informed consent, the costs and benefits of the research for all parties, power and economic issues, and including minority participation in the research project (Atkinson, 1993). According to Pollard (1992), cross-cultural research bears a responsibility to contribute directly to promoting the host community's scientific self-sufficiency. It is incumbent upon the principal investigator to establish formal training opportunities for minorities, such as including those persons on their own staff. However, the principle investigator must not over-rely on their minority colleagues as gatekeepers or to fulfill their relationship responsibilities. Often, the host community lacks access to research publications concerning them. Therefore, research should be physically, culturally, and linguistically accessible (Pollard, 1992). In addition, the principle of beneficence is supported when researchers identify and incorporate issues and questions that are important to the host community in the research design.

Informed consent in cross-cultural research is often particularly difficult. No single person or group can fully represent the needs and interests of a heterogeneous population. Input is required from a variety of sources since the maximum participation of host community scientists/researchers is a central ethical concept in cross-cultural research (Pollard, 1992). The following guidelines have been suggested to maximize informed consent in cross cultural research: learn at least a little of the language, use informal writing, ensure communication options match skills and preferences of the participation group, and be aware of issues and differences in personal and cultural meanings of terms such as privacy, honesty, confidentiality, etc. Collaboration is a

significant part of effective communication. Therefore, conversations with colleagues and community leaders, regular consultation and feedback with those involved are all critical in conducting ethical research, particularly in cross cultural communities (Darou, et al., 1993; Pollard, 1992).

Despite the difficulties of ensuring ethical practice when conducting research on minority groups by majority researchers, Atkinson (1993) supports its continuation as useful in an increasingly multicultural world and as a means to stimulate interest among members of minority groups to pursue graduate studies. However, Fontes (1998) cautions that researchers, most of whom are white and middle-class, and therefore part of the dominant social class, often conduct research, unconsciously or consciously, in the interests of the dominant culture.

Funded Research

Since research is often reliant upon grants, Check (2000) discusses three groups of issues particular to doing funded research: the ethics of the research and acceptance of funding, the question of who controls the research, and the relationships among the various players in the research enterprise. Taking money from a sponsor is not a value neutral activity. Acceptance of funding links the researcher and research with the values of the funder. Funders can place restrictions on a study and the researchers must ask the question of themselves as to whether or not they can proceed under those conditions.

In terms of controlling the product and process of the research, after accepting funding, the researcher is not entirely a free agent. Funding (as well as institutionally driven) obligations exist for both parties, for example, what can be said, by whom, who owns the data and the findings that result from the study, how data can be used both

during and after the study, how data can be reported, who owns the rights to publish the findings (in full or partially) and where can they be published are all issues that may need to be negotiated prior to accepting funding. Researchers can be caught in the expectations of what the funders want them to deliver (Check, 2000).

Funding also has an impact on the relationships among the various players in the research. Accepting funding necessitates that researchers inform participants of who is providing the money for the research and what that funding is being given for. Furthermore, it becomes important that researchers make their own relationship to the funders clear and to tell participants whether they are acting as paid employees of the funder or they are acting as independent researchers (Check, 2000). Similary, Glenn Greiner (personal communication, November 30, 2001) emphasized a related element in the issue of consent: that the participants' have rights to decide for themselves if they want to participate in the research and if they want to foster the goals of the research itself. Knowing who is funding the research is a critical component in being able to make an informed decision about whether or not to support that particular research endeavour.

Summary

The selected literature has been reviewed with the intent to sensitize both the author and reader to salient issues pertaining to interdisciplinary inquiry and research ethics. CUS is a broad ranging project, encompassing many disciplines and research foci; there were a number of avenues related to ethical issues worthy of attention that I did not address for reasons of manageability. The areas I chose to highlight, based on my interests and location within the field of educational psychology, included research ethics in general, ethical theory rooted in philosophy, team and group dynamics,

interdisciplinary methodology, and ethical issues in qualitative, community based, cross-cultural, and funded social science research.

Chapter Three

Method

In this chapter, the rationale for a qualitative research framework and a brief sketch of the theoretical orientations for the study will be presented. In the following sections I describe the case-study methodology, including the case context, participant selection, the interviewing process, sources of data, methods of data collection, data analysis, and data verification.

Rationale for a Qualitative Research Paradigm

A qualitative research design allows for consideration of the larger picture, focuses on relationships with a system, requires that the researcher be observant and have the necessary skills for interviewing, and involves ethical considerations such as the presence and influence of the researcher (Janesick, 1994; Creswell, 1998). It is assumed that eliminating the effect of the researcher is neither possible nor necessarily desirable, and therefore qualitative research takes into account that the researcher is one variable influencing the outcome. Qualitative inquiry demands that the researcher, who is the instrument, be sensitive to the salient elements in the interview and follow them up with appropriate questions (Guba and Lincoln, 1985). Given the interrelated emphasis of the study, in which both experiential and ethical aspects of interdisciplinary research are explored, a research method that could elicit a range of possible descriptions about interdisciplinary experiences and processes was necessary. This qualitative paradigm fit the intent and purpose of the present research: to understand participants' experiences in interdisciplinary research and use the intuition of the investigator to follow up and explore in further detail references to ethical issues.

Philosophically, throughout the study, I draw from a post-modern or constructivist epistemology and a feminist theoretical orientation. Constructivist and feminist ideology include the following assumptions: multiple knowledges can coexist; there is no such thing as bias, because all perspectives are positional; there is no universal truth, as knowledge is location and place specific; reality and truth are a product of individual and cultural constructions; subjectivity is shifting, situated, and contextual; and that qualitative and reflexive methodologies are consistent with this worldview (Chodorow, as cited in Wilkinson, 1996; Guba and Lincoln, 1998; Unger, 1996). I have also incorporated concepts from the feminist literature in exploring aspects of ethics relating to knowledge and power. A feminist perspective on science and knowledge suggests that they are embedded in patriarchal social structures and carried out in bureaucratic organizations (McCormack, 1989). These epistemological and theoretical tenets influence how I have understood and analyzed the data and reflected upon ethical issues throughout this study.

Case Study Design

Consistent with Guba and Lincoln's (1985) assertion that the complete research design cannot be given *a priori* but must develop as the study proceeds, so too has the design for this inquiry been an emergent process. Initially, I envisioned a phenomenographic method (Marton, 1981, 1986) to explore the range of conceptualizations of ethical dilemmas in interdisciplinary research. However, for reasons of practicality and anonymity, the purpose of the inquiry shifted from people's experiences of particular ethical dilemmas to focusing on the experience of interdisciplinary research in general, allowing for ethical issues to emerge and be

followed up from within the narratives themselves. A case study design was consistent with the nature of the project I was studying - identifying specific issues within a bounded and defined research context.

I chose the case study as the preferred method due to the holistic and contextual emphasis of the design, situating the case within its physical, ideological, and institutional setting. A qualitative case study provides an in-depth exploration of a system in which the researcher is situated and is based on collecting and analyzing a diverse array of data collection materials including observations, interviews, audio-visuals, documents, reports. Similarly, a case study can encompass an exploratory, descriptive, or explanatory approach. This thesis includes aspects of both exploration and description. In addition, a case study allows for including different perspectives on issues and experiences, as well as allowing for "ordinary cases, accessible cases, or unusual cases" (Creswell, 1998, p. 62).

This thesis is a "collective case study" in that it consists of multiple cases drawn from the larger context or "bounded system" of Coasts Under Stress (Creswell, 1998). The case is bounded by time, the second year of the five-year CUS project, and place, the West Coast Team. It is a system in that it has interrelated parts that form a whole, as described in the following section. This thesis explores interdisciplinary research processes, focusing on the ethical issues illustrated by the individual cases or interviews within CUS.

The Context of "Coasts Under Stress"

As Coasts Under Stress (www.coastsunderstress.ca) is the context for this case study, it is important to describe the scope of this interdisciplinary research initiative,

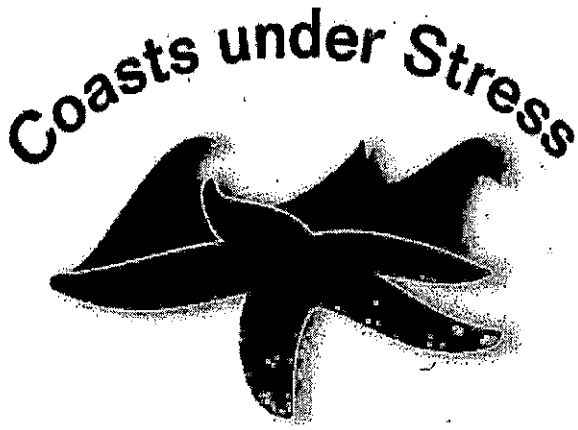
especially as its ambitious breadth was the impetus for my interest in this topic. CUS is a five-year project that started in April 2000. It is a national experiment in large-scale interdisciplinary research that is jointly funded by the Social Sciences and Humanities Research Council (SSHRC) and Natural Sciences and Engineering Research Council of Canada (NSERCC) through its major collaborative research initiative (MCRI) program. Using a set of complementary case studies on the East and West Coats of Canada the aim of this project is to achieve an integrated analysis of the long- and short-term impacts of socio-environmental restructuring on the health of people, their communities and the environment. In this project, approximately 70 natural and social scientists and over 165 trainees and graduate students are working together with local communities on the two coasts. The project and its case studies are built around the unifying threads of environmental and human health to create a broad, multi-layered perspective on the management of natural resources. Formal scientific (natural and social) and humanist analysis are combined with the lived experiences of coastal people to reach the project goal of offering policy makers an integrated awareness of the implications of social and environmental restructuring (http://www.coastsunderstress.ca/home.html).

The design of CUS was developed using the metaphor of a five-Armed sea star, organized around a central core, within which the research case studies are structured (see Figure 1 below). As a metaphor, the sea star emphasizes the overall coherence of the research project, and its ability to be flexible and creative. Each Arm of the sea star focuses on a particular research question. These questions in each of the Arms will be examined by interdisciplinary teams of researchers working in collaboration with partners in selected local communities, among First Nations and in various institutions, industry

and government. The Arms are designed around the following research "Arms:" 1) Lay and expert knowledge, policy and decision making; 2) Past, present, and future changes in environmental, community and individual health; 3) Fisheries and forestry: The implications for economic development, the environment, and human health; 4) Mineral and energy resources: Implications for economic development and environmental and human health; 5) Social and political restructuring and the health of individuals, families and communities; 6) Synthesis and evaluation of the project, census data, and analysis of fisheries sector (Appendices to the Mid-Term Report, p. 1, July 31, 2002; http://www.coastsunderstress.ca/research.html).

Figure 1: Conceptual Framework of Coasts Under Stress

We have developed the metaphor of a five-armed sea star within which to structure our work. As a metaphor, the sea star emphasizes the overall coherence of our Research Project, and its ability to be flexible and creative. Each arm of our sea star focuses on a particular research question.



These questions in each of our arms will be examined by interdisciplinary teams of researchers working in collaboration with our partners in selected local communities, among First Nations and in various institutions, industry and government.

Arm 1: Lay and Expert Knowledge, Policy and Decision Making

Research Question: How do different kinds of knowledge (local and scientific) on ecosystem dynamics help to influence decision making, which in turn affects human and environmental health?

Arm 2: Past, Present, and Future Changes in Environmental, Community and Individual Health

Research Question: How can local ecological and scientific knowledge help us to understand changes in environmental, community, and individual health in ways that will help develop better strategies for future ecological recovery?

Arm 3: Fisheries and Forestry: The Implications for Economic Development, the Environment and Human Health

Research Question: What are the consequences of old and new strategies in the forestry and fisheries sectors for community and environmental health and resilience?

Arm 4: Mineral and Energy Resources: Implications for Economic Development and Environmental and Human Health

Research Question: What are the risks and benefits to community and the environment of the development and exploitation of hydrocarbon and mineral resources?

Arm 5: Social and Political Restructuring and the Health of Individuals, Families and Communities

Research Question: How has social and political change (or lack thereof) affected the health of individuals, families, and their communities?

My own position within the project has been as a research assistant within Arm 5, the main focus of which is how social and political change (or lack thereof) affects the health of individuals, families, and their communities. Understanding how the interaction of social and political institutions, social programs (Employment Insurance, worker's compensation), health, education, and training services with industrial restructuring in the past and present have affected the health for individuals, families, and communities as a whole is the scope of Arm 5. The particular CUS study that I am involved in is exploring supports and barriers to life-career development and planning for adolescents in selected coastal communities of British Columbia (Marshall, 2002). It is a qualitative study that draws on individual interviews and focus groups with adolescents and teachers in Prince Rupert, Hartley Bay, Port Hardy, Alert Bay, and Port McNeil. My primary research tasks involved writing literature reviews, interview transcription and data analysis, and attending some West coast and both coasts team meetings.

Participants

Participants for the thesis were identified using a purposive selection strategy in which one relies on the experience, insight, and knowledge of those who are in a position to choose appropriate participants (Berg, 1998). In this case, potential participants were identified from the West Coast list of members, in consultation with my supervisor. Participants met the following criteria:

1. They had participated as a researcher on the Coasts Under Stress project for at least a year.
2. They were currently involved in research at the post-doctoral level or in a faculty position on the CUS project, at the University of Victoria.

3. They had experience doing research within their particular academic discipline, outside of their involvement with CUS.
4. Participants were from a mix of natural and social science disciplines.

The rationale for choosing experienced researchers and for ensuring their active participation in CUS is premised on the assumption that those who have had more involvement in the interdisciplinary team process would be better able to provide detailed information about their experiences on the project and reflect on ethical issues. Although graduate student research assistants would have been invaluable to interview, it was felt that the sensitive nature of the topic had the potential for supervisory relationship conflict, and rendered these participants too vulnerable to be interviewed.

The process of interviewing the CUS researchers began by identifying potential candidates and sending them an invitational letter via email (see Appendix A). These letters were sent out on an individual basis until five participants agreed to participate. After indicating their interest, participants were sent copies of the consent form and the proposed interview schedule. In addition, each participant was given the opportunity to meet for a short informational session. After an informational session, one potential participant declined further involvement, stating a lack of sufficient relevant information. Another candidate was sought using the above-mentioned process, for a final total of five participants in the study.

Participants were informed that their anonymity could not be guaranteed due to the close working relationships and small academic community of those involved with CUS. Participant were also informed that their participation risked exposure, although every attempt would be made to conceal identities. For example, quotes would be

stripped of any personally defining information, and the data would only be used to highlight issues pertaining to interdisciplinary research, not to persons themselves. Similarly, when presenting data to my supervisor, only segments of transcripts were shared with identifiable information deleted.

Data Collection: Sources

The primary source of data for the thesis emerges from the five interviews. Additional sources of data include notes from my personal experiences and observations from team meetings in which I participated, conversations with graduate students and professors involved in the Coasts Under Stress project, and reports, presentations, and papers posted to the CUS website. These alternate sources of data helped me to gain a more contextualized and comprehensive picture of ethical issues particularly salient to the CUS project in ways that the literature review and interviews did not. Data collected from the sources other than the interviews are all influences that have informed my awareness and thinking and therefore influence my analysis. For example, experiences and issues described by participants often connected to information that had been discussed in a team meeting, in conversations with graduate students, posted in papers on the CUS website, in the relevant literature, or in my own personal reflections as a participant-observer. The sources of information gained from participant-observation and conversations with graduate students have been included in this study only as they relate to the primary data collected through interviews. If a participant raised an issue that related to these additional sources of data, then I expanded on this area by drawing from these other sources.

Data Collection: Interviewing

In qualitative research studies, practice interviews are recommended as one way to assess how effectively the interviews will work and whether the type of information sought will be obtained (Berg, 1998). Accordingly, I piloted the interview questions with a fellow graduate student who was involved in another interdisciplinary research group at the University of Victoria. A second pilot-interview was conducted with my thesis supervisor, who is a member of CUS. The interview questions that evolved resulted from these practice interviews and from discussions with my thesis committee (see Appendix C for the initial interview guide submitted to the University of Victoria's ethical review board). Over the course of the study, the questions that I actually asked differed slightly from those initially proposed in the interview guide. The following questions actually formed the basis of the interviews in this study:

1. What issues, challenges and problems have you experienced or observed in the interdisciplinary research process with CUS?
2. What benefits, learning, and insights have you experienced or observed that have emerged from the CUS interdisciplinary research process?
3. Two years into CUS, what do you know about yourself now as a researcher that you didn't know before?
4. If you were to choose to be part of another interdisciplinary research team, what would be important for you to consider?

These questions were crafted with the purpose of gathering a broad range of information about participants' experiences in CUS. Using myself as a research instrument (Guba and Lincoln, 1985), I intended to follow up any references to issues

that had ethical overtones with more focused questioning. I chose not to ask directly about ethics and ethical issues in CUS because I felt that this would be a sensitive and potentially controversial topic for participants to address, given that we did not know each other and I could not guarantee their anonymity. Given that the primary focus of the study was initially experiential, and secondarily ethical (in that this dimension would follow from the experiential aspect), I did not include this direct reference to ethical issues in my consent form or recruitment letter. To redress this situation, in my initial discussion and reminder e-mail message that I sent to each of the participants prior to the actual interview, I identified that my interest in doing this study was to identify ethical issues pertaining to their experience as researchers engaged in an interdisciplinary research process.

The interviewing style that I adopted for this study was consistent with the unfolding nature of qualitative inquiry (Guba and Lincoln, 1985). My questions during each interview were influenced by the information and knowledge that I gained along the way. An excerpt from my journal reflects this emergent nature of the interview process: "I'm going to learn a lot as this research progresses – from not really knowing, to learning and accumulating information as I go – and that will influence the interviewing process." As my understanding of interdisciplinary research issues began to take on more complexity and shading, so too did my ability to specifically follow up issues that had ethical dimensions more directly. For example, in the first interview, technology was referenced as helpful in facilitating communication and information sharing. However, the second and third participants did not mention technology at all. Then, in the fourth interview, the interviewee spontaneously referenced technology as problematic in terms

of developing relationships. So, in the fifth interview although the participant did not raise the issue of technology, I asked about this person's view on the topic.

Another factor that influenced my interview style was the timing of the interviews themselves. Two interviews were conducted prior to a CUS team meeting in which I was a participant and observer. After this team meeting, in which many issues were brought up that were relevant to my thesis topic, I was able to raise questions in subsequent interviews pertaining to those specific issues. This affected the interview process in that I drew more heavily from the interdisciplinary research literature in the first two interviews while in the last three interviews I was more influenced by the participants' comments from previous interviews and my own observations from team meetings. For example, initially I asked questions about the importance of "shared vision" or "definitions of interdisciplinary research" which were drawn from the literature. Shared vision is cited as a critical element in interdisciplinary research (Brewer, 1999; Nissani, 1997; Jewitt; 2000), while definitional ambiguity was noted as possibly leading to methodological problems (Epton, Payne, and Pearson, 1983). I assumed, therefore, that these issues would emerge as salient or as possible sources of tension. Contrary to this, I found that in the first two interviews, definitional clarity/ambiguity did not emerge as a relevant topic, and I discontinued initiating it as a line of questioning. (This issue will be further explored in Chapter Five.)

Thus, I consider this emergent questioning style both potentially enriching and limiting. Enriching because bringing forward issues identified by previous interviewees could deepen the discussion and increase the perspectives on one topic. Alternately, doing so may have precluded new issues from being discussed. As an interviewer, I

attempted to balance the need for both breadth and depth in my interviews by alternating open-ended questions with more pointed ones.

Following a semi-structured interview format, the interview questions were open-ended so that participants had the opportunity to choose the dimensions of the question that they wanted to answer. Three participants chose to begin the interview by talking about their experiences of CUS' interdisciplinary research process in general, without referencing the questions directly. One participant very succinctly answered each written question in the order they were written on the interview schedule and one participant chose to reframe the interview questions about interdisciplinary research into the following: "Why do interdisciplinary research? What is involved in interdisciplinary research? How is interdisciplinary research being done in CUS?" In each interview, I followed up participants' comments with questions for clarification, for expansion, or to direct their attention to specific issues relating to ethics that emerged from my literature review, from other participants, and from my own experiences as a participant observer in the CUS project.

Data Analysis

Copies of transcripts were given to each participant prior to the formal data analysis with the explicit instructions to delete any potentially compromising information. Two of the five participants deleted content portions of their transcripts, two returned the transcripts with grammatical corrections (that's what you get for interviewing academics!), and one participant did not make any changes at all. Before and after each interview, informal conversation, and team meeting, I noted any observations, impressions, and questions in a field journal.

As I transcribed each interview, I noted the thoughts and questions that emerged throughout. In this way, I documented the evolution of my ideas and growing awareness of the ethical issues in CUS. I reflected upon the information I received, noting the way in which the participant spoke about certain issues. Similarly, I reflected upon the absence of certain issues or topics that I had expected to be raised by participants but which were not spoken about. The purpose of journaling was to document my own involvement and development in this interdisciplinary research process. I particularly noted the moments in which I was personally engaged in ethical issues relating to carrying out this research study.

The initial steps of data collection and analysis followed Creswell's (1998) outline of the process for case study research. The first step involved compiling "narrative descriptions" of the content as recorded by the investigator. This included a process of "direct interpretation" which is an aspect of case study research where the researcher looks at a single instance and draws meaning from it without looking for multiple instances of it. Because a broad range of views was sought, all data units were included in the analyses, whether only one or all of the participants mentioned this particular content. The narrative descriptions involved a process of both inductive and deductive analysis as I pulled data apart and put data back together again in ways relating to the research question (Tesch, 1990). I read the transcript and noted specific content statements, possible themes, words or phrases from the data in the margins as I read. I did this with each taped interview and transcript. This content analysis involved "data reduction" in which the data was simplified into general content categories (Coffey and Atkinson, 1996, p. 31).

The next step of the data analysis involved "within-case analysis" in which the themes within each interview transcript were identified and aggregated into clusters of ideas with detail to support each theme (Creswell, 1998). Phrases and words that were related to the research focus or questions were highlighted and colour-coded into content units. This stage of the thematic analysis involved "data complication" in which the content was teased apart and re-conceptualized in terms of finding commonalities, differences, and patterns for the purposes of opening up more diverse analytic possibilities (Coffey and Atkinson, 1996, p. 31). After each transcript was analyzed "within" and "across," I engaged in an "embedded analysis," in which an analytic aspect of the case is further elaborated upon (Creswell, 1996), in this context, ethics. This ethical analysis of the data involved my interpretation of the issues raised by participants as influenced by the theoretical orientations of constructivist and feminist theory.

Credibility of Data

Obtaining accurate information and drawing valid meaning from the data are two aspects of credible research (Wolcott, 1990). To maximize accuracy of the information, I sought multiple sources of data for this study, to meet the triangulation needed for coverage from a range of perspectives (Ristock and Pennel, 1996). This process of validating the accuracy of the data included the following steps: returning transcripts to participants for content correctness, seeking feedback from participants after each transcript was inductively analyzed, reviewing partial sections of transcripts with two graduate students familiar with interdisciplinary research, submitting sections of transcript analyses to my supervisor, informally interviewing and transcribing CUS graduate students about their perspectives on ethical issues, attending team meetings and

taking notes about the issues raised, presenting preliminary content themes in a poster presentation at a joint East and West Coast CUS mid-term review, tracking my own experiences and the development of my thoughts about issues in a journal, and reading material posted to the CUS website. As well, I continuously discussed the emerging themes and submitted the drafts of this thesis to my supervisor.

Participants had three opportunities to give feedback on the data and analysis. First, to clarify and edit transcriptions of their interviews. Second, to review an overview of the initial content analysis of the transcripts, which I emailed to participants. Third, at a CUS conference in which I presented a poster presentation of the preliminary findings and implications. The feedback I received was primarily related to grammar changes and deletions for confidentiality and anonymity. There were no major content or thematic feedback suggestions from participants. However, there was more thematic and interpretive discussions about the data from the perspective of other graduate students involved in CUS, from CUS panel presentations and discussion papers, and from data analysis sessions with my supervisor and other educational psychology graduate students.

Limitations of the Study

The above mentioned steps have been taken to promote accuracy of the data. However, it is important to note that these data sources are limited, and that the ways in which I have interpreted and represented the data brings together the content and issues raised by the participants themselves, as elaborated upon from my own standpoint and theoretical perspective. Caution must be taken in attempting to generalize qualitative research findings from the small size of this study (Anderson & Arsenault, 1990). It would be inappropriate to assume that the participants' views are shared by their Coasts

Under Stress colleagues. Furthermore, as each participant has been selected from distinct academic disciplines, it would be similarly mistaken to assume that a particular academician speaks on behalf of that discipline. The results of the study can only be truly representative of the voice that filters the dialogical process between the participants and the researcher. All qualitative approaches share a degree of a constructionist approach to knowledge in that any knowledge of the social world that is created, such as research findings, is from one perspective – that of the researcher (McLeod, 1996). However, the analysis of the data will faithfully reflect only those issues identified by the participants themselves.

Summary

In this chapter, I have highlighted the rationale for choosing a qualitative methodology and a case-study design. I note that both constructivist epistemology and feminist philosophy have influenced the design of the study and interpretation of the findings. The processes involved in the selection of research participants, style of interviewing, steps of data analysis and means of promoting data credibility were outlined.

Chapter Four

Data Themes and Commentary

This chapter is organized to reflect the interdisciplinary research issues raised by the participants themselves. In the initial stage of my analysis of the data, the content categories generally followed the interview questions that I asked (see interview schedule in Chapter Three or Appendix C). The data categories emerging from the interview questions included content relating to: Organizational Structure of CUS, Facilitating Factors in Interdisciplinary Research, Challenges and Differences in Interdisciplinary Research/CUS, Individual Characteristics, Benefits of CUS, Suggestions for CUS. I have included this first layer of data analysis in order to give the reader a deeper familiarity with the content. I have included Table 1 in order to document content and themes emerging from the data prior to re-conceptualizing and analyzing the data around ethical issues. The following paragraph orients the reader more fully to this first layer of content organization.

Organizational Structure included data units relating to funding, the interface between academic and non-academic contexts, administration, composition of the research team, research design, reporting procedures, and disciplinary and interdisciplinary institutional structures. Facilitating Factors of Interdisciplinary Research related to group dynamics, relationships, conceptualization of the project, individuals' experiences with interdisciplinarity, and project administration. Challenges and Differences related to epistemological and methodological research strategies between the humanities and natural and social sciences, the cultural differences between the East and West coasts of Canada, academic and non-academic contexts, individual and

collaborative research, and generational differences. Individual Characteristics included perspectives about and experience with interdisciplinary research. Benefits of CUS related to the generation of knowledge, personal and professional gain, helping communities, and change in the academic system. Suggestions for CUS addressed gaps in research expertise, project design needs, and community considerations.

Although this initial configuration of the data captured the ideas and experiences of participants within CUS, it did not address one of the aims of this study – to identify and expand upon the experiences and issues raised by participants from an ethical perspective. Therefore, an integrated ethical analysis of the data is necessary to meet the purposes of the study. The following chapter integrates both the data findings (issues raised by participants), and an analysis of those issues. In the analysis of ethical issues, I draw upon aspects of constructivist and feminist theories and relevant literature relating to the philosophical and cultural context of knowledge.

Table 1: Initial Content Categories and Data Units

ORGANIZATIONAL STRUCTURE OF COASTS UNDER STRESS	♦ Funding ♦ Academic, community, and government interface ♦ Project management, decision-making, leadership ♦ Composition of research teams ♦ Geographic distance ♦ Scope, breadth of project, Arms, bi-coastal ♦ Reporting system ♦ University structures and disciplinary paradigms ♦ Comparative analysis design
FACILITATING FACTORS IN INTERDISCIPLINARY RESEARCH/CUS	♦ Group dynamics ♦ Relationship development through research processes ♦ Conceptualization and research design of project ♦ Previous interdisciplinary research experience ♦ Administrative management of research ♦ Flexibility in individual needs
CHALLENGES AND DIFFERENCES IN INTERDISCIPLINARY RESEARCH/CUS	♦ Natural and social science collaboration ♦ Methodology and language ♦ Project and research design ♦ Bi-Coastal, MUN/UVic, historical, cultural, political, university structures ♦ Academic and non-academic research interface ♦ Politics, community needs, and policy ♦ Traditional, lay and scientific knowledge ♦ Group dynamics ♦ Time scales of research within academia ♦ Publication ♦ Old versus new guard of academics
INIDIVIDUAL CHARACTERISTICS	♦ Perspectives and views on interdisciplinary research ♦ Previous academic, interdisciplinary background
BENEFITS OF CUS	♦ Faculty researchers ♦ Helping communities ♦ Knowledge ♦ Graduate students ♦ Change in academic system
SUGGESTIONS FOR CUS	♦ Research expertise needed -parallel geographic sites, policy analysts, community liaison, ecological health component ♦ Process and project design needs -facilitation, communication, geographic focus, shared responsibility and power ♦ Community Considerations -cross-cultural issues, education about research process, relationships, sensitivity

The purpose of this chapter is to highlight participants' perspectives on a range of ethical issues relating to interdisciplinary research. I expand upon some of the ethical questions and implications that arise from the participants' comments. This interpretive organization of the content was designed to specifically focus the data on ethical issues relating to interdisciplinary research. Therefore, this chapter is structured around the following content categories: Project Administration, Research Design, Research Contexts, Interpersonal Dynamics, and Translation of Knowledge. Selected quotes from the data, edited to preserve anonymity, will be used as a jumping off point from which to explore underlying ethical considerations and questions.[3] Table 2 provides an overview of the meta-themes and themes presented in this chapter.

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[3] A reminder to the reader that these edited quotes are cited in isolation from the body of participants' narratives in which they were embedded in order to a) preserve anonymity and b) highlight the issue only. When reading and interpreting the quotes themselves, the reader is encouraged to be cautious and is directed to understand the data as reflecting individual perspectives that are idiosyncratic and unique to participants' personal experiences within CUS. As each person's perspective and ideas impact the group as a whole, it is the perspectives themselves that are meaningful, not whether they accurately represent a given situation.

Table 2: Content Categories and Ethical Considerations

1. Category: Project Administration
    a. Leadership
    b. Budget
    c. Communication Processes
2. Category: Research Design
    a. Metaphor: "Arms"
    b. Common Goals
    c. Geographic Scope
3. Category: Research Contexts
    a. Communities
    b. Nationally Funded Research
    c. University Institutions
4. Category: Interpersonal Dynamics
    a. Individual Considerations
    b. Relationships
5. Category: Knowledge and Translation
    a. Epistemology
    b. Cultural Context of Knowledge
    c. Methodology
    d. Academic Research to Policy
    e. Geographic Contexts

Project Administration

All of the participants interviewed addressed the topic of project administration. Some participants spoke particularly about leadership style while others spoke about the functioning of the administrative and executive structures. Financial administration, such as budget allocation and transparency (or lack thereof), was raised by a couple of the participants. Woven throughout the issues relating to leadership, administration and budget was the predominant theme of communication. Communication processes implemented within CUS was a central issue raised by participants, from the ways in which it has facilitated information sharing and collaboration, to the ways in which it has hindered certain creative processes and relationships from developing.

Leadership

Researchers in CUS differ in their degrees of interdisciplinary experience and comfort in working collaboratively across disciplines. Therefore, it is a balancing act for the leadership of an organism such as CUS to be able to accommodate these differences. One means of balancing individual needs with team needs includes creating avenues for publication that can accommodate both the individual author as well as the larger team to which the author contributes: "One of the things that is tried in CUS is making sure there is flexibility in publication, so that people have a chance to publish under their own name, their own pieces, and it also gets posted to the CUS website so that it is claimed as a team piece of output." Similarly, as academic research is traditionally a solitary initiative, mechanisms must be in place to be able to include discrete segments of research in a way that contributes to the larger goals of the whole collaborative endeavour. "Sometimes a bit of research will come in as a chunk instead of as a complex

of cross-fertilization processes." Similarly, one participant reflected on the need to accommodate researchers who are more individualistic in nature and who may be thinking of leaving the team: "Showcasing what a researcher is doing, letting the team see what they are up to, this support and recognition from the team can pull back in a researcher."

Some participants have referred to a well-organized administration as central in facilitating a large-scale interdisciplinary project such as CUS: "There is an administrative structure, an advisory structure ... committees that help steer the review, an East coast and a West coast committee, and an executive that pulls it all together." Another participant highlighted the critical role of the principal investigator in interdisciplinary research and suggested that the PI needed to demonstrate interdisciplinary research expertise and the capacity to translate that knowledge to others involved in the project:

> There is an accepted and efficient functioning managing structure, with a PI who has experience and an understanding of doing this kind of research, who can advise and guide those of us at other levels of the project who haven't necessarily had that level or degree of experience.

In contrast, another perspective suggested that the administration of CUS is a nested hierarchy in which communication is lost as you go up or down that hierarchy: "I see it as nested, a hierarchy of administration. I think that the model that they are using for governance of the structure of this project is not an optimal one."

Some of the ethical points related to leadership involve the decision-making processes. Given that the success of an interdisciplinary research project primarily rests upon a key individual's capacity to foster communication, interaction, productivity, and outcomes, leadership style is of considerable relevance. Issues of governance and style

of executive decision-making and accountability have an impact on the team itself (Johnson and Johnson, 1997). Autocratic leadership includes dictating orders and determining policy without involving group members in the decision-making. Democratic leaders set policies through group discussion and decision, encouraging and helping group members to interact, requesting cooperation of others, and being considerate of members' feelings and needs. A laissez-faire leadership style is more removed, not participating in the group's decision making at all. One participant commented: "It is not only a case of providing the resources and saying 'God bless you – go off and do your research and come back in five years with the results.' It is an ability to manage a project of this scope, geographic and otherwise, that is key to its success."

Within CUS, how and with whom researchers are assigned to the different Arms of the project may have more or less beneficial consequences in terms of the relationships that develop between those researchers. Furthermore, the ability to foster a climate of respect and maintain confidentiality of individual team members' concerns impacts the trust that develops within the team. One participant spoke about the different perspectives surrounding the costs and benefits of aquaculture: "We are going to get voices from both sides of the debate. Voices, as long as they respect one another and listen to one another, can move us on. But if they don't, and end up in a shouting match and just retire to their own blocks, there is trouble." The degree of sensitivity to, respect for, and understanding about these differences that team members demonstrate impacts the safety and trust levels within the team itself. Without a culture that values its team members' input, there can be little honesty, full participation or cooperation among

members, as unequal participation can create problems within the group (Johnson & Johnson, 1997).

Budget

Participants thought that research needs within the project have largely been met by financial structuring to accommodate researchers while still remaining within the overall CUS budget: "So far, there have been voluntary contributions back and forth between the Arm leaders who have money that they have not used and those who are desperately scrabbling." Beyond the financial needs that have been met by shifting around previously allocated funds, researchers have also sought external funding sources from community and government partners. This ability to share the available financial resources is one means by which limited resources have been made accessible to those in need: "... by taking a bit of money that was for [another part] of the budget, and we flipped that around into [something else]." This same participant commented on not knowing about the overall budget: "I'd be very interested in seeing how much goes into administration, how much is going into research, how much is going into travel.... I would like to see that kind of transparency in the project." (Since the interviews for this study were conducted, the budget and reporting structures have changed in CUS, as many particular funding council requirements had to be met prior to the mid-term review and unanticipated situations had to be addressed in these first two years.)

Access to the budget relates to the central issue of communication, as it involves information sharing and relationships. One implication about the issue of access to budget information is the perception of transparency and accessibility regarding project information. The perception of having access or not to the budget reflects the team

climate within which a member is participating, hinting at the kinds of relationships that exist between team members. As well, the reality of whether or not overall or particular budget information can be accessed by a certain individual in a timely manner, has implications for researchers who are trying to meet and track multiple financial obligations (i.e., to research participants and research assistants).

Access to the budget primarily involves an ethical issue about responsibility. There is a responsibility for team members to be as fully informed as possible about fiduciary amounts, constraints, and obligations and to make decisions based on this information. There is the responsibility of the leadership to foster communication channels that allow for open sharing about this information, so that miscommunication and misconceptions about fairness and equitability are minimized. The way in which the budget of a project such as this is managed has consequences for many people. Not only are individual salaries at stake, so is the reputation of the team as a whole, the institutions supporting it, and the time, energy, and hope of the research participants and communities involved in it.

Communication Processes

In terms of managing the flow of information that is required in a project the scope of CUS, communication was identified by all participants as a key issue. Participants observed that the communication structures have both facilitated and hindered the flow of ideas, information and collaboration amongst researchers. Communication channels within CUS included a quarterly reporting system (which has since been modified), communications technology (email, list-serves, teleconference), team meetings, management teams (such as executive, advisory, steering committees,

etc.) and brown-bag lunch seminars. Meetings include those conducted in cyber-space and by tele-conference, as well as those that take place face-to-face. Semi-annual team meetings are the most formal ones, most often including graduate students, faculty, and some community partners or advisors, primarily from the same coast. Some Arms and specific research teams also have their own communication networks and procedures.

The team meetings were cited by one participant as instrumental in creating opportunities for connection and understanding between researchers and project components: "I would say the primary mechanisms for bringing people together, other than in specific research projects … is the sharing of those results and approaches to the research through the seminars, through the team meetings." Not only do these meetings contribute to the synthesis of ideas and research, but they also help with understanding the larger picture to which one's own discrete research contributes: "I could see team meetings being very important, being an opportunity and a forum to share … to realize the ways in which our individual pieces are knitting together…." One participant considered team meetings to be too structured: "What I think is really lacking in CUS are forums and opportunities for us as a collective project to get together and have these discussions. It [the team meetings] is too contrived, too controlled, too structured."

Information management was a common theme related to the processes of communication. Some participants referenced the communications and reporting systems as contributing to the overall interdisciplinarity within the project. According to one participant, quarterly reports, written collectively by CUS researchers and collated together into one document, help transmit the research information and progress to those in other Arms of the project: "The team report tells everybody about the goals, the

progress report ... If everybody reads all of this, it moves us all towards intellectual synthesis." Similarly, the list-serves and teleconferences help to immediately address issues with those that may not be in close proximity: "There are list-serves for each Arm, the Arms talk back and forth from coast to coast. Teleconferences help to pull things together fast. The Arms talk to one another, not just the Arm leaders, but actually the Arms." Teleconferences have been the primary avenue for meeting with colleagues across coasts. One participant spoke of an experience in a teleconference meeting: "In the course of talking in the teleconference, people were listening, and started asking questions more out of politeness than anything else. But they were good questions...."

The very existence of a group depends on communication, exchange of information, and transmission of meaning. Through communication, members of a group reach some understanding of one another, coordinate actions, plan how to achieve goals, and agree upon division of labour (Johnson and Johnson, 1997). Communication is central to managing the breadth and complexity of a large research project such as CUS. Not only is there the need for communication for the purposes of collaboration between researchers about their specific interests, but there is also the need for each individual researcher to have an understanding of the whole project, and where their piece fits into the larger picture.

In contrast to the participants who spoke positively about the teleconferences, some participants spoke to their experience of loss and lack of integration and connection resulting from hierarchical communication structures: "There is communication lost as you go up or down through that hierarchy of administration." Pointing to differences in perspectives on the same issue, another spoke about a frustrating experience in having to

communicate indirectly to research counterparts on the East coast through the central reporting system, rather than directly:

> The bureaucratic structure in this West coast Arm is reporting to a central core. And on the East coast, there is another Arm with that number reporting up to its East coast hub. If it is hierarchical, at the bottom end of that Arm, I need to be talking to people at the bottom end of that Arm on the East coast.

Given the communications channels that exist within the project, one participant reflected on the difficulty in grasping a broad understanding of the project as a whole: "Whether you are an original or new researcher on CUS, you likely still don't have a good sense of the big picture because the communication channels within CUS are not so great."

Communication networks influence the development of organization and the morale of group members. Those who occupy a more central position in the communication network are usually more satisfied with the group's work than members who occupy fringe positions. Typically, the morale of a group is higher in decentralized communication networks (where information is communicated to all) than in centralized ones (where all information is funneled to one person who then distributes the information). Within an authority hierarchy, where different members perform different roles, certain individuals hold more power than others within that system. Although authority hierarchies are established to facilitate the effectiveness of a group, they can often interfere with that effectiveness by undermining necessary processes such as distributed participation and leadership, equalization of power, and communication. If a group is to function effectively, its members must be able to communicate easily and efficiently, with ideas, knowledge and other information flowing freely (Johnson and Johnson, 1997). As presented above, participants interviewed voiced their different perspectives and views on these leadership styles.

Some participants have reflected on the lack of meaningful communication using information technology, such as conference calls and emails: "I don't find that emails and conference calls are good substitutes for face to face discussion...." Another reflected on a counter-productive aspect of technological communication:

> I sit on about five of the email lists and I find a lot of traffic I could live without. So, although it is to facilitate communication ... once I start coming to the conclusion that two out of the four messages on the list don't apply to me, aren't useful, and don't connect, then you start making those assumptions about messages before you even open them.

Another participant found that human interaction facilitated mutual understanding and was a much more satisfying and creative way to relate with one another: "I think that communication is really key, and to some degree, it has to be done in person and it has to be somewhat unstructured ... because that is where creativity emerges."

Communication involving technology such as emails and teleconferences, serves the invaluable function of facilitating immediate interaction across geographic distance and linking researchers in the field to the larger project. It also provides members of the team a forum for information sharing and problem solving about daily issues that may arise. In these ways technology has helped to include academics in daily communication processes and the sharing of information.

Ursula Franklin, in *The Real World of Technology*, proposes that there are human consequences to what she terms these "non-communications" technology (1999, p. 42). Technical devices change the modes of human interaction, interposing a physical distance, distorting, reducing, or even eliminating an interactive give and take between parties. Reciprocity is ruled out by design, diminishing the need to listen, understand and

accommodate each other. This further diminishes real-world connections, relationships, and even a sense of common humanity (Franklin, 1999).

These issues of technologically-mediated communication raise concerns related to function and access. For example, a few participants addressed the insufficiency of technologically mediated communication to foster meaningful relationships across disciplinary barriers. Rather, it was the face-to-face human connections that particularly helped researchers to bridge disciplinary boundaries and develop interpersonal relationships. The function of information technology is perhaps more suited to information sharing rather than to problem solving or in generating a creative dialogue between researchers. One participant linked the lack of unstructured time for dialogue and conversation, with a coinciding lack of creative synergy within the team.

In terms of access to technology, only those privileged with computer resources (and physical ability) can participate in these technological information sharing and communication processes within CUS. Those without access to technological resources are limited in their capacity to participate in the exchange of communication and information. Furthermore, technology privileges a text-based discourse, and is predominantly effective in supporting the scientific side of knowledge, which relies on written and visual texts. Oral traditions do not codify transmission and interpretation of information, laws, and values in the way that textually based societies do (Franklin, 1999). For example, it is difficult to represent traditional Indigenous knowledge with any fidelity, which requires a slowing down of time, an understanding of meaning and identities, and an oral style. Traditional Indigenous and local knowledge are embedded

within their contexts. To dislocate knowledge from its contexts is to strip it of its full meaning.

Summary of Project Administration

The administration of nationally funded projects, such as CUS, has implications for the continuation of funding for future large-scale interdisciplinary research. As well, the likelihood of generating community interest and support for such initiatives largely rests upon successful outcomes. Therefore, the administration of large-scale projects merits attention in terms of ethical considerations such as accountability for team processes including leadership style, collaboration, communication, decision-making, and fiscal responsibility.

Participants identified both beneficial and problematic aspects of leadership and the administrative and organizational structure of CUS. There was appreciation for the ways in which the executive and administrative leadership has facilitated interdisciplinarity through decision-making relating to the budget and to the communication of information through technology, team meetings and reports. Ethical issues surrounding the budget involve the need for open and honest communication and information sharing, as these elements impact on the development of trust and collaboration amongst team members.

Problematic aspects of leadership related to the hierarchical nature of administration, access to information, and the structure and style of technological communication networks. Interwoven with these concerns was the predominant theme of relationships. Because communication is interpersonal, whatever interferes with the relationship among group members - whether it is perceived inequality, cumbersome

communication networks, lack of human connection, or the privileging of technologically mediated discourse – interferes with reciprocal and mutual communication. Therefore, ensuring early and consistent opportunities for human connection and exchange would facilitate collaborations and relationships among team members.

One way to interpret research participants' contrasting views about leadership organization and communication is that different situations require different approaches to leadership, organization, and communication. For example, decisions relating to researchers' placements and involvement with particular projects may be suited to a democratic style of shared decision-making, whereas responsibility for the overall distribution of funds may be more suited to a centralized executive model of decision-making. This involves further ethical considerations about *who* decides and *where* the funds go.

An administration that can be responsive to its team members' needs is more likely to positively impact group productivity, cohesiveness, and satisfaction. Attention to the well-being and contributions of group members as well as to the structuring of members' roles and responsibilities are both important aspects of effective team leadership (Johnson and Johnson, 1997). Given that mutually respectful relationships are key in collaborative teamwork and that competitiveness breaks down communication and relationships in a team, fostering a culture of cooperation and collaboration is a critical aspect of leadership and project administration. It is also an element in the project's research design, as will be addressed in the following section.

Research Design

Research design is central to the topic of ethical issues in research. Kvale (1996), in describing qualitative research, emphasizes that ethical issues attend all stages of investigation – thematizing, designing, interviewing or data collection, transcription, analysis, verification, and reporting. Each of these stages needs to be taken into consideration when designing a study. As evidenced by the following data, in a collaborative or team research project, issues relating to relationships, common goals and purpose of research, communication, inclusion, representation and collaboration also need to be considered in the initial and ongoing design of a project. The conceptualization of interdisciplinarity within CUS and the design of the project were identified by participants as contributing to either the generation or resolution of problems associated with interdisciplinarity. The following data highlight aspects of research design that were present in CUS, such as the structure of "Arms", research purpose and focus, geographic scope, and inclusion of graduate students in the research project.

Structure: "Arms"

In CUS, the metaphor of a sea-star with different "Arms" has been an organizing concept central to the collaborative design of the project. Since collaboration across disciplines is fundamental to the concept and design of CUS, interdisciplinary opportunities have been embedded within the configuration of research questions. Collaboration further revolves around the involvement of researchers from diverse disciplines in one or more "Arms" of the CUS project. This conceptualization of "Arms"

as a way to foster interdisciplinary research collaboration has been represented by participants in multiple ways.

Participants identified both facilitative and hindering aspects of the Arm structure with regard to interdisciplinarity and integrating diverse epistemologies and methods. One participant reflected on the purpose of the "Arms" as a way to address the interdisciplinary nature of the project and promote collaboration within each Arm: "Clearly in the structure of CUS with the five Arms, there is a genuine attempt within each of those Arms to have a breadth of interdisciplinary activity. … And the five Arms are very central to how that interdisciplinarity is being developed in the project." According to another participant, the interrelationships across the vast diversity of disciplines represented within CUS are made more explicit because they have been built into the design of the project: "The logic of research will take you into interdisciplinarity quicker than anything else…. Interdisciplinarity has been built in Arm by Arm…". One participant spoke about how the structure and organization of CUS aided in the facilitation of interdisciplinarity across Arms: "A lot of the information and data that we are compiling within our Arm can be linked to what is going on in the other Arms, and that gives them a … connection that they wouldn't otherwise have." Another spoke about how the overlap of subject matter and research questions contributes to the interdisciplinarity of the project: "The questions and issues that are being discussed on both coasts are the same issues … there is cross-referencing all the time." Another participant talked about how personal relationships (evolving from their placement within the project Arms) have facilitated the communication, sharing of information, and collaboration across disciplines:

> Many of us have tried, within reason, to involve people from other disciplines. We actively search for what our linkages could be … They were helpful, we had a good relationship, we did lots of joint work, and … that was an excellent collaboration.

Offering alternative perspectives on the function of the "Arms," one participant commented that the Arms are an artificial construct: "To me, the Arms are an artificial construct. They came after the fact." Another participant spoke about the representation of disciplines or research sites within each Arm: "If you go to any of those [coastal communities], you may or may not have each Arm represented." Another described differences in research expertise and focus represented within each Arm. Clearly, overall project design was challenging and the strong responses evoked are perhaps a function relating to the tension between breadth and depth that emerges from design and structure of the project.

Common Goals

A common focus of research not only organizes differing research ideas and outcomes into a framework for greater understanding, it also brings people from different disciplines and locations within the university and community into connection with each other (Gershon, 2000). According to some participants, having a common goal enhances the ease with which a project is carried out. One participant reflected that a shared goal was a fundamental requirement in interdisciplinary research: "You don't need to be sitting in the same lab or office. You do need to be sharing the same goal." Another participant offered the perspective that a concern shared by researchers who are focusing on different aspects of the same problem can facilitate interdisciplinary research processes:

> Underneath all of the theory and structure and approach of my sub-project, I'm concerned for 'what does this mean for the community being studied?' ... I think that kind of ethical or moral core ... is a central kernel of concern about what the implications are for people outside of academia.

A common purpose can foster collaborative links: "From sociology to geography to health to forestry to fisheries, as we move further through the research and in among all of these things, the evidence that is being gathered is to a joint purpose."

Findings suggest that sharing a common purpose, such as a concern for the health of communities or a belief in interdisciplinary research as the way to achieve this aim, may be a critical factor in the effective practice of interdisciplinarity. However, findings also suggest that sharing a common purpose or vision does not necessarily mean sharing a common understanding about how concern for communities or interdisciplinary research should be carried out. This points to existing tensions between deep and surface understandings and needs within the CUS project.

Research Content

Similar to the topic of disciplinary imbalances with each Arm, participants also suggested that there are corresponding imbalances within the project relating to research content and focus. The absence of certain research areas has raised some concern for different participants. For one participant, linking historical and contemporary past to policy has become a challenge because there has been a lack of focus and attention paid to the deep past within the project itself: "From my perspective I think deep past is relevant. But it is only the shallow past that seems to connect to the thread of contemporary policy [in CUS]. It is a scramble to connect those two. There is a disjuncture...." This tension between deep and surface again emerges – without the depth of history to give context to the contemporary situations being studied – and

understanding may be lost. Another participant has pointed to the lack of a purely environmental focus, separate from the human communities that are interacting with those environments, in addressing the question of health: "I don't see much of terrestrial biologists and environmental specialists to go along with these kinds of ecological questions." Finally, some researchers have pointed to the need for policy specialists to be involved in the project in more integral ways. Often researchers lack the time, resources, and expertise needed to fully address the question of policy:

> It would be better to have somebody in public administration or political science or an economist take that on. ... We just don't have the time or the money to carry policy recommendations very far....

Geographic Scope

The geographic scope of CUS has also impacted participants' experiences of interdisciplinarity. Similar to the comments about "Arms," participants have mixed responses to the geographic scope of the project. As a facilitating factor of collaboration, one participant reflected on how the same geographic focus has helped to cut across temporal differences in research projects: "Somebody may be looking at the past, and somebody else might be looking at contemporary issues, but we all have that same geo-spatial location and concern. So, that is a nice link between the projects." A different perspective acknowledges the loss associated with trying to spread the research across multiple communities. One participant commented on the challenge of having enough researchers to fully immerse oneself in a community being studied. This same participant was concerned about a loss of meaning and accuracy in representing research without a full picture of a given community: " There is loss in spreading yourself out." A different

participant picked up this theme in the loss of potentially sharing data in deep and creative ways:

> I think we are losing the possibility of geographically focused connections.... We lose the possibility of ricocheting off each other's findings and deeply sharing in creative ways. We end up with data which might or might not still do this, but it is a little more hit and miss.

Another participant has referred to the extended time-line that involving multiple sites necessitates and wonders if fewer but more in-depth studies could accomplish more in a shorter period of time: "If we had those disciplines live within the community for two years, would we know as much as we know doing it this way over five? Or would we know more? I suspect we would know more. It would be more efficient." A similar view was expressed by another participant: "How well can you really know what is going on in those places, when you've got not just one, but five or three community sites?"

The comparative analysis design raised questions for some participants about the validity of comparisons across locales as well as across coasts. Similarly, the relatively short time and unbalanced representation of researchers in the community sites, raises the issue of justice in terms of deeply understanding the data collected from these communities. There may be negative consequences for these communities should researchers draw an invalid or inaccurate picture in their interpretations and representations of the data.

Role of Graduate Students

According to many of the participants, graduate students have played a major role in facilitating interdisciplinarity within CUS. Not only may graduate students be less wedded to particular methodologies and disciplines than their faculty supervisors, they are often asking questions and sharing ideas with both peers and faculty involved in the

project. One participant spoke about how graduate students are more flexible in their thinking: "At the student level, you are still learning, you are still expected not to know. Graduate students push us and make us flexible. They are more flexible by nature, by lack of training." Another spoke about how graduate students have been central to some of the cross-fertilization of ideas:

> To some extent I think the graduate students that have got involved in the project have been central to some of that interdisciplinarity happening. ... they've bought into an interdisciplinary perspective in some cases, perhaps more than their supervisors have done.

Summary of Research Design

The way research is carried out is influenced by the way in which aspects of the project are conceptualized and designed. Differences in researchers' epistemological standpoints are often commensurate with different ideas about how to ethically design and implement research studies. While some researchers locate themselves within a medical model tradition, in which researchers are the experts who get to define the questions, other researchers locate themselves within more participatory collaborative and feminist traditions, in which ethical research includes participant input into its focus and direction. Therefore, one issue related to research design is the degree to which communities have been able to steer the direction of the research. According to Pollard (1992), the ethical principle of beneficence is supported when researchers identify and incorporate into the research design issues and questions that are important to the host community.

Participants have suggested two elements relating to research design that have contributed to their sense of how interdisciplinarity is being practiced. The first is the way in which the research questions themselves have been integrated throughout the

Arms of the project. The other is the geographic organization of the research to center around particular communities. Many participants spoke about how the common purposes of the project, such as the focus on community health and the concern for communities in general, have contributed to their collaborative efforts. Some participants viewed the Arms as an integral aspect of functional interdisciplinarity while others suggested that the way in which CUS was initially conceived and planned heralded in some difficulties in carrying out the research itself.

A purpose of research design is to address initial and ongoing issues relating to the following concerns: protecting participants' confidentiality and anonymity; obtaining informed consent; highlighting the beneficial consequences of the study and for whom; assessing and addressing any potentially harmful consequences of the study for participants; attending to the researcher's role and how obligations and relationships to participants, subject matter, or funders affect the study; and how accuracy of data and its interpretation and representation are handled (Kvale, 1996). These elements of project design share the need to address the ethical issue of relationships – initiating, building, and maintaining them with community participants, research colleagues and graduate students. In terms of overarching ethical implications of research design for on-going collaborative interdisciplinary research, relationships are central. The quality of relationships amongst researchers and participants as well as amongst colleagues on the team, have implications for the effective functioning of the project as a whole, including team members' perception of inclusion, representation, fairness or (im)balance. For example, research relationships can facilitate or hinder other components of research design, such as sampling, other data collection methods (Maxwell, 1996) and the future

of community or researcher involvement in research projects. Thus, it is important to think about the kind of relationships that are being facilitated by the research design, not only with the people who are involved as participants, but also with the people who comprise the interdisciplinary collaborative project. Maxwell (1996, p. 67) emphasizes that these relationship concerns are "design decisions," and not something that merely happens along the way of conducting the study.

Research Contexts

In interviewing participants about their experiences as researchers involved with CUS, all spoke, in some manner, about the complexities of carrying out research in communities. In this section, I present the data related to the contexts within which the West Coast CUS team is embedded. These include geographic contexts, such as the B.C. coastal communities themselves, as well as the contexts of nationally funded research and university institutions.

Community

Engaging any community in a research initiative sets up expectations that the research will ultimately be of some benefit to that community. Given that CUS has an environmental and human health focus, participants commented on the challenges of transforming research findings into relevant policy that will positively affect the communities experiencing stress in those areas. One participant reflected on the expectation that the research information will ultimately benefit the community:

> How are government, other agencies, and policy going to be informed by these results, which will ultimately bring about positive changes for the health and well-being of the people living in these communities? ... You are inevitably raising expectations that it will be worth their while. ... It is those kind of expectations that give you cause for concern.

In terms of the potential outcomes of CUS' involvements with coastal communities, participants spoke about interdisciplinary collaboration for the sake of problem solving and helping communities. One participant suggested that "toolkits" for communities could be potentially beneficial:

> There will be a few projects that will have some broader linkages and some spin-off into policy or approaches. Something I would call toolkits, things that can be used at the community level in terms of education, social services, environmental protections, should the community choose to use them.

Some participants have reflected on the process of engaging in on-going research relationships with communities and members of those communities. Given that this is an interdisciplinary research project involving many researchers from different fields and areas who are accessing the same communities, what one researcher says or does in a community has a ripple effect elsewhere within the project, potentially impacting colleagues. One participant highlighted the need for awareness on behalf of the community about research processes in general:

> I don't think people in these communities will understand the research process that well, necessarily. You know, that it is hypothesis driven, and that this is part of the testing of these approaches and are not the final answers. ... Maybe there is a degree of education to the community that has to happen as well.

According to this participant, without awareness about the difference between tentative and preliminary findings versus policy recommendations, misunderstandings are more likely to occur and impact the research collaborative in negative ways.

In addition to the need for communities to understand the research process, this participant also spoke about the corresponding need for academics to sensitively relate their findings back to the community:

> We have to deal with the realities of these communities and that we cannot waltz into these communities and say, 'stop fishing because fishing is bad.' Something

> like that is an advocacy position. All that is going to happen is going to be a reaction against that position in that community. And we are not going to get participation from the community.

The ways in which preliminary and intermediate findings are explained and interpreted to the larger community has consequences for the research project as a whole, impacting on other researchers' relationships with community members. Furthermore, future academic-community initiatives are also impacted by the ways in which researchers carry out their projects in the present: "... a balanced approach and listen to the bigger scope or bigger picture in these communities ... And not just with CUS, but with the future for other academics who are going into these communities."

Another dilemma associated with conducting community-based interdisciplinary research is that there are often different methodological perspectives on how research questions should be defined and to what degree participants should be involved in the research process. Defining helpful interventions is a specific example of where differences in epistemology, ideology and methodology can be problematic. One participant reflected on this difference: "I could easily see that different groups of researchers within the project might have different views on how one might best intervene to bring about positive change." Not only is an intervention or recommendation related to one's disciplinary perspective, a top-down process of defining help is seen as problematic by one of the participants: "Even if you have the desire and the complete intention to help, ... as long as we are imposing our version on others, we can never be sure that it's going to be helpful."

Other participants picked up on this theme of involving community members in the research process itself: "There needs to be a process that enables community folk to

be in on defining what help is, because they are the ones who are going to know." The distance of the academic research community from the sites in which their studies take place has contributed to the lack of community integration into the research processes themselves. According to this participant, the challenge of distance from community negatively impacts the quality of the research: "I think that research is stronger when it is conducted in community. But one of the problems is the distance of the academic community geographically from some of the community partners." In addition to the difficulty of community integration posed by geographic distance, another participant specifically mentioned the importance of including First Nations' perspectives in the research:

> One thing that is important is the involvement of First Nations groups within these communities we are looking at. How their knowledge and traditional ways of viewing their lifestyle and economy might factor in to how you prescribe for the future.

Actively involving community members in the research raises the issue of informed consent. There are many assumptions embedded in the concept of informed consent. *A priori* consent is a contested notion by those who view research as an ongoing, collaborative process that unfolds in indeterminate ways. One participant asked: "How can you get prior informed consent? If you get prior consent, it is probably not informed." Second, a written document pertaining to informed consent may be inappropriate and culturally insensitive for the participants involved in the research: "The people… want a relationship between you and me where your handshake means something, not where I sign a piece of paper and I never see you again." Third, the challenge of individual versus collective representation and legitimacy is not resolved by singular act of signing an informed consent document:

> Individuals in the community have a choice whether to participate or not, but whether they do or don't may affect the collective they also belong to, and they may or may not be represented or acknowledged by their community as somebody who has the authority to speak on what you are asking about.

Informed consent raises questions about the complex and layered issues involved, and points to the limitations and difficulties in the process of obtaining fully informed consent.

The issue of informed consent is fraught with intentions and assumptions. It is meant to protect the rights of the individual participant. However, forms are insufficient to recognize and protect the rights of the community as a collective identity. In community-based research, the larger community is as much the participant as the individual. This becomes even more complex as no single group or person can fully represent the needs and interests of a heterogeneous population (Fontes, 1998; Pollard, 1992). Some researchers have argued that process consent, rather than *a priori* consent, should be part of all stages of the study, from data collection to interpretation and dissemination. Continuously informing those involved in a study has been cited as critical to establishing and maintaining consent (McLeod, 1996; Marshall and Rossman, 1995). Furthermore, collaboration and regular consultation and feedback with those involved are critical in conducting ethical research, particularly in cross-cultural communities (Darou, et al., 1993; Pollard, 1992).

Relationships with research participants are also sites of ethical considerations. Fontes (1998) argues that researchers are always in the more powerful position in relation to the research participants. This may include the power to determine the questions asked, the power to interpret, translate, or represent findings, or the power to define help and make recommendations at a political level. Given this position of power, care must

be taken that the research is not exploitative, and that it benefits the individual or community as much as the researchers themselves. This may begin with defining what constitutes "help" or "benefit", and to what degree dimensions of the research are driven by community members or academics. One ethical concept in cross-cultural and community-based research is the inclusion and representation of a variety of perspectives in the research. Ethnically diverse research teams and the maximum participation of host community scientists and researchers are ways in which cultural biases in the research can be mitigated (Atkinson, 1993; Pollard, 1993). Some participants would like to have seen more community involvement of this nature in CUS.

Safeguarding and maintaining mutually beneficial and respectful relationships between academics and the host community is another important ethical value in community-based research. Darou et al. (1993) have cited a history of insensitive researchers going into northern Cree communities, resulting in the community's exploitation and mistreatment. Recognizing and validating the relationships between the inquirer and those who participate in the inquiry are necessary elements in ethical research practice (Lincoln, 1995). Fairness in research includes the learning of the participants as much as that of the researcher, open and democratic sharing of knowledge, fostering social action, and the inclusion of alternative voices (Lincoln, 1995).

There is debate amongst the CUS researchers about what constitutes ethical research practice. According to one graduate student involved in CUS, in terms of data collection and dissemination, some researchers suggest that a responsible research position is to give the community the "facts" and the community can do with them what they want. Other researchers suggest that the issue is not just about getting the data and

information, it is also about concern for the consequences of how that information is understood and applied, as well as developing researcher capacity within the community. Furthermore, for some of the participants and CUS researchers, neutrality is key to unbiased research, while others regard neutrality as tantamount to oppressive privilege. Marshall and Rossman (1995) suggest that many people will not respond or trust researchers unless they take a stand or position. Similarly, Price (1996) considers ethical research to be for the purposes of social action, rather than for the purposes of knowledge building or career, suggesting that researchers may also act as advocates.

Nationally Funded Research

CUS is a multi-faceted project embedded in local, provincial, and national political systems. The project is primarily funded by two national bodies, Social Sciences and Humanities Research Council of Canada (SSHRC) and Natural Science and Engineering Research Council of Canada (NSERC). One participant spoke about these political and funding contexts as generating a burden of responsibility for those involved with CUS to ensure that the project succeeds:

> That for big projects, you want big questions, and questions of national significance, and a level of national policy at a level of responsibility to the taxpayer. When you are dealing with large-scale research, you also have to be dealing with a large national question to justify the budgets from a funding agency perspective.

A project the size of CUS involves significant amounts of funding. Aspects of this financial obligation to the funding agencies, to the communities, and to the taxpayers were identified by two of the participants. One appreciated the risk undertaken by the funding councils themselves: "It's a flagship project for SSHRC and NSERC. They've in a sense put themselves on the line because it is a lot of money. It is a big risk for them."

Another spoke about the resulting pressure from these risks: "The expectations that are being raised with the granting agencies, with the communities that we are working with and so on, are major. There is a lot on the line here to demonstrate success, to demonstrate justification for this level of funding."

In addition, meeting the informational needs of government and communities poses fundamental questions about the integrity and autonomy of theoretical academic research.

> Academics think in a five-year stretch, government acts in a six month window, communities want an answer now, or at least this year. So there are differences in cultural senses of time between the political sphere, the community, and the theoretical research perspective. The closer you get to contemporary political questions, the more the time scale thing happens. And then what does that do for useful theoretical research?

Another participant spoke about the ways in which provincial policies resulting from research findings could positively impact coastal communities: "What CUS is doing connects quite directly with some of the initiatives and planning that [government is] going to do around rehabilitating communities along the coast." A similar perspective was raised by a different participant:

> By making other levels of government, other jurisdictions aware of the issues, perhaps that will lead to the consideration of improving some policy of [forestry] or fisheries, or in the off-shore oil and gas sector. These things we didn't know before might at least provide the basis for policy development.

One of the central issues particular to doing funded research is the complexity of relationships among the various players in the research enterprise (Check, 2000). Participants spoke about the tensions and competing interests involved in trying to accommodate and respond to the different needs of communities, government, academics, and taxpayers. Concern was raised over the ability of academics to pursue

theoretical research, free from the time constraints and interests of stakeholders. Raising community expectations about the potential benefits of the research adds both pressure and responsibility for the researchers to make a difference in the communities. However, researchers are in an intermediate role, in that the decisions about the application of research findings do not rest with the academics themselves.

Kvale (1996) cites three ethical aspects of the researcher's role. These concern scientific responsibility, relation to the participants, and researcher independence. Scientific responsibility to one's profession and the participants involves producing research that yields knowledge that is verifiable and worth knowing. Findings from this study add to this notion of knowledge as verifiable and worth knowing through the discussions and debates surrounding differences in epistemology and methodology. Is good research advocacy-based or does it follow more positivist aspirations to objectivity? What is meant by verifiability? Constructionist and qualitative researchers would define verifiability in distinctly different terms than experimental or quantitative researchers. The fact that different understandings about scientific responsibility and knowledge are represented in interdisciplinary research projects necessitates the negotiation of these boundaries, challenging and changing the landscape of science.

Relationships with research participants may include a variety of roles such as exploiter, advocate, friend, etc. There are ethical implications associated with different roles, such as whether someone in an advocate role should publish information that may have negative consequences for participants (Glesne and Peshkin, as cited in Kvale, 1996). Findings from CUS expand on this ethical aspect of relationships with participants. Particularly with regards to the negotiation of relationships in community-

based research – involving the entrance into communities, the maintenance of respectful and non-exploitive relations, and consideration about how to end (or continue) involvement with community members.

When there are stakeholders in the research, the independence of the research can be co-opted by funders of a project as well as by its participants. Loyalties to either group may lead the researcher to ignore some findings and emphasize others to the detriment of a full investigation of the phenomena as possible (Kvale, 1996). Data from this study expands on Kvale's understanding about independence of research. CUS researchers receive funding from SSHRC and NSERC indirectly and to some degree may face challenges to independence in their research in terms of interpretation and representation of findings. However, there may also be challenges to independence for some CUS researchers in terms of approach, style or method of research, because the collaborative nature of this project and the common sites of study render research practices more open and visible, than when research is conducted independently.

University Institutions

An interdisciplinary project the scope of CUS brings with it its own challenges in terms of fitting within academic institutions that are built upon disciplinary foundations. One participant asked:

> The challenge is how do you do the interdisiciplinarity without damaging the discipline structures on which it is based? And the other side of that is, 'How do the essential discipline structures protect themselves without handicapping the interdisciplinary work that is becoming more and more important?'

Maintaining disciplinary integrity while also accommodating interdisciplinary research was a concern for this participant. Another perspective on the relationship between CUS and university institutions was related to funding: "Universities need to be flexible,

because as funding structures and opportunities change, university structures need to change with them."

Participants reflected on the relationship between change at the individual level and systemic change. One participant spoke about the importance of how individuals, particularly those at the helm of university decision-making related to research, may be influenced and broadened by the processes of interdisciplinarity: "I see CUS as an opportunity to start changing some of the mindsets of the "old guard".... and the mindsets of those individuals have to change before change can happen in the system." These changes have the potential to influence further change in research granting bodies: "Hopefully, these kind of experiences will roll back into the funding councils and disciplines at large, and the university structures." Another participant reflected on the changes that had already taken place in response to interdisciplinary research: "Universities have got wiser and more flexible" about accommodating interdisciplinary research. This emphasis on change resulting from interdisciplinary research, whether it is at an individual or systemic level, suggests that interdisciplinarity is a relatively new or different way of approaching knowledge, in contrast to specialization, that has not been fully included in academic institutions.

One main ethical issue related to the data about academic institutions revolves around the control of, and access to, resources. These resources include publishing opportunities, facilities, funding, and promotion opportunities within academia. Questions about who sits on the promotion committees, editorial boards, review boards, granting councils, and other academic bodies, are imbued with issues of power. As researchers, we are subject to the power structures of the university setting and

institutional context (Price, 1996). Therefore, given the disciplinary foundations of academic institutions and resources, interdisciplinary researchers may not be recognized and rewarded commensurately with their more disciplinary-based colleagues. In some instances, being an interdisciplinarian may be a professional liability, rather than an asset. For example, the "highest levels of pay and prestige are often reserved for those in the most specialized fields" (Makoski and Paludi, 1990, p. 12).

Summary of Research Contexts

Community-based research that involves members of a community raises expectations that this research will benefit that community and will be worth the efforts of their involvement. Researchers bear responsibilities to their colleagues and to the communities to obtain consent, report research findings, and manage conflicting roles in ethically sensitive ways that do not jeopardize the relationships that have been established. As a way of safeguarding these relationships, universities require researchers to engage in a formal process of gaining consent prior to engaging in research activities. Issues about informed consent, such as with whom and how that consent will be negotiated, is a complex one that involves more than just the researcher and participant.

In funded research, conflicts of interest may arise between competing stakeholders. Particularly when the needs of government, community, and academic research intersect in a large-scale, nationally funded project, a balance needs to be struck by the researcher in negotiating and resolving these differing loyalties and roles. One element within this dilemma that needs to be considered is the quality and character of relationships that researchers initiate and maintain with the communities. Not only do

these relationships have an impact on other researchers within a team, but they also affect the community as a whole, as there are long-term impacts for future generations of academics who may want to do research in these same communities. As well, the integrity and autonomy of academic research is a value that may be compromised when research is commissioned, or financed by industry, government or other private granting bodies, or when policy decisions need to be made prior to the completion of a study.

One main ethical issue related to the data about academic institutions revolves around the control of, and access to, resources such as publishing opportunities, facilities, funding, and promotion. Given the disciplinary structure of academic institutions and the value of specialization, interdisciplinary researchers may not be recognized and rewarded commensurately with their more disciplinary-based colleagues, raising concerns about inclusion, fairness, power and privilege, and respect in valuing (or not) different ways of knowing and styles of doing research.

Interpersonal Dynamics

Participants spoke about individual characteristics that contributed to the overall functioning of CUS as a collaborative team. Some participants mentioned previous interdisciplinary research experience as having impacted their understanding and appreciation of the challenges associated with collaboration across the natural and social sciences. Participants also mentioned the importance of trust and respect for and amongst team members. The following section explores data relating to individual characteristics and relational dynamics within CUS.

Individual Considerations

Previous interdisciplinary research experience played a part in participants' attitudes towards CUS. One participant spoke about having a healthy appreciation for the tasks involved in interdisciplinary research: "From previous experience, I've realized that it is not a trivial exercise to try to get social scientists to sit down in the same room as natural scientists and try to even frame research questions and try to come up with agreement about what was important to do, let alone do it." Another participant reflected on his attitude towards working out differences within the team:

> The way in which we work out the different perspectives on issues is listening to each other's views, learning from each other's views, while at the same time, respecting the fact that in the data collection and in the actual analysis of those data, we will not necessarily do things in exactly the same way.

Another participant spoke about having a healthy respect for the processes involved in establishing an interdisciplinary research team: "It is tough to do this. Trying to set up a project like this, in a way that it will work and be most successful, requires a lot of care and thought." Other participants spoke about having an interdisciplinary mindset: "I don't know how else to think, other than in an interdisciplinary way.... I brought that mindset with me." Another spoke of a willingness to suspend individual preference for the sake of team needs: "I may disagree with what team research requires as an individual, but if it has to be done that way, then I will go along with it." One participant spoke about being interdisciplinary either by nature or from experience, suggesting that interdisciplinarity is a personal quality: "Some of the team are interdisciplinary because they've been doing that kind of work for a long time. Some are learning, and it is still tentative ... And there are people who shouldn't do interdisciplinary work because they aren't interdisciplinary by nature."

Because there is such a breadth of disciplinary specialization required and represented in CUS, team selection – deciding who and what expertise is needed – is important in this collaborative work. Participants suggested that both target-selection and self-selection of academic researchers played a role in team membership and ongoing involvement. One participant spoke about shared vision as being a necessary quality: "People have to share a vision, otherwise nobody will be working on the same thing.... Because there are so many differentials, you must have something that you share." Another participant suggested that researchers self-select on this basis of shared vision: "I think it's fair to say that the people who are on the investigative team self select on the basis of some degree of shared vision from the outset, otherwise they wouldn't buy into it." Having a sense of participating in, and contributing to, meaningful research was another element of team selection and participation: "Those who choose to involve themselves are involved because they see what can be done across disciplines to look at issues that have both scientific and societal significance."

Similarly, one's motivation and ability to commit to CUS impacts the team: "People have lives other than their research, and sometimes things don't get done that should be done. And that can create real difficulties." This same participant reflected on commitment to the value of interdisciplinarity: "The amount of personal commitment on a team like this is really important. People only do it if they care because it's too complicated, and there's too many other people interfering in their patch." Another participant spoke about the differences in commitment amongst researchers on CUS: "People have all sorts of different motives, and different things they want to do. Some people are not very committed, and some are." This participant's motivation to

participate was related to making a difference: "I guess I came on board knowing that there are problems, but believing that I could ... be a part of the process of change."

Differences in expectations about research processes and collaborative team-work can also impact the team culture. One participant described the differences between coming together as a team to answer questions versus generating discussion and questions themselves: "Some people really seemed like they were expecting the answers. One person said, 'you haven't answered the question.' Ya, but that is not the point. The point is to discuss it and for directions and more questions to emerge out of the discussion in the room."

Involvement in the project is partially related to the advantages of being part of the research collaborative. Researchers themselves, (faculty and graduate students) benefit personally and professionally from the interdisciplinary research processes in CUS: "I think that the biggest benefit of the CUS project is actually going to be to the individuals involved, because they are going to have transformations themselves. ... I see individuals' minds being opened and being transformed by the process." These benefits range from professional opportunities for faculty and graduate students, to the formation of fruitful networks: "It's opportunity to rub shoulders with people in different disciplines, to talk to them." Another participant suggested that other benefits include knowledge, training, money, and partnerships: "One could say, 'look at the knowledge gained, and the number of young researchers trained, and the money it's brought in, and the partnerships it's developed.'"

Graduate students are also recipients of the benefits of interdisciplinary research opportunities. These benefits ranged from training in the politics and practice of

research, to research opportunities for academic credit in order to complete their graduate degrees:

> From the point of view of graduate students involved in the project, I think CUS affords exciting opportunities that are rarely available, in terms of establishing credentials. You not only have access to the funding over five years, it is a great opportunity to develop a dissertation project, which you would rarely have the resources to do the work otherwise.

Participants spoke about their personal enrichment from the learning associated with interdisciplinary research. For example, one participant spoke about being changed as result of the process: "You do not come out of a project like this thinking the way you came into it. You come out much broader, and much more sensitive." One participant spoke about gaining knowledge about other fields of study and broadening of one's own perspective about research and health: "To me [CUS] has been broadening personally. It is interesting to see some of the connections." Another spoke about a growing awareness and understanding about the relevance of other disciplinary perspectives for his research: "I've learned a lot about how other disciplines approach what they are doing, and it's relevance to communities that I am interested in."

Relationships

Some participants have reflected that it is within human exchanges and relationships that disciplinary and institutional barriers are crossed and synergy and creativity emerge. Face-to-face dialogue and encounters contributed to mutual understanding, research collaboration, and the development of personal relationships. One participant remarked on the ability of human relationships to transcend disciplinary barriers: "Once you establish the human relationship between somebody from another discipline it becomes far easier to cross the barriers that both disciplines set up between

between team members is meaningful beyond a cost/benefit analysis of research productivity and outcomes. Christians (2000, p. 147) states that communities and social entities, (an interdisciplinary research team, for example), are "moral orders" and not "merely functional arrangements" that are constituted by "the self-in-relation." This social space within which morality exists needs to be nurtured and safeguarded. In terms of fostering morality through the cultivation of reciprocal and respectful relationships, time to develop familiarity with information and people is needed. Several participants raised this issue of time in order for respect, trust, and relationships to grow. One participant captured this sense of development over time:

> In the original Dunsmuir meeting ... there was still a real sense of different solitudes. ... By the time that we had a last full west coast team meeting, ... some of those connections were really starting to emerge, in ways that almost surprised the people who were sitting and listening or presenting.

The act of research not only has the potential to transform the landscape of knowledge and policy, researchers are also potentially changed. Individual transformations resulting from participating in the interdisciplinarity of CUS, such as broadening mindsets, was a common theme in the data. Other benefits to individual researchers included expanded social and professional networks, research and training opportunities. Although participants also spoke of benefits to the communities, more detail was given about individuals themselves. Given that the participants were all academics speaking about their personal experiences in CUS, this emphasis is consistent with my own line of questioning in the interviews upon participants' personal experiences. However, the relative balance between gains for researchers and gains for communities and participants is an ethical issue that needs to be considered. Evaluating to what degree participants, communities, and academics are benefiting from the research

will be important in determining the value of a major interdisciplinary initiative like CUS.

That researchers have different understandings about the purpose of some of the interdisciplinary research processes hints at cultural differences within the team. For example, one researcher saw the purpose of a panel presentation at a team meeting as an opportunity to generate useful questions to direct their efforts. Another researcher was interested in having the panelists answer these questions in clear-cut ways. This reflected a difference in disciplinary, epistemological, and methodological stances. In terms of ethics, cross-cultural competency in research and in teams requires that individual members recognize that their behaviour is influenced by cultural assumptions, beliefs, and values. Before members of a team can understand and respect each other's perspective, they need to have an awareness of their own cultural embeddedness and the extent to which their construction of reality is personal and different from the constructions of others (Casse, 1982, as cited in Wigglesworth, 1996).

Summary of Interpersonal Dynamics

Personal qualities and experience contribute to the overall team culture. As evidenced by the data, one's experience, attitudes, intentions, motivations, goals, and expectations, all impact the team in differential ways. In terms of productivity, buy-in to the philosophy or goals of a project, commitment to the overall project, and motivation to fully participate, feeling valued and respected increases the likelihood that these elements of involvement will be met. Sharing a vision and benefiting in some way from the team influences one's involvement and commitment to the process. In addition, the development of trust and respect over time contribute to nature of the relationships

people have with each other. These relationships form the basis from which the interdisciplinary research processes are built, and contribute to the overall team culture. If moral communities rest upon human identity, which is constituted in the social realm (Christians, 2000), then relationships are the sites in which values and moral commitments are negotiated dialogically. Therefore, fostering respect and understanding among team members is a critical aspect of ethics in interdisciplinary research.

Knowledge and Translation

"The first problem arising from the combination of two or more fields of study is often called the translation problem. It is a necessary first step in the development of integrative or synthetic work" (Salter and Hearn, 1996, p. 140). The bridging of distinct disciplines in interdisciplinary research teams requires that there be a flow of ideas and common understanding between those who engage in different research methodologies, steeped in differing epistemological worldviews. Some participants have identified that differences within scientific knowledge as well as between scientific or academic and lay, local, and Indigenous ways of knowing pose a challenge to this flow of mutual understanding. One of the major issues identifiable throughout the participants' interviews relates to the translation of knowledge. Translation refers to the movement of information from one discipline to another "while still retaining a sense of meaning" (Salter and Hearn, 1996. p. 140). In terms of knowledge, some participants spoke about there being a breadth of ways of knowing, each embedded within cultural and historical traditions and assumptions. This section presents data themes relating to the concept of knowledge and its translation within CUS. First, translation issues related to epistemology and methodology are presented. This includes participant perspectives on

theoretical concepts of knowledge (including *episteme* and cultural context) and qualitative and quantitative research methods (including time, language, generational research styles, and individual and collaborative research cultures). Second, translation issues relating to the interface of CUS within other socio-political contexts are presented.

The translation of information within CUS involves the flow of information across multiple disciplinary realms. Some participants spoke about how the intellectual synthesis challenges of integrating the humanities, natural and social sciences together within one research project are partially related to differing epistemological and methodological research paradigms. The following reflect some of the ways in which participants spoke about these different knowledges.

Epistemology

Some participants reflected on the nature of the challenges in working within an interdisciplinary context from a theoretical perspective:

> The social scientists talk about there being no such thing as 'objective' science, and watch the natural scientists bristle when they say it. But of course, they are talking from a very different point of view, they are talking about how the original question was formulated, how the world is framed.

One participant spoke of differences in approaching research questions and in understandings about what constitutes knowledge:

> The [natural] scientists by their training and their view of the world, bring a particular mindset as to how you structure research questions, framed within a positivist epistemological way of thinking about how the world works. The social scientists, and even more so humanists, are much more constructionist in their view of knowledge: there isn't a clear separation between an objective world that researcher is inquiring about, and the researcher who is the inquirer.

Another participant spoke about framing research questions as an example of a difficulty in operationalizing interdisciplinary research given these particular epistemological

differences: "It is not a trivial exercise to try to get social scientists to sit down in the same room as natural scientists and try to even frame the research question and try to come up with some agreement as to what was important to do, let alone do it."

Within the practice of interdisciplinarity, one participant highlighted the complexity involved in trying to synthesize all the parts of the project into a coherent whole. Not only is it a challenge to integrate the varying and discrete research outcomes into one big picture, it is also difficult to be able to gain perspective on the research project, as it is a dynamic process that is constantly evolving: "To put it together, at a distance, with this huge range of about 70 faculty and 40 graduate students, … it's a huge intellectual challenge, of trying to understand enough about it all, to be able to say where CUS is and where it's going."

Between the interfaces of the academy and larger socio-political milieu, there are differences that similarly require translation from one contextual way of knowing to another. One particularly difficult challenge has been to understand how and if differences between Traditional/Local ecological knowledge and scientific knowledge can be bridged in culturally sensitive ways:

> Just so many decades ago, the idea that Aboriginal traditional medicinal knowledge was called 'quackery' and 'superstition' and 'witchcraft' and was suppressed. … There are people alive today who were banned from their own practices and who are today being interviewed and asked for that knowledge.

This participant discussed the assumptions embedded in attempting to translate between these different knowledge systems and contexts:

> We talk about how to merge traditional ecological knowledge, and local knowledge, and western scientific knowledge, but we make assumptions that there are ways to do that. And I just don't think we have developed these models, these processes, to facilitate those kinds of hybridizations. The whole cultural context of that might be quite overlooked.

Another spoke about the evolution of mutual understanding between academics and community members that arises out of interpreting and expressing their different perspectives on an issue:

> First Salmon is a different thing to First Nations than any other fish in that year. The First Salmon carries with it the spiritual and physical well being of the community. Biologists look at this and think 'What?' and then begin to understand that it speaks to ecology, an ecological process and an understanding of human beings as part of the eco-system, part of nature, not outside of it.

Similarly, this participant spoke about how people from different contexts start to appreciate their knowledge within a more reciprocal and holistic view: "What the local communities get fascinated by is how their world fits into the wider picture. Biologists begin to understand … human beings as part of the eco-system, part of nature, not outside of it."

Popper (1972 as cited in Brier, 2000, p. 437) stated: "the phenomenon of human knowledge is no doubt the greatest miracle in our universe. It constitutes a problem that will not soon be solved." With regard to this study, this problem of human knowledge could be related to the politics, power, ethics, and partiality that are inherent within the constitution of knowledge itself and the implications that flow from that constitution. In this study, participants have referred to scientific knowledge (including debates surrounding positivist/empirical and constructionist viewpoints), lay and Indigenous knowledges, and knowledge for a variety of purposes (i.e., benefits to communities and researchers, and for policy, etc.). They have also talked about differing worldviews and how to integrate this diversity into a coherent picture. It is this integration or synthesis, often associated with interdisciplinary research, that raises ethical questions: if there is an imbalance of power between differing knowledge systems, can there be mutually

respectful and validating forms of the translation of those knowledges from one system or context to another? What gets translated and how, and into whose language or worldview? How is iconoclastic knowledge that runs counter to that of the status quo represented or validated? My own observations and private conversations with CUS graduate students and researchers suggest that this is an ongoing and complex process in which inequalities within CUS are identified (either privately or publicly), discussed (again, privately or publicly), but not necessarily resolved (although these processes may be farther along given the developmental maturity of the CUS project over the past few years). Given that power and knowledge are inextricably connected (Foucault, 1980), it becomes necessary to explicate some of the ethics involved in the attempt to work within contrasting, and often competing, knowledge paradigms.

In this section I address the conceptualization of knowledge itself, including the disciplinary structure of that conceptualization. There is inherent privilege in the general production of knowledge itself and in the production of knowledge about others. How knowledge is conceptualized and recognized and who produces knowledge and for what purpose, are ethical questions relating to the power and control of knowledge itself. Smith suggests that there are "rules" which help make sense of what is contained within the archive and enable "knowledge" to be recognized. These rules can be conceived of as rules of classification, rules of framing and rules of practice (Smith, 1999, p. 43). Invisible boundaries are drawn between what deserves systematic study according to the prescribed methodologies of science and the humanities, on the one hand, and what falls outside the realm of research into the domain of popular knowledge, superstition, social values, or folklore, on the other (Salter and Hearn, 1996). Some knowledges are more

dominant than others, some are submerged and outdated. Some knowledges are actively in competition with each other and some can only be formed in association with others. Ultimately, Giles (2001) suggests that the breakdown of knowledge into disciplines means jettisoning any unified framework that could both connect the various disciplines and resolve the disputes between them.

Academic knowledges, often organized around the idea of disciplines and fields of knowledge, share genealogical foundations in various classical and Enlightenment philosophies (Smith, 1999). Western academic disciplines have a political and institutional stake in Eurocentric knowledge, reinforcing these interpretations of the world (Battiste and Henderson, 2000). Power, within modern societies, is intertwined within these knowledge and truth hierarchies, operating diffusely through social relations (Fine and Kidder, 1997; Foucault, 1980). The tensions resulting from contrasting, oppositional, or alternate systems of truth and knowledge play out in contemporary academic debates.

Contemporary aspects of this canonization relate to the academic debates concerning the social construction of knowledge, often referred to as "culture wars" (Rabinowitz and Weseen, 1997, p. 620) or "science wars" (Darian-Smith, 2002, p. 194). Reflecting the diversity of knowledges falling outside of academic institutions, there is a similar heterogeneity within. Within academe - between and within the disciplines – claims to truth and knowledge are similarly contested, as evidenced by the "culture" or "science" wars. These "culture wars" name the situation in which practitioners of traditional science and cultural studies have clashed over the social construction of scientific knowledge and even the legitimacy of scientific research. Snow (1959,

reprinted 1993) coined the phrase "two-cultures" to depict the dichotomization of academia, with science, technology, power, and money on one side and humanities, art, social science, ethics and aesthetics on the other (Brier, 2000). In this hypothetical struggle, two stances along a continuum of possibilities are "realists" who uphold the objectivity and progressive nature of scientific knowledge, and "relativists" who recognize the culturally embedded status of all claims for universal factuality and who regard science as just one system of belief among many alternatives, all worthy of equal weight (Gould, 2000, p. 253). These camps, each with tits own knowledge types and forms, are in constant interaction, oftentimes talking past one another. Sometimes it is a constructive dialogue and sometimes a fight about who has the authority and power to determine a main frame of reference (Brier, 2000). These ethical issues relating to the power and authority in the social construction of knowledge are reflected in the theme of knowledge in CUS. As Collins (as cited in Walby, 2001, p. 490) states: "The amount of privilege granted to a particular standpoint lies less in its internal criteria in being truthful … and more in the power of a group in making its standpoint prevail over other equally plausible perspectives." Given that our standpoints within the university, in terms of socio-cultural status, gender, generation, peer groups, family of origin, sexuality, and any other defining characteristic, shape the stories we are told, the ones we are able to hear, the ones taken to be data, and the ones that are discredited or dismissed (Fine and Kidder, 1997), privilege and power are salient issues in the constitution and status of knowledge.

Given that there are both quantitative and qualitative research methodologies represented within CUS, and given that there are natural scientists, social scientists, and humanists working together on the same project, the debates around positivism and the

social construction of knowledge are relevant in this discussion about knowledge, power, and ethics. If power, in the form of money, publishing, policy, promotion, conference time and other rewards rest disproportionately with one type of scientific, academic or disciplinary endeavour, then this backdrop of inequalities, within which CUS exists, is a context that has ethical implications for the researchers themselves and the relationships between them. As Hartstock (1997, p. 372) asserts: "the criteria for privileging some knowledges over others are ethical and political rather than purely 'epistemological.'"

Eurocentric conceptualizations of knowledge are grounded in cultural views that often have no methodology for dealing with other knowledge systems. When interdisciplinarity involves incorporating other voices in the design and conduct of research, the conventions of research are so significantly challenged that it is difficult to know how to proceed (Salter and Hearn, 1996). Given the diversity of knowledges and methodologies represented within the team itself, and in response to CUS's interface with local and Indigenous communities, the cultural context of knowledge plays an important part in the ethics and power of knowledge translation. This includes references to aspects of differing worldviews, the socio-cultural context of knowledge, and intellectual and cultural property rights.

There are culturally distinct Canadian East and West coast political, social, economic, and environmental systems being studied within CUS. These differences pose challenges with regards to the interpretation of knowledge and its comparability across coasts. These bi-coastal translation challenges will be taken up in a later section. The primary focus of this section is on the cultural context of knowledge as it relates to

Indigenous and non-Indigenous communities as this aspect was particularly highlighted in the data by some participants.

Smith (1999, p. 2) argues that research, regardless of the finer points of research tradition or method, has often been experienced as a colonial enterprise by Indigenous communities. She argues that it is difficult to discuss "*research methodology*" and "*Indigenous peoples*" together, in the same breath, without having an analysis of imperialism, without understanding the complex ways in which the pursuit of knowledge is deeply embedded in the multiple layers of imperial and colonial practices. The globalization of knowledge and Western culture constantly reaffirms the West's view of itself as the centre of legitimate knowledge, the arbiter of what counts as knowledge and the source of "civilized" knowledge. Consequently, from an Indigenous perspective, research has not only been experienced as imperialistic, it has involved the contrast of differing world-views. Just as there is no monolithic "Indigenous culture" so too are there differing aspects of a Western orientation to research. In contrast to Indigenous world-views, Western research brings with it different cultural orientations, sets of values, different conceptualizations of such things as time, space and subjectivity, different and competing theories of knowledge, highly specialized forms of languages, and structures of power. Indigenous peoples' spiritual relationships to the universe, to the landscape and to stones, rocks, and other things, seen and unseen, have been difficult arguments for Western systems of knowledge to deal with or accept (Smith, 1999).

Expanding on this notion of diversity in knowledge bases and systems, is a contemporary cross-cultural challenge of how to recognize explicit cultural groups politically, as non-recognition can be a form of oppression (Taylor, as cited in Christians,

2000). One means may be to acknowledge that what makes ideas "real" is the system of knowledge, the formulations of culture, and the relations of power in which these concepts are located. What a certain concept means, for example, "self" or "an individual," is based on centuries of philosophical debate and systems for organizing whole societies predicated on these ideas. These ideas constitute reality and reality cannot be constituted without them (Smith, 1999). One of the problems that Smith discusses is that the methodologies and methods of research, the theories that inform them, the questions that are generated from them, and writing styles they employ, all become significant acts that need to be de-colonized. Reading, writing and talking are as fundamental to academic discourse as science, theories, methods, and paradigms. Given this Eurocentric and imperialistic bias of research with Indigenous populations, ethical concerns arise over the critical reflection, awareness and understanding about the historical context and assumptions inherent within researchers' world-views and paradigms of knowledge. To understand theory and research from one's own perspective and for one's own purpose is paramount for ethical research.

Methodology

Participants spoke about different aspects of qualitative and quantitative methodologies, such as statistical and narrative methods, time, language, generation, gender, and individual versus collaborative research. In this section, data relating to these aspects of methodology are presented, followed by a brief discussion about some of the associated ethical implications.

Qualitative/quantitative methods

When looking at health and community in the CUS project, there are researchers who are looking at historical statistical information and those who are interested in contemporary narratives related to health. In looking at this issue from a qualitative research perspective, often it is a depth perspective or narrative that is meaningful and relevant to the researcher. However, from a quantitative perspective, trends and patterns over time become the significant arbiter of meaning. One participant speaks of these tensions in attempting to create shared meaning across statistical and narrative knowledges:

> [One researcher] is looking at the statistics …and then [another researcher] is interested in the people behind those statistics and how it is affecting the community. So he can ground those statistics, he can bring other stories, some of the missed statistics, or can correct some of them in some ways.

How to respect multiple ways of knowing, how to convey the significance of each of these different perspectives to each other, and how to make sense of conflicting data, pose challenging questions in the translation between quantitative and qualitative ways of knowing. When scientific quantifiable knowledge is used as "the" measure of knowledge, and when local or Indigenous qualitative knowledge is seen as either supporting or refuting scientific quantifiable knowledge, then it is not a democratic exchange between equally distinct and valued ways of knowing. If one type of knowledge is always being translated to the other, (for example, if French is always being translated into English, but not the other way around) then the translation of knowledge becomes a reductive exercise rather than an opportunity for equal exchange. Data findings suggest that opportunities for equal exchange are both present and absent. Opportunities to explore these inequalities and suggest alternatives exist in the relationships between individuals when

mutual trust and respect are present. However, as a larger team and group, although opportunities exist in structured panel presentations and informal CUS social gatherings, often there are pivotal individuals who are absent from these CUS gatherings. As well, some individuals may feel more silenced than others in these group formats. One value of interdisciplinary research projects such as CUS is that it presents these translation challenges that need to be faced and grappled with.

In their study about graduate students' perspectives on qualitative and quantitative methodologies in the department of psychology, Rabinowitz and Weseen (1997) describe the debates surrounding these differing methodologies as having become conflated with the larger academic "culture wars." They suggest that what might pass for moderation or graciousness towards qualitative research by those on the quantitative side of research may well be the product of profoundly unequal power relations between the two camps.

Since attitude impacts a team's culture, perceived superficial respect could negatively impact communication and trust amongst team members. Exacerbating this tension is perceived inequality by some of access to resources by qualitative researchers. To a large degree, positions, jobs, contracts, grant monies, journal space and other forms of professional power and prestige have rested and continue to rest in the hands of traditional (quantitative) scientists. Despite inroads made by the critics of science, traditional science still commands great respect throughout academia and society, and traditional scientists form a large and powerful fraternity (Rabinowitz and Weseen, 1997).

Time

Another interdisciplinary challenge relating to research methodologies requires the accommodation of differences in the time frames of research. Research, depending on whether it is quantitative or qualitative, positivist or constructionist, lab-based or community-based, takes a differential amount of time to produce findings and results: "Natural scientists have a very straightforward progression of things that they do. It is easy to determine. Social science … may take time to get into a community. It may take a couple of years to build the trust in the community, to do the interviews." This participant highlights this difference in time frame, and also demonstrates how these temporal differences associated with methodology can create tensions within the project, particularly when collaboration between the natural and social sciences is required: "Natural scientists often find the social science bit real slow. … Social scientists often feel discouraged at the same time the natural scientists are feeling impatient."

Two of the ethical considerations around the issue of time relate to the funding of research and the interconnectedness of research within CUS. First, there is concern around the differential valuing and funding of research depending on academic discipline and research methodology. Traditionally, the larger monies have been granted to those in the "hard" sciences, for a variety of reasons and needs. The amount of grant money available for those working in the social sciences has been significantly less. Although the amount of time it takes to establish relationships, collect data, interpret, analyze and write up the findings in qualitative research takes a significantly longer time to complete than in quantitative or statistical analyses, this work may not be recognized or valued in terms of commensurate funding dollars. If establishing continuing relationships and

training community members is part of ethical community-based research, and yet if there isn't sufficient funding to establish and maintain those connections and programs, then this differential granting limits the degree to which social science researchers can fully engage in ethical research. For example, in a discussion about funding for graduate students who are research assistants on CUS, it became obvious that those in certain academic departments were granted significantly more money than others for the same amount of time and hours required. This partially reflects cultural differences in the ways in which graduate students are funded depending upon the department and individual faculty members. However, this differential funding also partially reflects the valuing of certain types of research over others. Second, CUS is a team project with a specific time-line for producing research outcomes. Many of the research projects within the team are connected in some way to each other. Therefore, if one aspect or researcher takes more time, there may be potential negative outcomes for that researcher or the project as a whole. For example, if academic currency is synonymous with publishing and research grants, and if it takes social scientists longer to publish than natural scientists, this tends to result in inequitable distribution of funds and resources, potentially creating tensions or ethical compromises within the team.

Language

A further challenge associated with interdisciplinarity is related to language and understanding each other's vocabularies: "Language, and terms and meanings were a big problem at the beginning of the project." Some participants have reflected on this particular linguistic challenge in understanding one another as a cultural difference in terms of words versus visual representations of meaning: "It is a difference in culture that

we natural scientists are generally more visually oriented." Another participant experienced the translation of technical information into lay language as a personal challenge: "Natural scientists work with symbols and squiggles. Social scientists use words all the time. Humanists deal very much with ethics. It does happen that a respected team member says 'I haven't understood a word you've said in the last 15 minutes.'" A similar view offered by a different participant also spoke to comprehension difficulties: "To natural scientists, diagrams and maps are part of what we do. So, to read something … that is full of verbiage, and I would probably consider us reasonably intelligent, we have great difficulty understanding what is being said." Another participant saw this challenge as an invitation to begin inquiring more deeply into each other's particular field of study: "Basically, we don't read each others' literature. We obviously have to start to understand each others' vocabularies, understand each others' theoretical perspectives, and understand each others' methods."

The translation problem is made more difficult by the language problem, which arises because the same words are used in quite different ways in different disciplines. Each disciplinary (and interdisciplinary) community has a different way of speaking about topics and the conduct of its research (Salter and Hearn, 1996). This different way of speaking is made up of the technical terminology, but also of the manner in which information gains credibility, the order in which information is presented, the points of reference considered appropriate, and the implicit agreements about what needs to be said and can be profitably taken for granted. The problem is not simply one of different terminologies but of understanding the significance of what is being said in each case. Specific terminology is often associated with a particular research tradition, with certain

words having a highly contextualized meaning within that tradition. For example, words like "validity," "mind," "research ethics," "democracy," "objectivity," "neutrality," "feminism," "self," and "titration" are associated with different meanings in different disciplinary contexts. Without the handy reference points embedded in the arguments of each discipline, others fail to make the connections between "the words being uttered and the meaning intended" (Salter and Hearn, 1996, pp. 141-142).

The existence of essentially contested concepts in all disciplines complicates the language problem considerably. Especially when a word or phrase, such as "sustainable development" acts as a vehicle representing conflicting paradigms and social values, seeking out an appropriate definition to effect a translation from one disciplinary context to another is complicated, and may not be desirable (Hammond, 2002). In terms of ethics, terminological battles about the ownership (and thus the meaning) of particular words "displace the more fundamental issues at stake" (Salter and Hearn, p. 145), such as an analysis of power. Differing interests attempt to fill this gap of interpretation – to fix the meaning of words and concepts in such a way as to support their version of "reality" or "truth" (Foucault, as cited in Salter and Hearn, 1996). For example, definitions regarding health have been one debated process – to make the definition both broad and bounded.

Generation and gender

One of the participants commented on the differences between the "old and new guard" of academic researchers. For this participant, the older generation of researchers are "of a certain gender," meaning male, thus raising the issue of gender. In terms of

generation gaps in the team, another participant spoke about the difficulty in working outside of one's area of expertise:

> You know, when you are my age and you've been working inside a discipline for thirty years, and you know it inside out, upside down, and you are highly respected in that one little box, it is really hard to go out into a big team and have to sit there knowing that you know nothing, and you don't even understand what is going on.

This quote contains themes of trust, vulnerability and shame. Trust is needed on many levels: that one will still be respected, that others will help you to understand, that others will share their knowledge, that others will not take advantage. In turn, these trust elements point to the vulnerability and attendant shame that one may experience in feeling exposed by admitting a lack of knowledge or understanding, given the traditional role of having expertise that academics often inhabit.

Another participant highlighted this academic generation gap and pointed to how some of the differences in training impact the team: "The researchers in charge of the project right now are coming from places where things were very separate. I think young researchers today are being trained to be interdisciplinary. … [One young researcher] said, 'I don't think in a box. There is no box.'"

The issue of gender raised earlier about the "old guard" of the university institution suggests the need to understand the impact, if any, these differences have on research method and practices, especially in interdisciplinary teams. From a feminist analysis, age and gender have much to do with power and authority within academe (Hubbard, 1988). Access to publishing, promotion, and funding are resources controlled by those in positions of power who act as gatekeepers to these resources. Although educational institutions may be more liberal than the society at large, they are strong

pressed toward conformity to the status quo (Makoski and Paludi, 1990). For example, many feminist scholars are also social activists, and this may bring them into conflict with peers who have been socialized to believe that advocacy and scholarship are incompatible (Unger, 1982, cited in Makoski and Paludi, 1990). Funding tends to go to already established scholars. Scholarship, or publishing, has more weight than other faculty activities when it comes to hiring, promotion, and tenure, highlighting the privileging of status quo in academia.

Research culture

Collaborative interdisciplinary research necessitates that to some degree, academics must be able to participate in a team setting, which involves shifting from an independent and competitive research culture to a collaborative one. Disciplinary research is traditionally an individual venture, with each research project often designed and carried out with one principal investigator. However, those involved with CUS have had to accommodate to a team culture, in which there are researchers studying separate, yet related topics, under the overall umbrella and project management of a principal investigator. One participant describes a difficulty in switching from an individualistic research culture to a team one: "It is the weakness of academics, or team research, where they come from a culture where they basically do their work as individuals with choices over where they do research. And not many people are willing to give up their previous choices." Another participant refers to the consequences for team research when there are individualistic researchers involved: "You could end up with people competing in terms of their projects instead of collaborating. Or you will lose somebody from the team, or you will lose a chunk of work." Considerable time and guidance are needed for

successful integration of interdisciplinary research and there are growing pains involved in this process.

North American society has a long history of valuing individual achievement and success in competition. These values are reflected in the academy in the emphasis on individual work. For example, single authored publications are given prestige and value over co-authorship (Makosky and Paludi, 1990). In addition to contending with tensions between individual and collaborative research, ethical concerns relate to the multiple roles and responsibilities involved in team research. These roles and responsibilities become even more complex when researchers are involved in long-term collaborative research being conducted in shared community sites. Not only are there responsibilities to participants, to funders, to their discipline, to graduate students, and to their own sense of integrity, but team research also engenders responsibilities to other colleagues, whose work and professional reputations are, to some degree, dependent upon each other. When taking part in a nationally funded interdisciplinary research team, there are potential consequences if one member does not fulfill his or her responsibilities. For example, there may be non-continuance or a reduction of funding or reputations damaged as a result.

Other translation challenges relate to the content and geographic scope of the project – its research focus and its geographic scale. Both epistemic and geographic scope involve the challenge of communication – not only across theoretical divides, but also amongst researchers working at a distance from one another, within and between the East and West coasts of Canada. A further integration challenge necessitating translation

is incorporating this interdisciplinarity into university institutions that have evolved from foundations in a disciplinary structure.

Academic Research to Policy

CUS is a project that involves multiple government and non-governmental organizations, communities, and universities. Academic institutions tend towards producing research for the academic community. When working with community and government partners, it becomes necessary to translate research outcomes into language that is accessible to those outside of the discipline or profession. Crossing these contextual boundaries requires that there be translation from research to policy: "How are you going to turn this scientific research into policy? … I see this as the biggest challenge for CUS." Participants have also shed light on some of the tensions that arise when outcomes need to be translated into policy: "I think a lot of us can do a pretty good job of some analysis and recommendations on our sub-components, but I don't think we have the capacity to come up with overall recommendations." Differences within the team about what constitutes appropriate recommendations also contributes to the difficulty in translating heterogeneous and possible contrasting academic research into coherent policy recommendations:

> Even within the health context there are some quite different views from different disciplinary perspectives on what constitutes the primary determinants of health. And, what therefore should be our approach to interventions, policy related ones especially, that would bring about improvements in health?

These different viewpoints about what and how to translate research into policy point to different values that researchers bring into play when proscribing recommendations to government and communities. For example, researchers may differ in their valuing of certain aspects of (short-term, long-term, technology, economy, culture, environment,

resources, etc.) the problem/solution. The ways in which these different values are accommodated within interdisciplinary research has ethical implications for all involved.

In addition to values in the translation of research to policy, participants posed questions about the effects that political time pressure might have on the quality of the research results: "The closer you get to contemporary political questions, the more the time scale happens. And then what does that do for useful theoretical research? Does it become question of the day driven?" Another spoke about this issue of political pressure: "At the last Dunsmuir meeting, … one person said, 'We need recommendations now.' That is the problem with government regulations, they don't want to wait for the data."

Salter and Hearn (1996) suggest that when the translation problems are encountered in the realm of funded science between researchers and those who want to use research for purposes quite different from the usual academic ones, the translation problems can threaten the autonomy of the research enterprise. Compounding this problem is the fact that policy-relevant research is so much in demand and its problems so infrequently recognized. Bridging the gulf between academic research and its application to social problems is always much more difficult than is commonly understood. Practicality or relevance cannot be achieved simply by bringing members of the academic and nonacademic communities, or policymakers and researchers, together any more than interdisciplinarity can be achieved by simply bringing scholars from two or more disciplines together. In practice, the relationship between the research community and policymakers is likely to be a troubling one. Few researchers oriented to the scholarly exercise actually participate in giving policy advice, and those who do often express profound dissatisfaction with the result (Salter and Hearn, 1996).

The science required by policymakers is often one that requires a high degree of concreteness in the design of the research and it its conclusions, while most academic research is not capable of producing that concrete closure. However, policymakers are often not educated about the limitations of research in this regard. Rather, some research, sub-fields, or disciplines that are capable of producing something akin to closure are highlighted, to the exclusion of others. Consequently, when policy makers seek out scientific advice, certain fields of study or methodologies are privileged. The idea that reality does not exist unless it can be counted exemplifies the type of knowledge that is privileged when it comes to translating research into policy. Furthermore, in the study of mandated science, the interpretations of findings are likely to differ, depending upon who is interpreting the data. Translation problems arise when academic work is popularized for nonacademic audiences, including policymakers. Although familiar terminology is used, it has different connotations in each context. Moving information from one discipline or context to another is never easy and often results in distortions (Salter and Hearn, 1996).

Geographic Scope

As part of the research design of CUS, coastal communities are the sites of in-depth research components carried out from a range of multiple disciplinary perspectives. One of the translation challenges is related to the flow of information from one geographic context to another. This requires an ability to take one's locally specific research and apply the findings and lessons in meaningful ways between different coastal communities:

> A team like this not only has all those different disciplines in it, but also has two different coasts, with two different political cultures, and two different historical

> cultures. When the natural marine scientists on the East coast are used to looking at cod, and the marine scientists on the West coast are used to looking at salmon, do they have anything to say to one another?

Making these connections is complicated by the existence of different social, political, environmental, and cultural contexts in which specific research findings are embedded. Translating the local experience into information that is applicable and relevant in other regional contexts is similarly challenging for academics used to working within narrow fields of inquiry: "In the past I only saw my research as relevant within a BC context. And now I find myself wondering what the connections are with the East coast." On a macro-scale, another participant spoke of translating local research findings into results that could be used at a national level: "Would something like an intense archaeological study of one small bay, which represented 200 or 300 years of history, and which is a metaphor for Basque fishing in the Maritimes, be used to teach at a national perspective about the experience?" This involves taking specific locales and understanding their experiences not only at a provincial and bi-coastal level of analysis, but also a national or global one.

Attempting to integrate and compare knowledge from different political, environmental and social cultures, carries with it assumptions of similarity. This may result in an imposition of comparability that may not exist. Similar to the language problems across disciplines, where the same words may take on different histories and meanings, problems of language and interpretation of meaning across coasts are similarly complicated. For example, the experience of social institutions such as welfare may be culturally and socially constructed very differently between the East and West Coasts of Canada. These institutions, though serving the same purpose, may be experienced and

conceptualized very differently by Canadians living on either coast. Some ethical implications of this may be related to miscommunication around the shared use of terminology without sharing in similar understandings of that concept. Alternately, misunderstandings and judgments about these cultural differences may also occur as a result of these different discourses.

Summary of Knowledge and Translation

In this study, participants have referred to scientific knowledge (including debates surrounding positivist/empirical and constructionist viewpoints), lay and Indigenous knowledges, and knowledge for a variety of purposes (i.e. benefits to communities and researchers, and for policy, etc.). They have also talked about differing worldviews and how to integrate this diversity into a coherent picture. Given that power and knowledge are inextricably connected (Foucault, 1980), it becomes necessary to explicate some of the ethics involved in the attempt to work within contrasting, and often competing, knowledge paradigms. There is inherent privilege in the general production of knowledge itself and in the production of knowledge about others. How knowledge is conceptualized and recognized and who produces knowledge and for what purpose, are ethical questions relating to the power and control of knowledge itself. Power, within modern societies, is intertwined within these knowledge and truth hierarchies, operating diffusely through social relations (Fine and Kidder, 1997, p. 639; Foucault, 1980). These ethical issues relating to the power and authority in the social construction of knowledge are reflected in the theme of knowledge in CUS.

Similar ethical considerations exist when translating research into policy and across geographic regions. When working with community and government partners, it

becomes necessary to translate research outcomes into language that is accessible to those outside of the discipline or profession. Some ethical implications of this may be related to miscommunication around the shared use of terminology without sharing in similar understandings of that concept. For example, verifiability of research can mean different things to different people, and these different understandings may be diametrically opposed and mutually exclusive. Alternately, misunderstandings and judgments about these cultural differences may also occur, unconsciously privileging and oppressing one discourse over another, and potentially reifying and reducing particular cultural groups' claims to knowledge.

Participants spoke about different aspects of qualitative and quantitative methodologies, such as statistical and narrative methods, time, language, generation, gender, and individual versus collaborative research. How to respect multiple ways of knowing, how to convey the significance of each of these different perspectives to each other, and how to make sense of conflicting interpretations of data, pose challenging questions in the translation between quantitative and qualitative ways of knowing. When scientific quantifiable knowledge is used as "the" measure of knowledge, and when lay, applied, experiential, local or Indigenous knowledge is seen as either supporting or refuting scientific quantifiable knowledge, then there is not a democratic exchange between equally distinct and valued ways of knowing.

Language complicates the issue of translation across contexts because the same words are used in quite different ways in different disciplines and outside of the university. The problem is not simply one of different terminologies but of understanding the significance of what is being said in particular situations. Without the

readily available reference points embedded in the arguments of each discipline, others fail to make the connections between the words being used and the meaning intended (Salter and Hearn, 1996, pp. 141-142). In terms of ethics, terminological battles about the ownership and meaning of particular words also reflect political power struggles among different interest groups.

Overall Summary of Ethical Considerations

Project Administration: One ethical consideration raised in the theme of Project Administration is that of responsibility for team processes such as organization of the research, leadership style, collaboration, communication, decision-making, fiscal accountability, and outcomes of the research project. Balancing individual and group needs, facilitating collaboration, and establishing communication networks that assist both collaborative information sharing and relationship building are tasks that need to be included in the management or administration of large-scale interdisciplinary research. These task and process issues necessitate leadership sensitivity to interpersonal relationships and overall team culture or atmosphere.

Research Design: Ethical issues are inherent in the design of research in that it is here where ethical issues relating to confidentiality, anonymity, informed consent, benefit and harm (and for whom), multiple relationships and roles that researchers are involved in (with participants, colleagues, professional bodies, government, funders, etc.) and data interpretation, ownership, access, accuracy, and representation (Kvale, 1996) are first encountered and addressed. In this study, differences in researchers' epistemological standpoints and values about how to ethically design and implement research studies were evident. Participants spoke about the theme of Research Design in their ideas about

the structure of the project into Arms, the architecting of common goals and purpose into the configuration of research components, the collaboration across geographic regions, and the role of graduate students. However, participants differed in their values and ideas about how to achieve rigorous, ethical, and responsible research.

A common thread running throughout these Research Design issues is the centrality of relationships in negotiating and resolving differences about implementing particular aspects of research design. In terms of interdisciplinary project design, in addition to planning the structure, organization, purpose, content, and scope of a project, time also needs to be incorporated into the design at the proposal stage (Marshall and Rossman, 1995) in order for collegial relationships to develop so that respectful and mutual cross-fertilization of ideas and research can occur. Maxwell (1996, p. 67) emphasizes that these relationship concerns are "design decisions," and not something that merely happens along the way of conducting the study.

Research Contexts: The section on Research Contexts elaborates on some of the ethical issues raised in the Research Design section, discussing them in the context of community, funded research, and university institutions. From within the context of community-based research, ethical issues about the degree and nature of including community/participants in the direction of the research, and about the complexities in obtaining initial and ongoing consent were expanded upon. In funded research, researchers are often caught in a web of competing and conflicting interested stakeholders. Kvale (1996, p. 118) identifies "scientific responsibility," "independence of research," and "relation to subjects" as three competing values that must be negotiated by researchers. In the context of university institutions, some of the ethical issues raised

related to control and access to resources, such as publishing opportunities, facilities, funding, and promotion. Interdisciplinary researchers do not always have commensurate access to such resources in the ways that disciplinary-based researchers do. Traditionally, specialization has been granted a privileged status in academic institutions, suggesting the existence of ethical concerns relating to power and privilege.

Interpersonal Dynamics: Individual considerations such as one's attitudes towards collaborative teamwork, philosophical orientation towards interdisciplinary research, motivation, and commitment to fully participate were identified as relevant issues in the process and practice of interdisciplinarity. Sharing a vision and benefiting in some way from the team influences one's involvement and commitment to the process. In addition, the development of trust and respect over time contributes to the nature of relationships that people have with one another. These relationships form the basis from which the interdisciplinary research processes are built, and contribute to the overall team culture. Consequently, fostering respect and understanding among team members is a critical aspect of ethics in interdisciplinary research.

Knowledge and Translation: Ethical considerations involved in Knowledge and Translation relate to epistemological, methodological, and socio-political concerns. There is inherent privilege in the general production of knowledge and in the production of knowledge about others. How knowledge is conceptualized and recognized and who produces knowledge and for what purpose, are ethical questions relating to the power and control of knowledge itself. These ethical issues relating to the power and authority in the social construction of knowledge are reflected in the issues raised by participants.

Participants spoke about different aspects of methodology, such as qualitative and quantitative approaches to research, time, language, generation, gender, and individual versus collaborative research. How to respect multiple ways of knowing, how to convey the significance of each of these different perspectives to each other, and how to make sense of conflicting data, pose challenging questions in the translation between these different approaches to knowledge. When one type of knowledge is used as "the" measure of knowledge, and when alternative ways are seen as either supporting or refuting that privileged type, then a democratic exchange between equally distinct and valued ways of knowing does not exist. Language complicates this issue of mutual translation and understanding across contexts.

Chapter Five

Discussion and Implications

> In an infinite universe, ignorance is infinite, too. So what makes me think I'm going to figure out anything during this brief lifetime? Maybe, instead of following my breath when I meditate this morning, I'll follow my ignorance: How it comes unbidden. How it fills me. How it connects me to everyone else who's alive. O ignorance, be my teacher. Teach me to love what I'll never understand (Safransky, 2000, p. 47).

Personal Process: An Interdisciplinary Experience

The theories and philosophies that have influenced my study are entwined with the personal relationships I was involved in throughout graduate school. At times, I have felt lost in a world of theories and ideas from an array of disciplinary perspectives that alternately intrigued, baffled, and inspired me. The evolution of this thesis has emerged alongside my theoretical interests, as I engaged in conversations with CUS graduate students and friends from other departments. These theoretical influences included: psychodynamic and family systems theories, philosophy of language, eco-philosophy, feminist philosophy and epistemology, post-modern ethics, constructivism, and Eastern philosophies of ethics.

One of the struggles throughout this journey has been to define my theoretical perspective. A question I posed to myself along the way: "How do I accommodate the difference between an Eastern/mystical philosophical view of ethics, which emerges from a non-dual/one-ness worldview, with an alternate worldview that says ethics exists because of, and in response to, the uniqueness of the other?" Like saying that the world is both round and flat, or that ethics must be either absolute or relative, I have had to wrestle with knowledge systems that are seemingly incommensurate. I don't know that I

have adequately answered this dilemma, other than to create the space within me to hold alternate perspectives about the same issue and to be able to shift perspectives amidst multiple standpoints. In addition to being theoretically influenced from a variety of perspectives, my venture into other disciplines in search of a thesis committee was enlightening and frustrating, possibly mirroring challenging and rewarding experiences of (CUS) researchers doing interdisciplinary work. Enlightening in the sense of wonder and excitement at the prospect of learning about other disciplines through interactions with potential committee members. Frustrating in the sense of being disappointed when my hopes, expectations, and assumptions about the process did not mirror the realities of my experience.

Initially, my understanding of ethics was limited to the Canadian Psychologists' Association decision-making model, *Canadian Code of Ethics for Psychologists* (2000), which is based upon four standard principles (respect for the dignity of persons, responsible caring, integrity in relationships, and responsibility to society) and the tri-council/University of Victoria's human subjects research application (http://www.research.uvic.ca/Policies/Default.htm). As ethics was going to be one focus of the thesis, it seemed necessary to familiarize myself with the philosophy of ethics. As I journeyed into the philosophy department to speak to different professors, I was struck by the abruptness with which I was received. One message I received was that ethical theory was equivalent to "mental masturbation." Another message was that if I was an "ethical relativist" I should go to the English department. I left the philosophy department feeling unworthy and stupid, as if I had been name-called. What was an ethical relativist? And if I was interested in ethics, which I thought was rooted in

philosophy, why was I being passed off to the English department? Thus began a deeper education about ethics and my own identity. I struggled with ideas about absolute and relative ethics, and my beliefs about my role as a counsellor. If my beliefs were rooted in an absolute sense of what is good and right, how could I help others come to their own understanding about what is good and right for them, without imposing my own beliefs? I came to understand that as humans sharing a common world, there is universal basis for ethics, however differently "right" and "good" may be interpreted.

Ethics, in a practical sense, was also present throughout my research process. From the inception of the study through to the presentation of the written manuscript, ethical issues have been present. Primarily, my involvement with CUS implicated me in dual roles as a research assistant and participant-observer. Furthermore, my supervisor was a researcher with the CUS project and thus worked with all of the participants. This further complicated the issue of anonymity and confidentiality of participants. To limit the complications relating to multiple roles, my tasks as a research assistant did not require relating with other CUS researchers or community members. To minimize the risk of participant exposure, I have been careful to submit data to my supervisor that has been stripped of personally identifiable information.

Occasionally, during the analysis and write-up, it did not always feel natural or easy to make connections between certain data issues and their ethical overtones. In part, my struggle with this reflects one of the tensions that emerged within CUS, particularly noticeable in the realm of contrasting methodologies represented within the team. Certain methodologies, particularly qualitative ones, assume that ethical issues are process issues, imbued in all stages of research from conception, design, collection,

analysis, interpretation, and representation. Other ways of conducting research seem to view ethical issues in research as a stage to be resolved, and then set aside, in the early part of research design. Often, this means demonstrating how issues of consent, confidentiality, anonymity, and risk will be handled in the applications to institutional or professional review boards. In this second description of research, there is a disjuncture between ethics and experiences – rendering ethical considerations distinct from ongoing experiences in research.

Similarly, there were times when the links between interdisciplinary issues or experiences and ethics were more obvious than others, such as the power dynamics in the translation and application of knowledge from one context to another. Other times, these links were obscure and challenging to convincingly demonstrate, such as the links between unspoken experiences and ethical considerations. In these moments, perhaps it can be read as a limitation of this writer's conceptual and applied knowledge in the ways in which ethical dimensions are part of certain issues. Or, perhaps it is a finding of the study that not all experiences and issues raised by participants involve or necessitate the exploration of ethical dimensions. An alternate interpretation of this finding suggests that the ways in which ethics in research, particularly interdisciplinary research, are understood and conceptualized are too narrowly defined to make sense of this disjuncture between experiences and ethics. If this latter suggestion is a credible one, it points to the need to expand the boundaries delineating ethical discourse and disciplinary/interdisciplinary paradigms – transforming the edges of what is currently known or understood about what constitutes ethics in interdisciplinary research. As David Abram (1996) emphasizes in his book, *The Spell of the Sensuous: Perception and*

Language in a More-Than-Human World, the boundaries of a living body are open and indeterminate, more like membranes than barriers, defining a surface of metamorphoses and exchange. Similarly, boundaries between discourses, disciplines, and other defined bodies of knowledge, are also permeable, requiring border crossings, translations, negotiations, and ultimately, change.

Implications of Data Content and Analysis

Based on the findings of this study, one could argue that successful collaborative team research depends upon interpersonal considerations involving the building of trust, maintaining good relations, honouring reciprocity and being sensitive to ethical issues such as power and representation, not only between researchers and participants, but between the researchers themselves.

Not only are researchers generally concerned with ethics in research relating to the principles of informed consent, confidentiality, and benefits to communities, researchers involved in collaborative interdisciplinarity are also deeply implicated with each other in multiple ways (team members working together, independent researchers working at cross-purposes, competitors for resources, supporters, adversaries, friends, etc.). In signing on to such a project, independent researchers are also making commitments to their colleagues, to the enterprise as a whole, and to the communities and non-academic partners who are also invested in the project. What researchers do in their own project has implications for researchers elsewhere in the project. If an individual is over-budget, withdraws from the project, takes longer than expected, or has negative relationships with community members, then this impacts on the team in general. More

subtly, the attitudes that each individual researcher brings to the project also contribute to the culture of the group as a whole.

If one's attitude is partially influenced by one's disciplinary background, then the cultural milieu of academia as a whole, within which disciplines are nested, may play a meaningful role in the practice of ethical interdisciplinarity. For example, when research involves community-collaborations for the sake of collecting and incorporating Indigenous and local knowledge into more formal and institutionalized structures (such as universities and government), respecting the validity of non-academic knowledge is one means of practicing ethical research. With its disciplinary organization, privileging the status quo of "hard" sciences and positivist research traditions, the context of universities themselves influences researchers' experiences of interdisciplinarity. It is difficult to have individuals appreciate and value each other in mutually equitable ways when the system within which they practice research differentially rewards certain types of science over others. Therefore, attention to process, in addition to task, is especially important for interdisciplinary researchers. These processes designed to facilitate mutually equitable and respectful research could include opportunities to explore the assumptions embedded in one's epistemological stance. Time and space could be allocated to discuss questions, concerns, observations, and beliefs about knowledge and scientific research, and how these differences impact the team as a whole. One potential of a project like CUS lies as much in searching for answers to particular research questions as it does in developing collaborative interdisciplinary research mechanisms for future large-scale projects.

Valuing Interdisciplinarity

Valuing interdisciplinary research for a variety of purposes is a definitive finding of this study. Drawing on the data contributions of the participants, interdisciplinary research has the potential to broaden horizons - personally, professionally, theoretically, and concretely. Personally, in terms of the ways in which researchers are encouraged to forge conceptual and interpersonal connections, engaging in relationships with other academics, community, government, and industry partners. Professionally, requiring that researchers consider alternate epistemological and methodological paradigms, challenging the hegemony of any one privileged discourse. Theoretically, broadening the landscape of knowledge. Concretely, in the application of academic research *in vivo* - in the contexts of community, government, and nature and in facing the challenges associated with interdisciplinarity, such as the translation of knowledge.

Valuing interdisciplinary research from the perspective of a participant-observer, the practice of communication, in all its forms – technological, interactive, didactic, reciprocal, dyadic, adversarial, collegial – comes to the fore. In whatever form, interdisciplinary communication necessitates wrestling with linguistic differences and barriers, questions of meaning and intent, and negotiations of disciplinary and non-academic border crossings. Interdisciplinary research teams, the size and scope of CUS, include multiple methods of communication to manage the complexities of information sharing, collaboration, and geographic distance. Aspects of certain styles of communication processes and methods may work for particular individuals and in particular contexts. However, in facing the linguistic, communication, and heuristic challenges associated with interdisciplinary research, opportunities for improving these

channels of communication and understanding are fostered. For example, the findings in this study suggest that both technological and human exchanges are beneficial and necessary to facilitate interdisciplinary collaboration, intellectual synthesis, and research outcomes.

Negotiating Relationships

Further implications of the data for future interdisciplinary research relates to the above mentioned topics of relationships, communication and technology. In large-scale interdisciplinary projects, opportunities for face-to-face human interaction contribute to the bridging of cultural/disciplinary barriers in ways that technology cannot. While technology facilitates certain types of communication, such as information sharing, it privileges scientific knowledge and may hinder other types of valuable communication, such as synergistic creativity emerging from unstructured dialogue or give-and-take reciprocity (Franklin, 1999) – essential for moral communities (Christians, 2000).

Process, as well as task, demands attention in collaborative teamwork (Johnson and Johnson, 1997). Without positive working relationships, the research itself may be compromised. It is the human context of communication, and not the technologically mediated context, that lays the foundation for meaningful exchanges and collaborations. Therefore, attending to processes that foster human relationships, such as time and opportunity for discussions about dynamics, issues, roadblocks, challenges, benefits, and outcomes of interdisciplinary research is an important element to build into future collaborative projects. Not only is this of utmost importance in establishing communication and relationships at the beginning of a project, it is also necessary to

continue to meet process needs in order to maintain and promote future continuity of these collaborations and mutually fruitful relationships.

In a world where there is a sense of urgency regarding matters as critical as human and environmental coastal community health, and where there is a government demand for policy recommendations, there is pressure to produce results. In addition, when resources such as time and money are limited, prioritizing tasks is necessary. However, the findings of this study suggest that it would be unwise to undertake large-scale interdisciplinary research without significant and ongoing attention to process and team-building elements such as fostering a team culture that is conducive to taking risks and learning, establishing open, honest, respectful, and mutual communication and interpersonal connections. These process elements form a foundation within which interdisciplinary collaborations occur. These relationship concerns are "design" concerns (Maxwell, 1996, p. 67) that need to be taken into account when planning and funding such large-scale interdisciplinary research.

Paradoxical Tensions

Knowing/not knowing

The crossing of cultural divides in academia, such as my foray into the philosophy department, has also prompted me to wrestle with my ethical position and helped me to become aware of my own disciplinary cultural milieu. I discovered that to go out into certain disciplines in the academic world and "not know" felt neither valued nor welcomed. I wrote in my journal: "You need to have a foot up. You can't be trying to get on the ladder of knowledge and still be valued." In contrast, my experiences within the educational psychology department have felt radically different. It has been here that I

have struggled to let go of the need to know, and instead become more comfortable with not knowing: to be able to let go of knowing, and therefore be open to discovering. This has been my learning in both abstract theoretical and applied contexts. Particularly as I sit with clients in a counselling relationship, letting go of the need to know creates space within myself for the being of the other to emerge and take shape, without wholly imposing and projecting preconceptions. In academic discourse, one is rewarded for knowing, and judged harshly for not. Comments from participants in the study suggest that this mirrors the experiences of interdisciplinary researchers who venture beyond the role of expert into spaces of not knowing, in order to learn and understand about their colleagues' different ways of knowing and engaging in research.

Fostering academic spaces and environments in which not knowing is valued could contribute to creating a culture of openness and honesty in which it is safe to risk in order to learn. When the perception and experience is one of judgment for not knowing, it becomes harder to ask questions of each other. If safety and freedom from harm are of paramount importance for participants in research, then it follows that researchers also need safety and freedom from harm in order to practice research. As a student one is expected to be open to learning, receiving, and discovering knowledge, while established academics are more often cast in the role of expert or specialist. Therefore, to step beyond the boundaries of one's role or area of expertise can be a risky venture, potentially rendering academic researchers vulnerable. Two years into CUS, one member acknowledged that he was reluctant to ask what the social scientists meant by "health ecology" because he felt he should have already known this and feared judgment from others.

This instance points to a theme that has emerged in various guises throughout this study – that of tension between definitional clarity and ambiguity. While on the surface it would seem that definitional clarity is critical to knowing and understanding, this was not always the case. During the data collection stages of the study, I found that defining certain concepts, such as interdisciplinarity, was not necessarily helpful, in that defining a dynamic process stifled it. In actuality, it seemed that the opposite was true – ambiguity of terms like "health" and "interdisciplinarity" potentially allowed a multiplicity of perspectives to be included, facilitating the inclusion and involvement of more voices. At other moments, it seemed as if definitional clarity was necessary to foster another aspect of knowing – that of understanding (in the instance of the person who was afraid to ask about the definition of health ecology). And yet, even knowing this definition may have been insufficient in achieving an understanding of this concept. Defining a concept contributes to an intellectual knowledge of the term, but may or may not have helped to understand the meaning, context and application of that term. For example, participants agreed that sharing a vision was a critical element in the effective practice of interdisciplinarity. Participants *shared vision* in terms of being community and health focused. However, participants did not necessarily *share understandings* about how to achieve aims defined by this community and health focus. Therefore, my initial rejection of definitional clarity as a significant concept, resulting in my dropping this line of questioning, was premature. This tension between knowing/not knowing and between knowing and understanding has emerged throughout the study, and has shown up in ways that were not initially obvious to me. In addition, issues of shame, vulnerability and trust are present in this theme of not knowing, potentially impacting many aspects of

interdisciplinary research processes, particularly collegial relationships. Additionally, issues of power are related to definitional clarity or ambiguity, as who defines what for whom is an ethical issue that has been previously explored in the context of knowledge and translation in Chapter Four.

Power/Powerlessness

Issues of power were intertwined throughout the interviews, analysis, and representation of data. Within the interviews, contrary to one common understanding that the researcher is often in the more powerful role (Fontes, 1998), I did not experience myself in the interviews as the one with power. Although I began with my own research interests and questions, some participants chose to define their own questions. Perhaps my experiences of disempowerment are partially related to giving up control in ultimately defining the questions, interviewing people in positions of power within the academic system, and learning about the topic as I proceeded. Although I have carefully confirmed the accuracy of the content in a variety of ways, how I have presented the material is very much a creative synthesis of the content presented by participants and my own perspectives and ideas about ethics. In this way, the data, as it has been represented, belongs neither solely to the participants nor to myself. Rather, the material has been presented primarily through my own understanding of the material, and therefore, the responsibility for its accuracy rests with me. In terms of representation, there has been an element of censorship throughout the project. I have been conscious that my supervisor and myself are involved in CUS in multiple ways and, consequently, there are ongoing relationships that need to be safeguarded. While the issues raised by participants have

been presented, data that could be personally and professionally sensitive and compromising have been withheld for the sake of respect, confidentiality, and anonymity.

This has impacted my interpretation of data particularly in terms of power issues. I have found it difficult to discuss certain aspects of the analysis related to power, in terms of CUS and self-reflexivity. From a reflexive stance, I have found it easier to highlight the ways in which I felt disempowered (during the interviewing) than it has been to discuss the ways in which I have experienced power (in the interpretation, analysis, writing, and structural organization of this study). Following my reluctance, I became aware that the fear of having to relinquish or share these powers motivated my disinclination to expose them – old "ostrich burying head in sand" maneuvers.

Understanding that the micro-experience is often a mirror of a larger macro-context, I then wondered about the ways in which I and participants have not discussed issues of power in terms of CUS. At times throughout the study, I have felt frustrated by a vague awareness that important ethical considerations related to power were not being openly discussed by participants, who, in my mind, should have had lots to say about this issue. Partially, this was an assumption that I needed to make conscious and question. Partially, this was related to discussions with graduate students and observations about processes within the project that were openly related to power differences. During the interviewing, I paid attention to differences in participants' dialogue and speech, such as voice inflection (emphatic, questioning, assertive) and expressiveness (monotonous, excited, passionate, bored) when discussing certain issues. At the end of this study, I am left with the knowledge that tensions relating to power and powerlessness are salient in my own study, in interdisciplinary research projects, and embedded in larger institutional

contexts: "All narratives are structurings of time and are therefore inescapably related to unconscious systems of ordering" (Thompson, 1987, p. 14). This theme relating to the tensions of power and powerlessness would be an interesting one to specifically address in future research about the nested hierarchy of contexts within which interdisciplinary research is practiced.

Limitations of Study

Caution must be taken in attempting to generalize qualitative research findings from the small size of this study (Anderson & Arsenault, 1990). It would be inappropriate to assume that the participants' views are shared by their Coasts Under Stress colleagues. The findings of this study present a mix between the participants' perspectives on interdisciplinary research and my own voice that has interpreted the data through an ethical lens, informed by constructivist and feminist theoretical orientations. In addition, the CUS project has changed and developed over the course of time in ways that I have not documented. My own involvement with CUS is limited to the first two years of its existence. At the time of writing this thesis, the CUS project will be heading into its fourth year. Therefore, the reader is advised that the data presented in this study relate only to early years of interdisciplinary projects, and do not reflect the issues that may currently exist.

Implications for Future Research

There are four recommendations for future research that flow from this study. First, as this study is primarily based on data collected from professors, faculty members, and post-graduate researchers, it would be worthwhile to explore ethical issues in interdisciplinary research from community partners' and graduate students' perspectives.

Much of my own understanding about the implications of the ethical issues raised by the participants has come from conversations about these issues with other graduate students involved in CUS. Perhaps as a result of their different standpoints within the hierarchies of power in universities, as well as from wrestling with their growing identity as academics, graduate students may be attuned to ethical issues in ways that have not been addressed in this study. Exploring dimensions and experiences of ethical issues in interdisciplinary research from community partners' or graduate students' perspectives would enrich the discourses surrounding the issues raised in this study.

A second theme to follow up in future research could include exploring and evaluating the application of non-reductive frameworks or mechanisms to understand and translate knowledge from one context to another, in mutually validating ways. As interdisciplinary research continues to be a valued means of addressing complex social and environmental issues, future research about the ways in which large-scale interdisciplinary research projects have addressed or resolved issues relating to knowledge translation would be very useful.

A third focus for future research could be to study the developmental processes of interdisciplinarity. Given that interdisciplinary research initiatives are organic and emergent processes that cannot (and should not) be fully prescribed, determined, or standardized, it would be valuable to study the evolution of successful (and unsuccessful) interdisciplinary research projects. This would allow those interested in implementing or participating in interdisciplinary initiatives to benefit from the learning and be able to assess and apply certain strategies that have proven effective and helpful in facilitating relationships, collaboration, and productivity.

Finally, a fourth recommendation for further research is to study and reflect upon interdisciplinary research teams as moral communities. As confirmed by the findings of this study, interdisciplinary research involves many cross-cultural aspects, such as differences in epistemological worldview, methodological means, researchers' standpoints within the university and communities, geographic sites, disciplinary expertise and interdisciplinary familiarity, etc. As evidenced by the interdisciplinary literature review, there is very little scholarship that looks at ethical issues, ethical theory, or relationships with regards to interdisciplinarity. Yet interdisciplinarity is becoming a prominent means to study complex social and environmental problems (Mendes, 1992). Coming to terms with the differences and difficulties in interdisciplinarity is a necessary task, both for the management of the project, as well as for the researchers involved. Therefore, exploring the ways in which this diversity is experienced, how relationships and understanding are fostered, the emergence of problematic issues, and the ways in which these challenges are addressed offer valuable insight to the study of interdisciplinary scholarship.

Conclusion

"Morally right action is [one] which intends community" (MacMurray, as cited in Christians, 2000, p. 149). Interdisciplinary communities are moral communities, and as such, the conventional view of ethics "needs to be ontologically transformed … [into a] model in which human action and conceptions of the good are interactive" (Christians, 2000, p. 149). The task of ethics in interdisciplinary research cannot be reduced to professional codes that uphold normative principles, institutional review boards that assess applications for research with human subjects, or other non-contextual,

institutional models that assume a neutral or objective stance towards ethics. Rather, a more fitting social or relational understanding of ethics rests upon integrating everyday experiences, beliefs, feelings and judgments into an organic and contextual whole, in terms of human relationships and social structures (Christians, 2000). This places ethical concerns in interdisciplinary research within the shared space of an intentional community, rooting ethical considerations in the primacy of human relationships and everyday experiences.

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Appendix A

Participant Recruitment Letter

Experiences in Interdisciplinary Research

RECRUITMENT LETTER

Dear Possible Participant:

My name is Sarah Corrin and I am a graduate student in Counselling Psychology at the University of Victoria. I am conducting research for my thesis about experiences, meanings, and challenges in doing interdisciplinary research on the Coasts Under Stress (CUS) project. My interest in this topic stems from a desire to understand the experiences of working on such a diverse interdisciplinary research team, particularly how different perspectives contribute to the meaning, benefits and challenges that arise. This research will be of value to those who are working in interdisciplinary contexts and to those interested in the management and administration of such teams. My hope is that this reflexive study of research will generate awareness of the various layers of subjectivity and meaning that individual researchers bring to interdisciplinarity.

I would be very interested in hearing your thoughts and observations about your experiences of interdisciplinarity within the CUS context, and the meaning that your research has for you personally, professionally, and in the larger community.

The interview process will consist of an informational interview to introduce my research and to answer any questions that you may have, an audio-taped interview lasting approximately one hour to one and a half, and a follow up meeting.

I am using a purposive participant selection process, and your name has been mentioned as someone who may be willing to contribute your knowledge of research experience and your time to this study. You are welcome to contact me for further details about this study and to discuss your possible participation in it. If you are interested in participating, please fill in the information below and return the sheet to me. You may also phone or e-mail me to indicate your interest at (250) 598-6387, or < scc@uvic.ca >.

If you have any questions, please contact me at (250) 598-6387 or < scc@uvic.ca >.

I am interested in participating in the study entitled "Experiences in Interdisciplinary Research".

Name _____

Phone _____ E-mail _____

Appendix B

Informed Consent

CONSENT FOR PARTICIPATION IN THE STUDY ENTITLED:

"Experiences in Interdisciplinary Research."

You are being invited to participate in a study entitled "Experiences in Interdisciplinary Research" that is being conducted by Sarah Corrin, a graduate student in Counselling Psychology at the University of Victoria. If you have any questions or concerns about the project, you may contact Sarah Corrin at 598-6387 or scc@uvic.ca

As a graduate student, I am required to undertake research as part of the requirements for a degree in Educational Psychology and Leadership Studies. I have chosen this thesis topic in consultation with my advisor, Dr. Anne Marshall, and it is being conducted under her supervision. You may contact my supervisor at 721-7815.

The purpose of this research is to explore the experiences and challenges of researchers engaging in interdisciplinary research, with particular emphasis on the Coasts Under Stress (CUS) project. The primary goal is to explore the practice, meaning, and process of aspects of interdisciplinary research. A secondary goal is to explore how challenges that arise impact on the process of doing such research. Research of this type is important because the results will contribute to knowledge about, and understanding of, the meaning and value of interdisciplinary research and of challenges that arise in the process. By identifying and describing some of the ways in which challenges are understood and experienced by researchers involved in an interdisciplinary project, the data will be of value to those interested in the functioning and administration of similar research projects. You are being asked to participate in this study because you have indicated you are willing to discuss your experiences in the CUS research project.

If you agree to voluntarily participate in this research, your participation will include a half-hour informational interview to answer any questions that you may have about the research, a one-hour audio-taped interview, and a half-hour follow up session to review the transcript. This will require approximately two hours of your time in total. Interviews will be scheduled throughout the spring, (April/May 2002) and will be conducted at the University of Victoria or another location of your choice. You will be asked to describe your research, identify the meaning that your research has for you, discuss the challenges that have arisen, and to explore the ways in which one or more of these issues has impacted you and/or your research. Participation in this study may cause some inconvenience to you, including the time it takes to set up, conduct, and follow up the interview

There is a potential risk to you by participating in this research, that of limited anonymity. Absolute anonymity cannot be guaranteed, as my supervisor, Anne Marshall, is a member of the Coasts Under Stress project. Furthermore, the small academic community and close working relationships that exist within the Coasts Under Stress project and the University of Victoria make absolute anonymity difficult to ensure. To prevent or deal with this risk the following steps will be taken: interviews may be conducted off-campus if the participant wishes to do so, and pseudonyms and codes will be assigned to each participant.

The potential benefits of your participation in this research include increased understanding about the value and meaning that interdisciplinary research has for individual researchers, and about challenges that arise in conducting research across disciplines and in an interdisciplinary team context. This research will potentially be of value to those interested in conducting research across disciplines or in interdisciplinary contexts.

Your participation in this research must be completely voluntary. If you do decide to participate, you may withdraw at any time without any consequences or any explanation or refuse to answer certain questions without any negative consequences.

In terms of protecting your anonymity, your name will not be recorded on the transcribed data, a code or pseudonym will be assigned and used in place of your name. The key to the coded names will be kept separately from the interview data and only myself will have access to the key. Signed consent letters will also be stored separately from any data. Interviews may be conducted off campus, to minimize the risk of recognition as a participant in this research study. At the completion of this thesis and the degree requirements, all audiotapes will be erased. All other data, transcripts, and notes will be shredded. In your review of your transcript, you will have the opportunity to delete any information, including anything that you might see as being able to identify you.

Your confidentiality and the confidentiality of the data will be protected by storing interview audiotapes and the transcribed data in a locked filing cabinet. Only the researcher and supervisor will have access to the data. The audio-tape from your interview, the transcribed data, and any notes taken during the interview will be destroyed within five years. If you withdraw, your data will be destroyed and not used, unless you grant permission for me to use it.

A copy of this research report will be given to you upon request. Research findings may be presented in the form of class/colloquia presentations and will be communicated to participants and interested professionals through print materials, presentations, and conferences. The results of the study will be published in peer-reviewed journals, presented at professional and/or scholarly conferences, and may be available in summary form on the Internet. A summary of the research will be given to you upon request.

In addition to being able to contact the researcher as above, you may verify the ethical approval of this study, or raise any concerns you might have, by contacting the Associate Vice President Research at the University of Victoria (250-472-4632).

Your signature below indicates that you understand the above conditions of participants in this study and that you have had the opportunity to have your questions answered by the researcher.

_____ _____

Participant Signature Date

A copy of this consent will be left with you, and a copy will be taken by the researcher.

Appendix C

Interview Guide

Experiences in Interdisciplinary Research

PROPOSED INTERVIEW SCHEDULE

1. Describe the research that you are currently involved in as a part of the CUS.
2. How do you see your research project fitting in within the larger CUS context?
3. What is important/valuable to you about your particular research?
4. What research issues have arisen in your particular project?
5. What have been some of your experiences in working as part of the CUS team?
6. What learning has come from these experiences?

If necessary, some of the following prompts will be used to facilitate discussion and exploration:

7. Can you talk a bit about your experiences working in a context of different methodological and theoretical approaches to research processes (such as data collection, publishing, and ownership of?)
8. What have been some of the challenges that you have faced in your research in working as part of the CUS team?
9. What learning has come from those challenges?
10. Has your involvement and interest in working on CUS changed over time, from when you first agreed to participate until now? In what ways?
11. If you were to work in another collaborative/interdisciplinary research context, what would be important for you to consider before you agreed?

VITA

Surname: Corrin Given Names: Sarah Clare

Place of Birth: Vancouver, British Columbia, Canada

Educational Institutions Attended:

University of Victoria	2000 to 2003
Hebrew University of Jerusalem	1995 to 1996
University of British Columbia	1992 to 1997

Degrees Awarded:

B.A.	University of British Columbia	1997

Honours and Awards:

Graduate Teaching and Research Fellowship	2002
Graduate Teaching and Research Fellowship	2001
Graduate Teaching and Research Fellowship	2000

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Title of Thesis:

Connecting Experiential and Ethical Issues in Interdisciplinary Research: A Case Study within "Coasts Under Stress."

Author [redacted]

Sarah Corrin

September 30, 2003

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