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Integrating Ethics and Epistemology: A Normative Framework for the Inclusion of Indigenous Communities in Technical Decision-Making

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Abstract of the Dissertation

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Guidelines for technical decision-making are, more than ever, including members of the communities that live nearby proposed, operating, or retired large-scale technologies. Understanding the normative basis of these guidelines is important in technical dispute situations, where the community members are in disagreement with scientists, policymakers, and the other stakeholders about what impacts and risks are attributable to the technology in question. I argue that guidelines of community member participation for resolving technical disputes should be fair, sound, and avoid violating three preliminary adequacy conditions: (1) the condition of acceptability for dispute resolution, (2) the condition of community member vulnerability, and (3) the condition of recognition justice. These norms and conditions form a normative framework that can be used to evaluate existing guidelines and to propose new ones. Technical disputes involving indigenous communities are focused on in this dissertation.

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Chapter 1

1. Introduction

My objective in this dissertation is to establish a starting point for addressing a morally and epistemically challenging question: How should members of affected communities participate in the specifically technical phases of decisions regarding technologies and their applications? The moral issues in this question concern how justice, vulnerability, and consent are relevant in framing the inclusion and exclusion of community members. The moral issues overlap a set of epistemic issues that emerge when we consider that community members' experiences, training, education, and skill sets differ greatly from those belonging to scientists, engineers, and policy experts who are also participants in the same technical phases. These epistemic differences can serve as the foundation of disagreements about what decisions are technically sound and whose expertise should be counted as competent.

Any response to the question of community member participation has to confront both the sociocultural pluralism of any public decision and the epistemic pluralism characteristic of the technical phases of decisions about technologies. Striking a balance between the moral issues invoked by sociocultural pluralism, like justice and vulnerability, and the technical issues invoked by epistemic pluralism, like soundness and competence, is challenging indeed. But striking such a balance is required if we are to be able to justify specific rights, required practices, and standards for how community

members ought to participate in the uniquely technical phases of any decisions regarding technologies and their applications, which I refer to as 'guidelines of community member participation.'

This chapter is an outline of the moral and epistemic issues involved in thinking about how community members ought to participate in technical decisions. In section two, I set the stage for this outline by describing an ongoing case in the Akwesasne Mohawk Territory. The case description is followed in section three by an analysis of the moral and epistemic issues in the case. Section four concludes the chapter by articulating the rationale for how to resolve these issues with a normative approach.

2. The Akwesasne Case Background

In the 1958, the St. Lawrence/FDR power project was completed along the St. Lawrence River near Massena, NY. The project included the Moses Saunders Power Dam, which created an inexpensive source of power for commercial industries. It also included the St. Lawrence Seaway, which allowed large ships to enter the Great Lakes from the Atlantic Ocean. The intention behind the dam and seaway was to jump start the development of the northern parts of New York state.[1] Shortly after the completion of the project, American corporations like General Motors (GM) and Reynolds Metals

[1] New York Power Authority, "St. Lawrence-Franklin D. Roosevelt Power Project," http://www.nypa.gov/facilities/stlaw.htm (accessed March 2, 2009). See Mary Arquette et al., "Holistic Risk-Based Environmental Decision-making: A Native Perspective," *Environmental Health Perspectives* 110, no. 2 (April 2002); Alice Tarbell and Mary Arquette, "Akwesasne: A Native Community's Resistance to Cultural and Environmental Damage," in *Reclaiming the Environmental Debate*, ed. Richard Hofrichter (Cambridge, MA: MIT Press, 2001); Akwesasne Task Force on the Environment Research Advisory Committee, "Superfund Clean-up at Akwesasne: A Case Study in Environmental Injustice," *International Journal of Contemporary Sociology* 34, no. 2 (1997), 273-275.

established large scale industrial plants along the St. Lawrence River.[2] The Aluminum Company of American already had a plant there since 1903.[3]

Since being constructed, these plants have released toxicants like polychlorinated biphenyls (PCBs), dibenzofurans, dioxins, polyaromatic hydrocarbons, fluorides, cyanide, aluminum, arsenic, chromium, and styrene.[4] PCBs were the most commonly released of these chemicals. Originally used to insulate electrical equipment, they were banned by the U.S. Environmental Protection Agency (EPA) in 1979.[5] PCBs have caused birth defects and cancer in laboratory animals; they are also suspected as a cause of cancer and adverse skin or liver effects in humans.

Some disastrous cases of exposure to PCBs are well known. In both Japan (1968) and Taiwan (1979), thousands of people accidentally ingested rice oil that was contaminated with PCBs. Some of the concentrations ingested were determined to be as high as 3,000 parts per million (ppm). In the U.S., the EPA determines three ppm to be unsafe. In the Taiwanese case, twelve of twenty-four people died from liver disease. Many people, both in Taiwan and in Japan, also suffered from severely disfiguring acne break outs on their skin. Thirty-seven babies whose mothers were poisoned by the PCBs had hyperpigmentation, facial swelling, abnormal calcification of the skull, low birth

[2] Akwesasne Task Force, 274-276; Arquette, 259; Tarbell, 96.

[3] Winona LaDuke, *All Our Relations: Native Struggles for Land and Life* (Boston: South End Press, 1999), 15.

[4] Arquette, 259; Tarbell, 93.

[5] Environmental Protection Agency, "EPA Bans PCB Manufacture; Phases Out Uses," http://www.epa.gov/history/topics/pcbs/01.htm (accessed March 5, 2009).

weight, and overall growth retardation. Eight infants died from pneumonia, bronchitis, or general weakness.[6]

At the time in the 1950s and 1960s when the plants along the seaway were established, U.S. federal and state authorities practiced few regulatory controls over PCBs and other toxicants.[7] 1970s environmental legislation, such as the National Environmental Policy Act of 1970, mandated heavy regulations and Not In My Backyard (NIMBY) and other anti-toxics movements created public awareness about the possibility of human health problems associated with exposure to industrial pollutants. Before this legislation and social action, little documentation or study of toxic releases existed.

It was also in the 1970s that the possibility of pollution came to the attention of the members of affected communities that are downstream from the plants. One of these communities is the Mohawk Indian Territory called Akwesasne, with a population of around 12,000 Mohawks,[8] which straddles the border between the U.S. and Canada. Both the St. Regis Indian Reservation, which is on the U.S. side of Akwesasne, and the Akwesasne Mohawk Reserve, on the Canadian side, are located immediately adjacent to the General Motors Powertrain Division plant, and are downwind, downstream, and downgradient from the ALCOA and Reynolds Metals plants.[9]

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[6] LaDuke, 16.

[7] Nancy Kubasek and Gary Silverman, *Environmental Law*, 3rd ed. (Upper Saddle River, NJ: Prentice Hall, 2000), 114.

[8] Tarbell, 94.

[9] Arquette, 259; LaDuke, 10.

For centuries, the Mohawks have relied on the St. Lawrence River and its tributaries for food, medicines, commerce, trade and recreation, in addition to traditional land usage, subsistence lifestyles, and cultural practices. All of these uses appeared to be placed in jeopardy by the pollutants emitted from the nearby plants. The full realization of the dangers began with some observations made regarding cattle.[10]

Since the late 1960s, some farmers on Cornwall Island, situated in the middle of the St. Lawrence River in Akwesasne, began to observe changes in how their cattle were grazing, which is a sign that the cattle were sick. Preliminary studies revealed that the cattle were suffering from fluorosis, a disease that weakens bones and teeth. Fluorosis is caused by airborne fluoride that is inhaled or is passed on through bioaccumulation in land and vegetation. Grass can absorb and retain gaseous fluoride from ambient air, which is then eaten by cattle.[11] Across the river, Reynolds Metals was releasing fluoride as a byproduct of aluminum production.[12]

In 1978, a study by Cornell University toxicologists indicated that smokestack emissions from the Reynolds Metals plant, especially fluorides, were key factors responsible for the changes in the health of the cattle.[13] The study also demonstrated that the contamination was not limited to cattle, but extended to the fish in the St. Lawrence

[10] See Arquette; LaDuke; Tarbell.

[11] H.W.F. Bunce, "Fluoride in Air, Grass, and Cattle," *Journal of Dairy Science* 68 (1986): 1706.

[12] Donald A. Grinde, *Ecocide of Native America: Environmental Destruction of Indian Lands and People* (Santa Fe, NM: Clear Light Books, 1998), 175. See Janet Raloff, "The St. Regis Syndrome," *Science News* (July 19, 1980).

[13] See, Lennart Krook, *Industrial Fluoride Pollution: Chronic Fluoride Poisoning in Cornwall Island Cattle* (Ithaca, NY: New York College of Veterinary Medicine, Cornell University, 1979); George A. Maylin, Richard H. Eckerlin, and Lennart Krook, "Flouride Intoxication in Dairy Calves," *Flouride* 20, no. 3 (July 1987).

River, including large populations of sturgeon, bass, and walleyed pike. The fish populations were also suffering from fluoride poisoning, which was weakening their bones and decaying their teeth.[14]

The new information about the health of fish and livestock populations naturally raised questions about a variety of possible threats to human health, including both fluorides and PCBs, which could possibly harm vulnerable community members like elders, children, and women. The community group that was formed in response, called MASH (Mohawks Agree on Safe Health), attempted to play the role of an environmental watchdog and source of information for Mohawks concerned about their health. The members of the community group were determined to find out the exact effects that pollution was having on humans and the environment in Akwesasne.[15] The results were not pleasing.

By the 1980s, toxicologists were engaging in thorough studies of the degree of contamination at Akwesasne. The studies examined toxic effects of pollution on wildlife and fish, with results that pointed to high levels of PCBs in frogs, snapping turtles, and ducks. Subsequent conditions led to a human health assessment that focused on PCBs in human breast milk. Women living in Akwesasne had high levels of PCBs in their breast milk, which they were passing on to their babies. By 1987, there was general public awareness of the environmental impacts in the community.[16]

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[14] Grinde, 175-176.

[15] Lornie Swamp, "Background of Environmental Contamination at Akwesasne," http://www.albany.edu/sph/superfund/akwes.html (accessed March 28, 2009).

[16] See Swamp.

Just over twenty years after the St. Lawrence/FDR power project was finished, Akwesasne had become so poisoned that it was not safe to eat the fish or game. More than 500 environmental contaminants had been measured, 125 of them in the fish, with PCBs being the most prominent.[17] The GM site alone released approximately 823,000 cubic yards of materials contaminated with PCB levels greater than 1 ppm (the standard of the St. Regis Tribe) and over half of these total materials is contaminated at greater than 50 ppm (considered hazardous by New York state).[18] Contaminated areas included four unlined industrial lagoons, one unlined industrial landfill, the East and North Disposal Areas, sediments, riverbanks and wetlands, and contaminated soil and sediments.[19] The Reynolds aluminum plant was emitting fluorides into the atmosphere at a rate of 400 pounds per hour until they reduced it to 75 pounds per hour in 1973.[20] Some locations where community members lived did not have safe drinking water; in others, residents could not use the soil for planting.

Akwesasne became the most polluted native reserve in Canada and one of the most severely poisoned sections of the U.S.[21] It is considered one of the 43 areas of concern (AOC) identified by the International Joint Commission, which is the bilateral environmental monitoring agency established by the U.S. and Canada for the Great Lakes

[17] Grinde, 175.

[18] LaDuke, 12; Akwesasne Task Force, 275-276.

[19] Akwesasne Task Force, 276.

[20] J.W. Annunziata, Haudenosaunee Environmental Task Force, and Uradyn Erden Bulag, *Haudenosaunee Environment Restoration: An Indigenous Strategy for Human Sustainability* (Cambridge, U.K.: Indigenous Development International, 1995), 21.

[21] Grinde, 171.

region that forms part of both countries. All of the industrial plant locations are listed as Superfund sites on the National Priorities List by the EPA. In 1983, GM was fined $507,000 by the EPA for its unlawful disposal of PCBs.[22] GM violated the Toxic Substances Control Act twenty-one times, and was cited for ten counts of unlawful disposal of PCBs and eleven counts of unlawfully using PCB-laden oil in a pump house with no warning sign.[23]

The pollution problems in Akwesasne have mobilized politicians, scientists, local community members, and other stakeholders to take measures to understand and resolve them. Moral and epistemic issues with technical decisions come to light when we examine how these different stakeholders try to work together or against one another. In the next section, I outline the moral and epistemic issues in relation to some of the disputes and collaborations that occurred in the Akwesasne case when the various actors attempted to understand and resolve the pollution problems.

3. Moral and Epistemic Issues

In response to these problems, many technical decisions had to be made to help in protecting the community and the health of the environment that its members depended on. How could the community members be certain about what levels of PCB contamination were present? What information were toxicological studies leaving out that might be critical to know? Were the Mohawks working with the right kinds of scientists? Was all the relevant information being disclosed by the scientists? Did

[22] Tarbell, 97; Akwesasne Task Force, 275-276.

[23] See Kallen Martin, "Akwesasne Industrial Contamination – Environmental Recovery," *Winds of Change* (Summer 1996).

Mohawk decision-makers have an adequate understanding of the technical issues? What resources for technical research are the Mohawks entitled to?

All of these questions pertain to particular epistemic issues that concern how to identify and estimate what impacts and risks should be attributed to the technologies used in the GM and Reynolds Metals plants. They also pertain to how the Mohawk community members should participate. Identifying impacts and risks is an epistemic issue insofar as it has to do with gaining knowledge of what impacts or risks have occurred or should be expected based on the types of technologies being considered. For example, is it correct to say that cancer or birth defects or both are known to be attributable to these technologies? Estimating impacts and risks has to do with establishing knowledge of the magnitudes, degrees, exposure levels, and amounts of impacts or risks that have been or can be expected to be produced by the technologies.

It should be noted that identifying and estimating impacts and risks are not the same as evaluating impacts and risks. Impact and risk evaluation assumes impacts and risks to already be established, and concentrates on how these impacts and risks should be put on screen as affecting things that people value, such as income, property values, quality of life, employment, and the like. Evaluating impacts and risks brings attention to what comparisons between harmful impacts and risks are salient and which value tradeoffs are necessary. Evaluating impacts and risks raises issues about whose values and preferences are considered, and whether preferences can be known, either by experts or by the community members and other stakeholders, through measures like 'willingness to pay,' and the like.

Although impact and risk evaluation usually follows impact and risk identification and estimation in technical decisions, I want to focus more narrowly on the latter (identification and estimation). That is to say, I am concerned with questions regarding how community members should contribute to resolving the epistemic issues concerning the determination of what impacts and risks should be attributed to a technology to begin with. In the Akwesasne case, this translates into the issue of how Mohawk community members should participate in the attempt to establish accurate knowledge regarding the nature and extent of the impacts and risks caused by the industrial plants.

Epistemic issues concerning the technical contributions of community members are tied to moral issues about inclusive participation. All actors, from the community members to the scientists to the other stakeholders, should be able to participate fairly in technical decision-making. Actors should not be treated unfairly because they are not scientists or engineers and are conceived as having little to contribute to resolving or understanding the epistemic issues. Knowledge of impacts and risks should be fully disclosed to those who stand to be affected, and there is no justification to set aside considerations of justice, consent and vulnerability. Moreover, actors should not be able to reject any technically relevant claims that might be made by community members or scientists based solely on their prejudices about what community members or scientists can know about technologies. Identifying and estimating impacts and risks is not necessarily or exclusively the domain of actors with explicit credentials like university degrees, training certificates, and prestigious jobs. These moral and epistemic issues are important for understanding the Akwesasne Mohawk case.

In the case, knowledge of toxicants and their impacts and risks does belong to the domain of credentialed scientists and engineers who study them and the technologies that release them into the environment. But the community members have to participate in finding out about what impacts and risks are attributable to the technologies because they have to live with the corresponding fears, threats, uncertainties, health problems, and environmental degradation. By no means ought they be excluded from technical decisions that involve the collection and configuration of evidence about exposure levels and other needed information and data. The presence of epistemic asymmetries should not produce power asymmetries. We should also avoid naïve assumptions about what community members can contribute to what is usually considered to be the domain of scientists and engineers. In some instances, they may have relevant perspectives and skills that are crucial for determining accurate knowledge about the impacts and risks. For example, community members might have better access to the other community members, greater familiarity with the region, local knowledge about the ecosystem, and historical knowledge about when important events occurred that are not included in the histories that the scientists or other experts might be relying on.

Getting scientists and community members to follow the same guidelines is difficult. In the case, neither the Mohawks nor the toxicologists are trained or experienced in each others' techniques and frames of reference; nor are they trained to work together. Pre-existing distrust and historical power asymmetries also threatened to strain such potential relationships. The first wave of scientists that studied the pollution problems in Akwesasne came and left without reporting the results to the community

members, unfairly excluding them from participating at all. If the Akwesasne community members did not know what the scientists found out, how could they keep track of what evidence was being used by those who might stand to benefit from any of the pollution problems going unchecked?

The actors also have different stakes in and social constraints on their ability to participate in technical decision-making. Most of the scientists and engineers involved are not members of the Akwesasne community. Some are employed by universities, corporations, and governments that serve importantly different interests than those of the Akwesasne Mohawks. Scientists are subject to deadlines, expectations, and professional objectives that constrain the quality of their work. Many Mohawks want immediate information and data because they are ultimately the ones who are suffering health problems and who may have the most to lose. They may also have few economic resources to voice their concerns and perspectives. Coordinating the stakes and social constraints of professional scientists and engineers with those of the community members can be problematic.

At one point in the case some of these moral and epistemic issues came to a head. A well respected non-Mohawk toxicologist was giving a talk at Akwesasne about her assessment of the improvements in the situation and continuing efforts being made by the Mohawks. She applauded the Mohawk community members for changing their lifestyles in a way that avoided exposure to PCBs, like the fact that many Mohawks had stopped eating fish and locally grown vegetables. The toxicological and epidemiological studies

had revealed accurate enough evidence for the Mohawks to engage in drastic lifestyle changes.[24]

However, for many Mohawks, the available evidence was not the only evidence that they wanted with regard to the industrial plants. The problem was that the dietary and lifestyle changes were made at the expense of giving up traditional diets. Many Mohawks claimed that giving up their traditional diet would have more long lasting health effects than the modified diet that merely avoided contaminated food and other exposure behaviors. In addition, many Mohawks claimed that the average exposure figures were not useful because they did not show accurately how elders, children, and women were affected in particular. They also thought the toxicologists' figures were wrong because they did not have the right techniques or knowledge to understand how toxicants might be distributed throughout the region, believing instead that their own local techniques for collecting and configuring evidence should have been appealed to by the scientists.[25]

What the toxicologist was hailing as a success led to disputes about what diet was healthiest, the PCB/toxicant free diet or the traditional diet, and how evidence on the pollution problems should be configured. To the Mohawks, it was clear that the toxicologists should have been gathering data about pollution levels that allowed the Mohawks to preserve as much of their diet as possible. The Mohawks had a different understanding of what evidence needed to be gathered, how it should be gathered, and

[24] A description of these events is provided in Akwesasne Task Force on the Environment Research Advisory Committee; Arquette; Tarbell.

[25] See Akwesasne Task Force on the Environment Research Advisory Committee; Arquette; Grinde; Tarbell.

what the goals of technical decision-making were. This was not merely an impact and risk evaluation issue *per se* as it mainly had to do with what the Mohawk community members thought the toxicologists should be doing with respect to the collection and configuration of evidence in the uniquely technical phase of the decision about how to respond to the pollution problems. There are also evaluative issues having to do with the tradeoffs between a toxicant free and a traditional diet, but the Mohawks did not think that costs and benefits of these tradeoffs could adequately be put on screen because adequate evidence about the impacts and risks had not been accounted for.[26]

We can summarize some of the epistemic issues with the following points. First, the Mohawk community members did not think that the available evidence was sufficient for being able to evaluate impacts and risks. Second, they did not agree with doing studies according to the averages favored by the toxicologists because they believed these averages did not capture the exposure levels and risks for elders, children, and women. Third, they questioned the relevance of the evidence produced by formal techniques of toxicologists and suggested that other evidence be gathered, both by the toxicologists and by the Mohawks using their own techniques.

One way of understanding these epistemic issues is that the community members and the toxicologists expressed 'rights,' 'required practices,' and 'standards' for how the epistemic issues should be resolved. Each of these terms refers to 'guidelines' about how actors like the Mohawk community members and scientists should act in order to better understand the technical issues and resolve the disputes among them. I refer to rights,

[26] See Arquette; Tarbell. Also, see Lawrence M. Schell and Alice M. Tarbell, "A Partnership Study of PCBs and the Health of Mohawk Youth: Lessons from Our Past and Guidelines for Our Future," *Environmental Health Perspectives* 106, no. S3 (June 1998).

required practices, and standards collectively as guidelines insofar as they prescribe compliance and specific rules and respect for certain decision-making privileges and responsibilities. But which of the proposed guidelines was justified, that expressed by the community members or the toxicologists or some combination of both? Perhaps the demands of the Mohawks' proposed guidelines were neither feasible nor sufficiently sensitive when looked at from the position of the toxicologists. Or perhaps the toxicologists had unfairly excluded the community members in their guidelines. Either way, the community members still have a right to know as a matter of fairness and it is the responsibility of the toxicologists to inform them of what impact and risks are known. Rights, required practices, and standards of disclosure, however, are also debatable despite the universal acceptance of the right to know.

Despite these disputes as well as some continuing disagreements, the Akwesasne case ends, at least for now, on a successful note. In response to the pollution problems, the Mohawks created their own Environmental Division (ED). It is now one of the most advanced tribal environment programs in North America. By 1990, the Division had gained a substantial amount of ground in the fight to clean up the water, soil, and air of Akwesasne. Community education has increased on the actual risks associated with the release and bioaccumulation of industrial toxicants. The ED is able to do its own environmental sampling, monitoring, and assessing, which allows for the possibility that scientific studies will be influenced by the unique concerns of the Akwesasne community

members. A multimedia program has been created to systematically record and assess these concerns.[27]

The ED has also forged strong relationships with non-Mohawk entities and institutions. In the beginning, it was difficult for the tribe to relate to the EPA because the latter did not recognize the advantages of working directly with the tribal government. Through persistent pressure the tribe became a recognized collaborator. Currently, the relationship is strong; however, there is a significant technical dispute that remains about what levels of PCBs should be left at GM plant site. This dispute persists despite agreements on many other issues.[28]

Other organizations have also established strong relationships with the ED, such as the New York State Department of Environmental Conservation (DEC). On a technical level the DEC has been instrumental in providing services such as proper data collection techniques and data analysis. Research institutions have also been critical to the ED's advancement. Universities like St. Lawrence University, Clarkson University, Syracuse University, Cornell University, and SUNY Albany have contributed their expertise in different areas.

Do the operations of the ED provide examples of what rights, required practices, and standards should be complied with by community members, scientists, and other stakeholders? Perhaps some of the successful guidelines followed by the ED and its collaborators can (1) be transferred to other ongoing cases in which community members

[27] See St. Regis Environmental Division, http://www.srmtenv.org/ (accessed April 3, 2009); Schell; Swamp.

[28] See Swamp.

face similar issues or (2) transformed into a basis for justifying new and enforceable administrative agency rules and policy mandates. These possibilities are important to consider for understanding how to substantiate normative claims about guidelines for community member participation in technical disputes, which I discuss in more detail in the following section.

4. Guidelines of Community Member Participation

Many of us subscribe to the view that rights, required practices, and standards for community member participation in technical decisions are important. The leaders of government branches, agencies, and departments also share this view and have mandated their administrative organizations to enlist the participation of community members along with scientists, engineers, and the other stakeholders. In the U.S., mandates have been issued in executive orders and statutes as well as by organizations like the National Research Council, the National Institutes for Health, and the EPA. Analogous mandates have also been issued in other countries. Despite the good spirit of these mandates, agency cultures, established procedures, and other managerial issues often prevent them from being fulfilled to the extent of their original intent.

One solution to the problem of mandate fulfillment is to expand our understanding of the normative basis of guidelines of community member participation. What makes an existing guideline or code of guidelines *prima facie* justified for administrative organizations to enforce as a rule? Or, in the absence of such rules, how should community members propose their own guidelines as *prima facie* justified for technical decision-making? If we can answer these questions, then we are contributing to the

normative resources available to community members: understanding the normative basis of such guidelines helps to empower community members, activists, and other members of the public to engage in dialogue with political and scientific actors in technical decision situations.

This dissertation is a starting point for understanding the normative basis of existing and proposed guidelines of community member participation in light of the types of moral and epistemic issues raised in the Akwesasne case. In chapter two, I argue that, from a Science and Technology Studies (STS) perspective, the general norms of fairness and soundness are the immediate basis of such guidelines. That is to say, rights, required practices, and standards have to be 'fair' in terms of whether every stakeholder has an equal opportunity to participate and 'sound' in terms of whether the impacts and risks are identified and estimated accurately.

An important issue with this normative basis, however, is that it does not supply additional conditions for how existing or proposed guidelines are *prima facie* justified as expressing or falling under the norms. What preliminary conditions do fair and sound guidelines satisfy that unfair and unsound ones do not? By '*prima facie* justified' I mean that the guidelines would be endorsed by the community members and have binding power on the other actors. My goal is to establish what the preliminary conditions are for evaluating guidelines of community member participation that are intended to resolve technical dispute situations. I refer to examples indigenous communities like the Mohawks throughout this dissertation.

Before the preliminary conditions can be defended, it may be objected that moral reasoning is irrelevant to technical disputes because they are not separable from social, political, cultural, and historical issues. In chapter three, I respond to this criticism by outlining a method of analysis for technical disputes that I refer to as 'conflict campaign analysis.' Technical disputes are defined as occurring when actors disagree over what impacts and risks to attribute to a technology; technical disputes occur along with other social, political, cultural, and historical disputes in larger environmental conflicts. These disputes are apparent in the statements that actors make in the public domain, such as when members of affected communities state publicly that 'that technology X will cause effect Y.' The role of moral reasoning is to develop normative frameworks in order to evaluate these statements and determine what additional statements could be included as demands on the other actors.

In chapters four through six, I defend three preliminary conditions which work in the following manner: existing or proposed guidelines are *prima facie* justified as fair and sound when they do not violate any of the three preliminary conditions. If a guideline violates one or more of the preliminary conditions, then it must be revised to satisfy it or its *prima facie* justification has to be ruled out. The three conditions I defend in these chapters are (1) the 'condition of acceptability for dispute resolution' in chapter four, (2) the 'condition of community member vulnerability' in chapter five, and (3) the 'condition of recognition justice' in chapter six.

The 'condition of acceptability for dispute resolution' has to with how the norms of fairness and soundness are integrated. Any guideline for technical dispute resolution has

to have epistemic presuppositions about why actors disagree in technical disputes and how they collect and configure evidence, which serve as explanations, conceptions, or assumptions about which actors' expertises provide more accurate estimations or whose perspectives are relevant. Epistemic presuppositions must differentiate, limit, or extend some actors' participation in contributing to the technical issues in relation to the other actors. The condition of acceptability for dispute resolution is that epistemic presuppositions, in suggesting different treatment, have to be testable by all the actors. Guidelines violate this condition when the reasons offered in favor of them beg the question or represent *ad hominem* fallacies; either one is not testable by any of the actors and could not be endorsable by the community members or binding on any of the other actors.

The second condition concerns how guidelines should and should not account for vulnerability in their formulation. I argue, in chapter five, that there are two primary requirements and two secondary requirements that should constrain any guidelines regarding vulnerability. Primary requirements are for any guideline, whether it is structured explicitly to account for vulnerability. Guidelines have to be both 'performable' by any vulnerable actors and 'non-manipulable' by the other actors who are vulnerable to a lesser degree. Secondary requirements are for any guideline that is structured explicitly to account for vulnerability. The account of vulnerability featured in guidelines cannot ignore 'unusual cases' or be based on 'irresolvable debates.' The 'condition of community member vulnerability' demands that guidelines do not violate any of these primary or secondary requirements if they are *prima facie* justified.

The ‘condition of recognition justice’ has to do with whether guidelines provide all actors with a fair opportunity to participate in resolving the technical dispute. The principle of recognition justice demands that social institutions that exclude affected actors from having meaningful participation are unjust. Social institutions can be government procedures, social prejudices, or other commonly accepted but discriminatory practices. The condition of recognition justice requires that guidelines are not structured in such a way as to imply or permit recognition injustices against the members of affected communities or any of the other stakeholders.

The three conditions work in combination as criteria of judgment for determining which existing or proposed guidelines of community member participation are *prima facie* justified as fair and sound for resolving technical disputes. Consider any required practice for technical dispute resolution, such as a ‘public meeting,’ which may exist in current sets of guidelines enforced by administrative agencies. Public meetings are only *prima facie* justified as fair and sound in terms of community members if they do not violate the condition of acceptability for dispute resolution, the condition of community member vulnerability, and the condition of recognition justice. The conditions also can be used as the basis for revising guidelines like the required practice of public meetings in order that they are fair and sound for community members.

The norms of fairness and soundness plus the three preliminary conditions furnish a normative framework for evaluating guidelines of community member participation on behalf of the community members. The normative framework can be appealed to when we examine cases like the Akwesasne case, where guidelines are often needed for dispute

resolution that are fair and sound; it can also be used in order to understand what conditions are satisfied by successful guidelines like some of the ones that are employed by the Akwesasne ED. Certainly, there are other features of existing or proposed guidelines that contribute to their being fair and sound in terms of community member participation. Examples of such features are particular practices for exercising guidelines successfully, manners of forming social bonds and ties with communities, and soliciting professional conflict mediators. The normative framework that I argue for in this dissertation precedes these more specific features because it requires any guidelines to at least satisfy the three preliminary conditions as a matter of establishing *prima facie* justification in terms of community member participation. Other features and issues should be considered after the conditions have been reviewed.

5. Conclusion

In this chapter, I described the moral and epistemic issues faced by members of affected communities in technical decision situations. The case of pollution problems in the Akwesasne Mohawk community exemplifies these issues insofar as the community members should participate fairly yet they think differently about how to estimate and identify impacts and risks from the scientists and engineers who are also participants. This dissertation reflects on how rights, required practices, and standards of community member participation should be formulated for resolving technical disputes. I seek to establish a normative framework for evaluating existing and proposed guidelines for technical disputes based on the norms of fairness and soundness. To be *prima facie* justified as fair and sound in terms of community members, guidelines cannot violate any

of the three preliminary conditions, which are the conditions of acceptability for dispute resolution, community member vulnerability, and recognition justice. This normative framework is defended in what follows in this dissertation.

Chapter 2

1. Introduction

STS scholars have examined technical decision situations like collaborations and disputes. The normative basis of guidelines of guidelines of community member participation is that they must be fair and sound. In this chapter, I argue that fair and sound guidelines also do not violate additional preliminary conditions that allow us to differentiate them from unfair and unsound guidelines. A normative framework for guidelines of community member participation should include these norms plus preliminary conditions.

In section one, I show that STS scholars claim that fairness and soundness form the normative basis of guidelines of community member participation. In section two, I provide an example of an STS case that proposes a guideline as fair and sound: the right to a community health survey. I argue that the guideline is undeniably fair and sound but that additional conditions are required in order to differentiate it from guidelines that are not fair and sound. In section three, I claim that what are required are preliminary conditions that existing or proposed guidelines have to satisfy if they are to be *prima facie* justified for community members in technical decision situations like disputes and collaborations. I conclude by outlining my focus on technical disputes involving members of indigenous communities.

2. Fairness and Soundness

STS scholars claim that the norms of fairness and soundness form the normative basis of the moral and epistemic issues of how community members ought to participate in technical decisions. I begin in this section by discussing STS in relation to technical decisions. I then show how STS scholars have come to invoke fairness and soundness regarding technical decisions.

STS encompasses wide ranging empirical research programs that seek to understand how science, technology, and society are interrelated. Most STS research programs examine how technological practices are usually more complicated than the social narratives about them, whether these practices take place in laboratories, physics departments, or congressional chambers. A lot of scholarly attention has been focused on how collective decisions about what impacts and risks to attribute to technologies are made that involve stakeholders like corporate leaders, policy makers, experts, and members of the affected communities. In particular, STS scholars are concerned with how community members should participate in identification and estimation procedures given that they sometimes do not have the required credentials and technical understanding and are often subject to vulnerabilities and discrimination. Charles Thorpe writes that "STS today is increasingly concerned with how to theorize and make practicable structures of public participation in scientific and technological decision-making and design."[1] One issue of public participation is how community members

[1] "Political Theory in Science and Technology Studies," in *The Handbook of Science and Technology Studies*, ed. HEdward J. HackettH, HOlga AmsterdamskaH, HMichael LynchH, and HJudy WajcmanH (Cambridge, MA: MIT Press, 2007), 80. See, Daniel Lee Kleinman, ed., *Science, Technology and*

should participate in the technical phase, which is focused on identifying and estimating what impacts and risks are attributable to a technology.

There are many kinds of technical decision phases or situations that affect non-technical communities. Technical decision situations range from decisions about where to site toxic waste incinerators, to what human health effects are attributable to chemical plants, to whether the permanent storage of spent nuclear fuel is the safest method of containment. There are lively debates about how technical decisions are made, the nature of procedures that are followed, the roles that different scientific and political actors play, and the like. Ultimately, it is hoped that technical decision-making is sound in the sense that it generates and discloses the most appropriate and most accurate information, data, knowledge, and takes into account the full range of significant factors. But soundness in technical decision making is complicated.

Empirical STS research has exploded many myths about sound technical decision-making.[2] Some of these myths describe technical decisions as being made according to well defined procedures run by appropriate and unbiased experts. These experts are thought of as employing universally accepted methods for identifying and estimating technology impacts and risks. An example is the public rhetoric surrounding the approval of drugs by the Food and Drug Administration in the U.S. Those who desire that we trust the FDA portray its approval procedures as well defined, carried out by the

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Democracy (Albany: State University of New York Press, 2000); Andrew Feenberg, *Questioning Technology* (London: Routledge, 1999).

[2] See Randall Collins, "Ethical Controversies of Science and Society: A Relation Between Two Spheres of Social Conflict," in *Controversial Science: from Content to Contention*, ed. Thomas Brante, Steve Fuller, and William Lynch (Albany: SUNY Press, 1993).

appropriate experts, and serving as the proper conduit of information for members of the public to make choices regarding what foods and medicines are safe.[3] The narrative suggests that all technical decisions made by the FDA employees and contractors are sound.

Another set of myths about how technical decisions are made has a populist theme. Sound technical decisions are made by discerning community members who recognize technological threats that are undisputedly harmful to human and environmental health. These discerning community members rally support about the hazard and convince public officials to make changes that will remove the threats. An example of this narrative is that usually used to describe Louis Gibbs' role in the Love Canal controversy. Gibbs, together with her fellow community members, recognized health problems that were prevalent in their neighborhood. Gibbs took action to identify the cause as buried toxins beneath their homes, organized the community members, and pressured politicians for their support. Gibb's efforts undoubtedly led to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), which mandated the cleanup of toxic sites across the U.S.[4]

STS research shows that technical decisions do not usually proceed according to mythical narratives like these. This is the case even when the myths are founded, in part, on some hazardous realities – that it really was hazardous to build houses over an

[3] See Food and Drug Administration, U.S. Department of Health and Human Services, http://www.fda.gov (accessed January 5, 2009).

[4] Christopher Foreman, *The Promise and Peril of Environmental Justice* (Washington D.C.: The Brookings Institute, 1998), 16. See Lisa H. Newton and Catherine K. Dillingham, *Watersheds: Classic Cases in Environmental Ethics* (New York: Wadsworth Publishing Company, 1993).

abandoned chemical dump in the Love Canal neighborhood, for example. Empirical research in STS has shown that most technical decision procedures are often not well defined insofar as actors have different conceptions of what protocols should be followed, even when these actors are working together in professional or community organization settings; actors also have different conceptions about what information, data, knowledge, and significant factors count as evidentially sound.

At the institutional level, experts like scientists and engineers face political, financial, and professional constraints that bias their judgments, either intentionally or unintentionally. Sometimes the appropriate experts disagree with one another or there are no appropriate experts for certain technologies and their applications. Sometimes the perspectives and skills of un-credentialed community members can contribute to the technical decision, yet there are also times when community members are undeniably wrong about technology impacts and pressure policy makers with unwarranted concerns.[5]

On the whole, empirical research in STS shows that technical decisions are complex, multifaceted, and feature mixtures of attitudes, issues, institutions, and styles of collecting and configuring evidence. Technical decisions are not made according to the narratives described by the myths – at least not in the wide majority of cases documented in empirical STS research. In the face of these complexities, it remains that technical decisions should include community members and any other stakeholders if they are to be fair and sound. Any procedural rights, guidelines, or standards have to be fair and sound if they are to be normatively grounded.

[5] See Cass R. Sunstein, *Risk and Reason* (Cambridge, U.K.: Cambridge University Press, 2002).

Steve Fuller conceptualizes this according to two ways of viewing how community members and other members of the public should participate fairly and soundly, the "plebiscitarianization" and "proletarianization" of knowledge production.[6] The former "argues that there should be only as much public involvement in knowledge production as will allow the process to flow smoothly."[7] Plebiscitarianization means that community members and other members of the public should only be involved in technical decisions when they absolutely have to be included. Even in such cases, community members would be considered as having nothing to contribute to the technical issues other than needing the right information disclosed to them. Plebiscitarianization seems to demand some standard that determines when community members' participation is absolutely required and some authority responsible for figuring out when to apply that standard. Within such a perspective, it is not likely that members of affected communities will determine this standard or the authority who applies it. Plebiscitarianization appears unfairly exclusionary because it reduces the amount of available opportunities for community participation. Perhaps it can be argued that plebiscitarianization is unfair and even unsound based on these considerations.

The proletarianization of science "reverses the priorities by arguing that knowledge production should proceed only insofar as maximum public involvement is possible."[8] Proletarianization means that community members and other members of the public

[6] Steve Fuller, "A Strategy for Making Science Studies Policy Relevant," in Thomas Brante, Steve Fuller, and William Lynch, eds., *Controversial Science*: *Content to Contention* (Albany: SUNY Press, 1993), 117.

[7] Ibid., 117.

[8] Ibid., 117.

would hold absolute veto power in technical decision procedures without necessary regard for the soundness of technical decisions. The soundness of technical decisions would be a contingent matter – contingent on the views of community members and other members of the public. Perhaps it can be argued that proletarianization is unfair and unsound because it reduces the opportunities for scientists and other experts to set rights, required practices, and standards that are useful according to their expertises.

The conflict that Fuller brings to attention allows us to evaluate our commitments about how community members should participate in technical decisions. We are committed to establishing procedures that are fair and sound; articulating rights, required practices, and standards for including community members is a necessary condition for ensuring that technical decisions meet the demands of the two norms. Few if any of us are committed to giving up fairness for soundness. Stephen Derby and Ralph Keeney capture this belief well by writing that in technical decisions "[e]thical constraints mean that there are certain alternatives and certain decision processes that just cannot be followed. For example, a decision process that excluded the participation of the people who would bear the risk from technological hazards is unethical."[9] Derby and Keeneys' point is that there are some forms of exclusion that hardly any of us would endorse, even when community members can be said to have no contribution to make to the technical issues. Community members are owed full disclosure as a matter of fairness (the right to know). Technical decision-making – and any other kind of decision-making – has to be fair for those who stand to be affected by the technologies the impacts and risks of which

[9] "Risk Analysis: Understanding 'How Safe Is Safe Enough?'" *Risk Analysis* 1, no. 3 (September 1981), 221.

are being estimated. Kristin Shrader-Frechette, in *Risk and Rationality* (1991), writes that "[s]cience need not coopt democracy."[10]

Most of us also believe in endorsing rights, required practices, and standards that ensure that sound technical decisions are made – that democracy does not coopt science. The norm of soundness is an epistemic matter having to do with the justification of knowledge claims, competence, expertise, and the nature of collaboration among actors with different epistemic competencies and frames of reference. We want technical decisions to include the best experts, the strongest justifications, and the most productive collaborations. Community members can contribute to technical issues in different ways, including contributing data collection or local knowledge. When community members cannot contribute in these ways, how should they influence what data gets established and how it is disclosed to them?

Harry Collins and Robert Evans describe this as the problem of how far community members' participation in technical decisions should be extended. They pose the following questions:

> Should the political legitimacy of technical decisions in the public domain be maximized by referring them to the widest democratic processes, or should such decisions be based on the best expert advice? The first choice risks technological paralysis: the second invites popular opposition. The tension here is between the problems of legitimacy and extension. The problem of legitimacy concerns the idea that only technical decisions that involve the public, and not just experts behind closed doors, can be granted legitimacy. But the problem of extension concerns the question of 'How far should participation in technical decision-making extend?'[11]

[10] *Risk and Rationality* (Berkeley: University of California Press, 1991), 13.

[11] "The Third Wave of Science Studies: Studies of Expertise and Experience," *Social Studies of Science* 32, no. 2 (April 2002): 235.

Collins and Evans' point is that we are committed to the idea that technical decisions are only legitimate when they include members of the affected communities and other members of the public. Our commitment to soundness means that not just any rights, standards, or guidelines for participation are justified. Community member participation should be extended into technical decision-making insofar as their inclusion is fair and sound.

For Collins and Evans, the question concerning community members becomes, "how do we know how, when, and why, to limit participation in technological decision-making so that the boundary between the knowledge of the expert and that of the layperson does not disappear?[12] In my own terms, I would pose this question as that of how we can reflect the norms of fairness and soundness as rights, required practices, and standards for technical decision-making that are endorsable by the community members and binding on the other actors, especially when there are epistemic differences that affect how actors view the technical issues.

Reflecting on Collins and Evans leaves us with a set of questions to consider. What sorts of guidelines should regulate interactions among members of affected communities, scientists, engineers, and policy-makers? What standards of disclosure of technical information should experts follow in terms of the community members? What sorts of forums, hearings, and other 'required practices' should be included that mix lay community members with credentialed experts? What sorts of non-credentialed knowledge, often held by community members, should play a role in sound technical

[12] Ibid., 10.

decision-making? These questions are about what rights, required practices, and standards flow from our commitments to technical decision procedures that are fair and sound in their inclusion of community members and the other stakeholders. I refer to them as 'guidelines of community member participation' or simply 'guidelines' in this dissertation.

Guidelines of community member participation that are fair and sound will also be *prima facie* justified from the standpoint of the community members. By '*prima facie* justified,' I mean that such guidelines are (1) endorsable by the community members and (2) have binding power on all the other actors. By 'endorsable,' I mean that there are no strong reasons for the community members to reject them based on their situations as community members. By 'binding power,' I mean that endorsable guidelines are not biased in favor of the interests of the community members to a degree that is unfair and technically unsound. In the next section, I provide an example of a guideline from an STS case and show how it is related to these norms and the problems with securing its *prima facie* justification.

3. Normativity and Community Member Participation

STS case research is done using a variety of empirical methods, e.g. fieldwork, historiography, statistics, ethnomethodology, and archival research. My concern is whether and to what extent this case research could be used to derive and justify candidate claims about rights, required practices, and standards for technical decision-making. In this section, I argue that case research can suggest what sorts of claims may

be worth considering as fair and sound, but does not furnish any conditions as to why these claims are endorsable by community members and binding on the other actors.

Let me start with a brief description of paradigmatic case of technical decision-making that has been documented extensively in STS for at least thirty years: how technical decisions about environmentally-related community health are made that involve the community members, environmental epidemiologists, and various government, corporate, and other organizational stakeholders. This body of case research encompasses hundreds of token case studies that all seem to point to the value of community members' participation in such technical decision situations. In this context, the idea of community member participation is usually referred to as popular epidemiology.[13]

In my description and analysis of the case, I am not going to question the fieldwork responsible for it, the data collection techniques, the quality of the social scientific research, or the like. I set those issues and questions aside in order to focus on the relationship between the research conclusions and the guidelines of community member participation that are relevant to the case. I begin my description of the case with an outline of environmental epidemiology.

[13] Many of the case studies can be found in the following sources: Phil Brown, "Popular Epidemiology: Community Response to Toxic Waste-Induced Disease in Woburn, Massachusetts," *Science, Technology and Human Values* 12, no. 2 (1987); Phil Brown and Edwin J. Mikkelsen, *No Safe Place: Toxic Waste, Leukemia and Community Action* (Berkeley: University of California Press, 1990); Steven Epstein, *AIDS, Activism, and the Politics of Knowledge* (Berkeley: University of California Press, 1996); Eric Mann and the Labor/Community Watchdog Organizing Committee, "Class, Race and Gender: The Unspoken Categories of Public Health," in *L.A.'s Lethal Air: New Strategies for Policy, Organizing and Action* (Van Nuys: Labor/Community Strategy Center, 1991); Wendy Chavkin, ed., *Double Exposure: Women's Health Hazards on the Job and at Home* (New York: Monthly Review Press, 1984); Patrick Novotny, "Popular Epidemiology and the Struggle for Community Health: Alternative Perspectives from the Environmental Justice Movement," *Capitalism, Nature, Socialism* 5, no. 2 (June 1994).

According to the National Research Council (NRC), environmental epidemiology refers to "the study of the effect on human health of physical, biologic, and chemical factors in the external environment, broadly conceived."[14] The NRC's definition goes on to state that "[b]y examining specific populations or communities exposed to different ambient environments, [environmental epidemiology] seeks to clarify the relationship between physical, biological or chemical factors and human health."[15] Environmental epidemiologists seek to study how human health is contingent on the physical, biological, and chemical composition of the environment. They are often concerned with whether a specific environmental agent can be shown to be associated with or related to specific human health effects.[16]

Epidemiological techniques for identifying salient associations and relationships involve collecting as much relevant data as possible in order to place factors in high relief. For example, cohort studies follow over time a group of persons who has received unusual exposures to some environmental agent. The goal is to track any significant changes in their health. Another kind of study is a case-control study, in which data is collected on people who are known to have a certain health effect, seems to establish whether these people share exposure to some environmental agent in common.[17]

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[14] *Environmental Epidemiology–Public Health and Hazardous Wastes* (Washington D.C.: National Academy Press, 1991).

[15] Ibid.

[16] Dade W. Moeller, *Environmental Health*, Rev. ed. (Cambridge, MA: Harvard University Press, 1998), 33.

[17] Ibid., 37.

A crucial issue for environmental epidemiologists is whether their techniques are sensitive enough to adequately enumerate and account for the significant variables in appropriate ways. Environmental epidemiologists may have to work with limited sources of government data, or there may be potentially significant variables the presence of which has not been documented at all. Social variables like race, class, lifestyle choices, community membership, degrees of trust, gender, and the like, may be significant, though environmental epidemiologists are likely not to have the community access or technical capacity to measure these variables with any accuracy.

Despite the issue of sensitivity, most community health studies have been left in the hands of epidemiologists who are employed by government, corporate, or academic organizations. These environmental epidemiologists perform studies on a particular community's health in relation to the environment without enlisting the help of the stakeholders, and without their participation in any other way. Often results are not even disclosed to affected community members.

A sample case occurs in Pittsfield, Massachusetts in the 1980s.[18] Pittsfield is the home of a General Electric (GE) plant that used PCBs as a part of their production of power transformers. Since the early 1980s, the plant workers had been concerned about health problems from exposure to PCBs. In response to the workers' concerns, the company sponsored an epidemiological study in the early 1990s. The study reported that the plant had likely polluted a local lake, the Housatonic River and, as a consequence, the aquatic life in the watershed. Most of the epidemiological data was in the control of GE,

[18] The facts in my description are derived mostly from Richard W. Clapp's description of the case in "Popular Epidemiology in Three Contaminated Communities," *Annals of the American Academy of Political and Social Science* 584 (November, 2002): 35-46.

the managers of which took limited action to address any health concerns: they simply posted signs along the river and lake with warnings not to eat the fish.

The epidemiological study and posting of signs was not enough for the community members living downstream from the GE plant, who formed the Housatonic River Initiative (HRI) in the early 1990s. The goal of the organization was to press for epidemiological studies of the extent of the pollution from the GE plant and how it might have affected human health. It was hoped that the data generated by such studies would help them determine a plan for cleaning up the pollution, so a pilot health study was commissioned that measured the levels of PCBs in blood samples from members of the community who had volunteered as respondents. This and other efforts continued through the 1990s, which created awareness of several pollution problems in the region, including, in 1999, HRI members' becoming aware that, some thirty to forty years earlier, the GE plant had given soil to residents of the Lakewood section of Pittsfield in order to fill in their backyards. Adult residents who used the soil as fill reported health problems such as skin rashes. HRI sponsored several community meetings where residents spoke about their concerns and their recollections of the extent of contaminated soil that was spread through the neighborhood.

Based on the information shared at these meetings, HRI applied for funds from the U.S. EPA in order to conduct a survey of the potentially affected residents. They contacted a professional epidemiological research and training institute in Boston to help them formulate and execute a data collection survey. The survey data was aimed at being useful for seeing whether salient relationships existed among the survey data, the blood

samples, and the households and areas that received the soil. As the questionnaire was being developed, soil conditioning was proceeding to determine what the PCB levels were across a number properties. Some properties had such high levels of PCBs in the soil that GE paid to have it removed and replaced with new soil. Once again, GE took minimal action to respond to its polluting activities.

An HRI volunteer staff member administered the questionnaire. Out of 950 questionnaires mailed, 406 were returned with usable data; 406 of 950 does not represent the true response rate because it was not known whether 950 is the actual number of residents in the households. Many of the households would have had more members than questionnaires sent. HRI staff did additional corrections and coding of the questionnaire, and developed a plan for grouping residents' histories by potential for PCB exposure. The questionnaires were sent off for key entry and construction of a spreadsheet data file that HRI staff could then work with.

The initial analysis of the prevalence of skin rash, thyroid conditions, and miscarriages was telling. The primary comparison in these initial analyses was the prevalence of symptoms or conditions in the Lakewood neighborhood compared to the prevalence in the National Health Interview Survey (NHIS) conducted in 1996. NHIS a widely distributed, nationwide survey conducted by the National Center for Health Statistics (NCHS) in order to gauge key health indicators for people living in the U.S.

Using the same age groups as the NHIS, the prevalence of skin rash in Lakewood males and females was consistently higher than in the national data, although the numbers of responses in individual subgroups were small, and statistical significance was

calculated. Likewise, the reported thyroid disease in Lakewood residents was higher than in the NHIS survey data, but the numbers of cases were small, and there was no attempt to calculate the statistical significance of the findings. Further analyses of the Lakewood data are anticipated and progress continues to be made in terms of determining the degree of health issues among community members.

One of the key points of this case narrative is that the community members were able to participate in a way that appears to be fair and technically sound. Prior to the forming of HRI, people living downstream had been excluded from participating in the technical decisions, yet after HRI and its success with the community health survey, the community members were participating actively, contributing to understanding the technical issues in ways that were relevant to the other actors as well, from the EPA to GE. Some of the reasons for the success of the community health survey are clear from the case description. First, GE was only willing to do so much in order to take responsibility for the pollutants its plant had released despite the demands of the community members that GE's own research did not gather sufficient amounts of evidence. Second, professional environmental epidemiologists hired by GE or the EPA were not likely to have had access to the community members whose responses were part of the survey and samples. The members of HRI were undoubtedly seen as sharing the same stakes as the other downstream community members, which facilitated access to the community members. Third, the community health survey showed that community members with no scientific credentials could be trained expediently to produce epidemiologically relevant data. For these reasons, perhaps the community health survey

is worth considering as a right that all members of similar communities in similar cases should have. Perhaps all community members in similar situations should be able to initiate and execute their own community health survey as a right, and measures should be taken to have the right legally codified by administrative agencies insofar as it contributes to ensuring that technical decisions of this kind are fair and sound.

The right to a community health survey and the corresponding obligations it imposes on others is a promising candidate for a claim about what rights community members should have in technical decisions. The argument behind such a claim, based on cases in popular epidemiology, could be outlined as follows:

(1) Technical decisions include community members when they are fair and sound.

(2) Based on the Housatonic River case, if community members perform a community health survey, then their participation is fair.

(3) Based on the Housatonic River case, if community members perform a community health survey, then their participation is sound.

(4) Community members who perform community health surveys in similar cases will have been included as a part of fair and sound technical decision-making.

(∴) All community members in similar cases have a right to perform a community health survey. The other actors have an obligation to refrain from actions that prevent or interfere with the community members' performance of the survey.

The conclusion establishes that, granted (1)-(4), all community members in similar cases should be able to appeal to the right to a community health survey and expect that the other actors fulfill its corresponding obligations. The right serves to preserve a fair and sound technical decision situation. In other words, we are committed to technical

decisions that are fair and sound; the right to a community health survey contributes to ensuring that fairness and soundness are maintained. Such a right is not the only right, guideline, or standard that could be claimed as worth considering for ensuring fairness and soundness in cases similar to the Housatonic River case, which makes it unlikely that it would ever be claimed apart from other claims. The relationship among proposed candidate claims is not explored in this dissertation, but should be kept in mind when we look at individual claims.

The argument shows some of the normative justification for the right to the community health survey: fairness and soundness demand the inclusion of community members and the other stakeholders. Moral reasoning demands that like cases be treated alike and, based on correlativity, the other actors are bound by the corresponding obligations. But the argument does not allow us to distinguish between claims that are fair and sound from those that are not so. Why would community members endorse the right to a community health survey? Why are the other actors bound to respect the right? What conditions are met by the right that are not met by analogous but unfair and unsound claims about rights, required practices, and standards?

Preliminary conditions should be added that emphasize why the right and its corresponding obligations would be endorsed by the community members and binding on the other actors. Such conditions would also be able to reveal how other claims are not adequate. What preliminary conditions could be added to it?

The first issue is about the kind of technical decision situation that the Housatonic River case exemplifies. The case began as a dispute over whether GE was doing enough

research to account for its polluting activities: GE claimed it was doing enough; the community members questioned this. Why is having such a right an appropriate guideline for the practice of dispute resolution? The community health survey contributed to resolving the dispute through fair and sound participation. The right presupposes that the knowledge generated by the community health survey is an important contribution for understanding the technical issues.

The second issue is whether community members can reasonably appeal to the right to a community health survey based on their vulnerabilities as community members. In the case, the EPA funded part of the community health survey. Perhaps GE should have had some responsibility too. In any case, the claim was one that the community members could exercise despite their vulnerabilities and for this reason is particularly fair and sound due to their feasibility.

The third issue concerns the justice of participation in decision-making procedures. The community members were fairly recognized as contributors by some of the actors and later by the actors who saw the significance of their contributions after the fact. The right to community members allowed them to participate and participate on their own terms. Their differences were recognized and they had the chance to participate with minimal discrimination, which could be called recognition justice.

The right to a community health survey is adequately fair and sound in the abstract because it does not violate the conditions pertaining to the practice of dispute resolution, the vulnerabilities of actors, and the demands of recognition justice. The dissertation explores these conditions further.

4. The Purposes of Preliminary Conditions

My goal is to develop these conditions into a normative framework that could be appealed to by community members and the other actors to evaluate existing and proposed guidelines for technical decision situations like collaborations and disputes. The conditions would serve two purposes specifically for members of affected communities. First, administrative organizations in the U.S. and other countries have been mandated to include the participation of community members in technical decision procedures, which have led to the creation of many guidelines that administrative organizations and other stakeholders are required to comply with. Preliminary conditions would provide moral criteria for judging whether the guidelines are inclusive in the relevant respects (fair and sound). Second, there are many cases in which guidelines do not exist. In these cases, the conditions serve as constraints for how new guidelines should be structured and proposed. In this section I expand on these purposes in order to clarify the dissertation goal.

In the U.S., the National Academy of Sciences published *Understanding Risk* (1996), which formulates guidelines of inclusive technical deliberation.[19] The report claims that:

> Adequate risk analysis and characterization thus depend on incorporating the perspectives and knowledge of the interested and affected parties from the earliest phases of the effort to understand the risks. The challenges of asking the right questions, making the appropriate assumptions, and finding the right ways to summarize information can be met by designing processes that pay appropriate attention to each of these judgments, inform them with the best available

[19] Paul C. Stern and Harvey V. Fineberg, eds., *Understanding Risk: Informing Decisions in a Democratic Society* (Washington, D.C.: National Academy Press, 1996), 2.

> knowledge and the perspectives of the spectrum of decision participants, and make the choices through a process that those parties trust.[20]

This report mandates government organizations responsible for making technical decisions to include the participation of everyone affected. Like with the STS perspective, fairness and soundness requires inclusiveness.

The National Institute of Environmental Health Sciences has also mandated a participatory approach to technical decision-making that includes input from all stakeholders.

> …the Institute also recognizes the necessity of addressing environmental health concerns of community members while research is ongoing. In response to these needs, NIEHS established innovative initiatives that begin to bridge the gap between researchers and community residents. NIEHS envisioned that the partnership of these two groups would address community environmental health issues, while enhancing basic etiologic and exposure assessment research as well as facilitating the development of novel approaches to prevention research.[21]

The NIEHS endorses including community member participation in technical decision-making as a matter of fairness and sound technical decision-making.

The U.S. EPA also has a protocol for community member participation in technical decision situations where permits for technologies are being issued. In Volume 40 of the Code of Federal Regulations, Part 124, expanded stakeholder participation provisions are mandated for the Resource Conservation and Recovery Act, Safe Drinking Water Act, Clean Water Act, and Clean Air Act. These provisions include such procedural claims as both conditional and discretionary public hearings, specific guidelines for such hearings

[20] Ibid., 3.

[21] Liam R. O'Fallon and Allen Dearry, "Community-Based Participatory Research as a Tool to Advance Environmental Health Sciences," *Environmental Health Perspectives* 110, supp. 2 (April 2002), 155.

as well as responsiveness to community members' comments.[22] Moreover, the EPA's Science Advisory Board is mandated to elicit community members' participation in its reviews.[23]

These mandates are not only issued by administrative agencies within the U.S. government. The House of Lords in Great Britain issued a report calling for expanding public engagement in technical decision-making.[24] and Britain's Office of Science and Innovation has shifted to a model of public engagement with science and technology issues. [25] Democratic participation in making technical decisions is also favored in the European Union (EU). The EU commission favors an approach that legitimizes scientific and technical decisions through participation.[26] There is also a push for knowledge to come from other places than the traditional ones, such as established research institutions and universities.[27]

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[22] Michael B. Gerrard, *The Law of Environmental Justice: Theories and Procedures to Address Disproportionate Risks* (Washington D.C.: American Bar Association, 1999), 187-189.

[23] U.S. EPA, "Public Involvement in Advisory Activities," http://yosemite.epa.gov/sab/sabproduct.nsf/Web/PublicInvolvement?OpenDocument (accessed April 3, 2009).

[24] House of Lords (2000) *Science and Society* (London: Stationary Office).

[25] See Thorpe.

[26] See, EU-Commission (2000), *Science, Society and the Citizen in Europe*, Working Document; G. Abels, "Experts, Citizens, and Eurocrats – Towards a policy shift in the governance of biopolitics in the EU" *Europe and Integration online Papers (EIoP)* 6/19 2003, http://www.eiop.or.at/eiop/texte/2002-019a.htm.

[27] See, M. Gibbons, C. Limoges, H. Nowotny, S. Schwartzman, P. Scott, M. Trow, *The New Production of Knowledge* (London: Sage Publications, 1994); H. Nowotny, "Democratizing expertise and socially robust knowledge', *Science and Public Policy*20, 3 (2003): 151-156; H. Nowotny, P. Scott and M. Gibbons (eds.) (2001), *Re-thinking Science: Knowledge and the Public in an Age of Uncertainty* (London: Polity Press, 2001).

One issue with these mandates is that, while federal or national governments may endorse them, their guidelines are not complied with or applied by the smaller departments, agencies, and other local organizations that actually work with members of affected communities. While many governments believe in inclusive participation, it is often hard tell whether these mandates are being implemented at the local level, such as in technical disputes. Derby and Keeney write,

> In many situations in our society, the general responsibility for making acceptable risks decision rests with the regulatory agency. However, the legislative charters for these regulatory agencies often state general, vague objectives for what the agency should do. However, these charters never clearly state what the specific objectives of the agency should be or how to measure or achieve the regulatory objectives. These critical questions are left open for the agency to decide for itself, often outside the effects of public participation.[28]

Although the mandates demand public participation, the formulation of specific guidelines is not necessarily inclusive. Having a normative framework would enable community members to have expectations about how they should participate, evaluate and judge existing guidelines the formulation of which may have excluded them, and pressure agencies to comply with their mandates. The normative framework can be appealed to by members of affected communities in order to collaborate and resolve disputes with administrative agencies and other entities that fall under their jurisdiction and guidance.

Adequacy conditions could also be used as preliminary constraints on new guidelines that are proposed for technical decision situations. An example would be a technical decision-making situation involving community members of an affected town, a

[28] Derby, 224.

U.S. agency, and a corporation. The latter party aims to site a paper factory near the homes of the residents. The administrative agency, under the National Environmental Policy Act, requires an environmental impact statement before it will sign off on the corporation's permit. The agency hires a research team composed of government and university scientists to create the environmental impact statement (EIS) without consulting the community members who, as a consequence, feel excluded from the procedures used to develop the EIS. The problem is that the agency has been mandated to include community members in all its deliberative processes, but due to numerous non-vicious reasons, the agency does not do so. Excluding community members from the EIS is not fair or sound.

In this case, a mandate for inclusiveness had been issued, but the agency did not comply with it by formulating guidelines for community member participation. One reason why these lacks of compliance and specification can be allowed to go unchecked is because the community members did not have a normative framework to appeal to beyond their sentiments about being excluded. Were a normative framework cognitively available to the community members, they may have likely been able to demand that enforceable guidelines be established and also have a normative sense in how the guidelines ought to be structured in such a way as to be endorsable by them and binding on the other actors.

In the rest of the dissertation I argue for what the preliminary conditions should be. To do so, I focus on 'technical dispute' situations where actors disagree on what impacts and risks to attribute to a technology. I also use examples of affected 'indigenous'

communities like Native Americans and First Nations in North America. The specificity of these examples will, in later chapters, help to highlight the categories of facts that need to be accounted for by existing or proposed guidelines when they are intended to be relevant to specific communities.

6. Conclusion

The normative basis of guidelines of community participation is that they ought to be fair and sound. STS scholars have claimed this regarding technical decision situations like collaborations and disputes. But knowing that guidelines should be fair or sound does tell us what features of existing or proposed guidelines make them fair and sound. I argue that preliminary conditions are required that guidelines cannot violate if they are to be *prima facie* justified as fair and sound. When combined with fairness and soundness, these preliminary conditions furnish a normative framework that can empower community members to play a more active role in technical decision-making. This dissertation is devoted to articulating and defending this normative framework as it would apply to technical dispute situations involving members of indigenous communities.

Chapter 3

1. Introduction

How is moral reasoning relevant to technical disputes? The issues raised by this question concerns how technical disputes are defined in the midst of the larger and more complicated conflicts of which they are a part. In this chapter, I argue that moral reasoning is relevant to technical disputes insofar as technical disputes are discursively identifiable within larger conflicts. I articulate and defend a method for analyzing disputes, which I refer to as 'conflict campaign analysis,' that focuses on certain interrelated features of actors' statements about impacts and risks. The role of moral reasoning in terms of technical disputes is to provide a normative framework for actors to integrate into the different parts of their 'conflict campaigns.'

I begin in section two by describing some technical disputes involving members of indigenous communities. In section three, I then characterize technical disputes in the sense that I use throughout this dissertation: situations in which actors' impact statements fall into disagreement. Finally, in section four, I respond to a criticism of my definition of technical disputes. In response, I outline a conception of conflict campaigns that defuses the criticism.

2. Disagreements about Technologies and Indigenous Communities

Sterling Gologergen is a Siberian Yupik from Savoonga, St. Lawrence Island, Alaska. In her lifetime, she and her fellow community members have perceived

increases in cancer among residents of the island. They have also become concerned with the level of contaminants in their subsistence foods. Gologergen, who works for the Indigenous Environmental Network[1] and Alaska Community Action on Toxics[2], believes that the cancer rates and food contamination are attributable to the residents' exposures to toxics leached from two formerly used defense facilities (FUDS) on St. Lawrence Island.[3] The FUDS include an Aircraft Control and Warning radar site, a U.S. Air Force Security Listening post, and a White Alice Communications System.[4] The facilities are collectively responsible for dumping petroleum, dioxin, unexploded ordinance, diesel range organics, PCBs, and other hazardous substances.[5]

The U.S. Agency for Toxic Substance and Disease Registry (1999) and the Army Corps of Engineers (2001) performed studies on the toxicity of the island.[6] Both studies found low levels of contaminants, determining that the residents of St. Lawrence Island were exposed to no more contaminants than Native and non-Native Alaskans who do not

[1] http://www.ienearth.org/ (accessed November 20, 2008).

[2] http://www.akaction.org/ (accessed November 20, 2008).

[3] Alaska Contaminated Sites Program, "Department of Defense Sites in Alaska," http://www.dec.state.ak.us/SPAR/csp/dod_sites.htm#fuds (accessed November 20, 2008). See, Joni Adamson, Mei Mei Evans, and Rachel Stein, *The Environmental Justice Reader: Politics, Poetics, Pedagogy* (Tucson: University of Arizona Press, 2002).

[4] Mimi Hogan, Sandra Christopherson, and Ann Roth, "Formerly Used Defense Sites in the Norton Sound Region: Location, History of Use, Contaminants Present, and Status of Clean-Up Efforts," Alaska Community Action on Toxics, National Institute of Environmental Health Sciences Grant # ES014308 July 1st, 2006.

[5]Alaska Contaminated Sites Program, "Saint Lawrence Island," http://www.dec.state.ak.us/spar/csp/sites/stlawrence.htm (accessed November 20, 2008).

[6] B.N Narloch, K.M. Rodriguez, L.K. Geist; MWH and USACE, "Human Health Risk Assessment and Risk Communication for a Subsistence Population using the Northeast Cape, Saint Lawrence Island, Alaska," Society for Risk Analysis Annual Meeting, 2004.

live nearby similar FUDS.[7] A better explanation of the high cancer rates are cigarette smoking and other lifestyle choices made by Siberian Yupik members.[8]

These findings support the claim that the residents of the island are not victims of environmental injustice, i.e. unequal access to environmental goods and disproportionate burdens of environmental risks. The ramifications are that state and federal level support will be low or non-existent for any potential clean-up of St. Lawrence Island desired by members of the Siberian Yupik community.[9]

The basic claims are disputed by Gologergen and her community. Residents testify to knowing family members who have died of cancer yet were non-smokers and lived healthy lifestyles, in addition to observations of changes in the quality of subsistence foods.[10] For community members, these observations clearly point to an explanatory gap in the impact statements made by the U.S. government. Whose statement about the impacts of the FUDS is more accurate? How should the community members participate in resolving the dispute? This conflict will be referred to as the St. Lawrence Island conflict.

Thousands of miles away in Maine, members of the Passamaquoddy Tribe formed the Nulankeyutomonen Nkihtahkomikumon organization (NN)[11]. The organization aims

[7] Alaska Contamined Sites Program, "Saint Lawrence Island," http://www.dec.state.ak.us/spar/csp/sites/stlawrence.htm (accessed November 20, 2008).

[8] Adamson, 34-35.

[9] Adamson, 34-35.

[10] Kai A. Henifin, "Toxic Politics at 64N, 171W: Addressing Military Contaminants on St. Lawrence Island, Alaska" (master's thesis, Oregon State University, 2007).

[11] Nulankeyutomonen Nkihtahkomikumon means "we protect the homeland."

at resisting the implementation of a liquefied natural gas terminal and pipeline, which is slated for construction on a portion of shoreline land owned by the tribe. Quoddy Bay Liquefied Natural Gas is the corporation responsible for the plans. Different groups within the Tribe have a negative history with Quoddy Bay, which is part of the reason for the recent escalation of this conflict.

The background of the conflict is that the Passamaquoddy Tribal Council signed a 50 year lease with Quoddy Bay. The lease allowed construction of a liquefied natural gas terminal on three-quarters of an acre of land called Split Rock on the shore of Passamaquoddy Bay. NN opposes the Tribal Council and Quoddy Bay representatives who signed the lease. They also oppose the Bureau of Indian Affairs, the employees of which are responsible for vetting the lease procedure under Indian law. NN members claim that the technology will dramatically change the natural beach area, which will degrade their historical, cultural, and religious heritage, decrease the land's recreational significance, and spoil the environmental quality by transforming it into an industrial zone inaccessible due to environmental hazards. NN members also cite the fact that Quoddy Bay has no prior experience in constructing this kind of technology.[12]

NN filed a lawsuit in 2005 claiming that the Bureau of Indian Affairs did not conduct the lease approval process properly because it did not conduct adequate environmental reviews, interagency consultations, and fair market appraisals. The BIA filed a motion to dismiss NN's lawsuit on the grounds that the NN does not have legal

[12]Gale Courey Toensing, "Passamaquooddy Suit to Stop Gas Terminal Finds New Life," *Indian Country Today* (September 24, 2008) and, same author and newspaper: "Passamaquoddy Group to Appeal Dismissal of LNG Lawsuit" (September 12, 2008); "LNG Firm Cuts Payments to Passamaquoddy" (August 12, 2008).

standing to file a claim. The litigation is currently caught up in a storm of claims, motions, and counter-claims that engage some of the most difficult issues in Indian and environmental law.[13]

Recently, the Federal Energy Regulatory Commission dismissed Quoddy Bay's application for the terminal, alleging that the latter did not provide the required technical information.[14] This represents a victory for NN. Quoddy Bay, however, claims that they intend to build the safest terminal in the world, despite their inexperience, and that it is just a matter of time before they are able to provide the requisite technical information to prove it.[15] This conflict is far from over. Do the FERC and BIA employ fair and sound guidelines given that the technical details do matter? What guidelines would members of NN be justified in demanding that FERC and BIA comply with? This conflict will be referred to as the Passamaquoddy Bay conflict.

Bob Lovelace is an ex-chief of the Ardoch Algonquin First Nation. He, among other Ardoch Algonquin members, have had to serve jail sentences and pay fines due to their actions to stop uranium exploration and mining on their lands.[16] The indigenous lands of the First Nation are interspersed with the borders of Frontenac County, in

[13] For a history of this case, see "Feds Dismiss Proposed Liquefied Natural Gas Terminal on Sacred Lands," *Indian Country Today* (November 10, 2008) http://www.indiancountrytoday.com/home/content/34085554.html (accessed April 15, 2009).

[14] "FERC Dismisses Quoddy Bay LNG Application" *Bangor Daily News* (October 18, 2008).

[15] A.J. Higgins, "Quoddy Bay LLC Promises the World's Safest Terminal," *Bangor Daily News*, December 21, 2005.

[16] Kate Harries, "Algonquin Negotiator Takes Stand, Found in Contempt," *Indian Country Today* (March 17, 2008).

Northern Ontario. Canada is the largest producer of uranium in the world.[17] Due to a recent spike in uranium prices, corporations have begun to stake claims in parts of Canada other than those who are usually mined in the province of Saskatchewan. Frontenac county is one of these new parts of Canada being explored for valuable deposits of uranium ore.

Frontenac Ventures, a Canadian mineral extraction corporation, has explored as much of Frontenac County as possible and has legal entitlements to do so. The Ontario Mining Act of 1887 gives subsurface rights to all Crown lands to corporations no matter who occupies the surface area or is currently claiming some kind of surface rights. Although the Act is rather old for today's issues, it is still relevant given that Canada remains an extraction-based economy. Economic survival depends on successful exploration of deposits of valuable minerals.

When members of the Ardoch Algonquin Nation found out that their lands were being explored by Frontenac Ventures, they took immediate action to stop exploration and place a moratorium on uranium mining in the county. According to Ardoch Algonquin members, uranium exploration will deface the environment and subsequent mining operations will cause radioactive substances to leach into the interconnecting system of lakes that form part of the Great Lakes watershed.[18]

[17] Daniel Workman, "World's Best Uranium Countries" (May 2, 2007), http://internationaltrade.suite101.com/article.cfm/worlds_best_uranium_countries (accessed April 20, 2009).

[18] See Ardoch Algonquin First Nation, http://www.aafna.ca/ (accessed April 12, 2009).

When uranium is mined, the tailings are buried near the mine site in order to prevent the leaching of radioactive substances into the environment.[19] The First Nations members claim that such technologies will not prevent leaching from occurring and will also be responsible for destabilizing the water levels in the region. They cite powerful case studies from the last sixty years in which First Nations members in other regions have suffered the effects of contamination from radioactive substances, case studies which form a part of the history of oppression against indigenous peoples in Canada.[20]

One of the case studies comes from the Elliot Lake uranium mine near the Serpent River Reserve in Ontario, established by the corporation Rio Algom in the 1950s. Radioactive waste leached into the waterways, which resulted in the destruction of aquatic life. The subsequent contamination increased rates for cancer, birth defects, and other medical conditions.[21] There are analogous cases from the Southwestern U.S.

A similar set of claims was made on the other side of the Great Lakes region in the 1990s when Crandon Mining Co., created by Exxon and Rio Algom, sought to construct a sulfide mine on the Mole Lake reservation. Members of the Mole Lake Chippewa argued that the mines would generate some 60 million tons of acidic waste, half of which would be dumped back to fill mine shafts, the other half of which would end up in

[19] Peter Diehl, "Uranium Mining and Milling Wastes: An Introduction," http://www.wise-uranium.org/uwai.html (accessed March 12, 2009).

[20] Kate Harries, "Small Price to Pay for Your Conscience: A Conversation with Bob Lovelace," *Indian Country Today* (May 12, 2008).

[21] Al Gedicks and Zoltan Grossman, "Exxon Returns to Wisconsin: The Threat of the Crandon/Mole Lake Mine," *The Circle* (April 1994).

tailings ponds ninety feet deep and spreading over three hundred sixty-five acres. They would contaminate both the Mississippi and Lake Michigan watersheds.[22]

At one point in the conflict, the mining opponents claimed that the twenty-five hundred-foot shafts would drain groundwater to the point that the water table would drop by as much as seven feet over a four square mile area. Exxon countered this claim by saying that the process will create wetlands and thus enhance rather than degrade the environment.[23]

Like Exxon and Rio Algom, Frontenac Ventures disputes the claim of the Ardoch Algonquin Nation about the impacts of uranium exploration and mining. Exploration and mining techniques have been refined over the last sixty years. Many companies in Canada, for example, have won awards for their technologies' reduction of environmental impacts. Frontenac representatives also question the First Nations members' interpretation of the past case studies. Some scientists have shown that the effects of contamination claimed to the be the product of uranium and other kinds of mining may not be unusual for anyone in Canada. Because their impact statements are inaccurate, the First Nations members do not have the right to a moratorium on uranium exploration and mining.

Bob Lovelace and his supporters continue to resist Frontenac's exploration activities, both in the courts and through protests in Ottawa and in Frontenac County. Some of his supporters are members of non-Native citizens groups from Frontenac

[22] Justine Smith, "Custer Rides Again – This Time on the Exxon *Valdez*", *Defending Mother Earth: Native American Perspectives on Environmental Justice*, 64.

[23] Ibid., 64.

County. Lovelace, his fellow community members, and supporters would have a stronger position if guidelines and standards were available to appeal to. I will refer to this conflict as the Frontenac County conflict.

Every case that I have just described involves a conflict between indigenous community members and corporate or government actors. In each of these cases it is unclear what proposed or existing guidelines the indigenous actors, along with other stakeholders that support them, should abide by for resolving the dispute over what impacts and risks are attributable to the technologies in question. How are these previous cases representative of technical disputes, and how should we define them?

3. Environmental Conflicts and Technical Disputes

The environmental conflicts just described feature public, technology-related issues that reflect deep differences between government and corporate actors like the Army Corps of Engineers and Quoddy Bay on the one side, and indigenous community members in North America like the Ardoch Algonquin First Nation and the Siberian Yupik community on the other side. Other actors are also involved, including activists, local residents, and scientists. Whether the conflicts remain intractable or transition toward settlement carries ramifications for the well being of these actors and their communities, shareholders, and constituencies.

One starting point for attempting to understand such conflicts is the perspective developed by environmental conflict mediators. These professionals are social scientists, lawyers, and activists who both study and participate in the mediation of environmental conflicts. Mediators study the different ways in which actors conflict with one another in

order to understand better what models of cooperation, settlement, and closure may be attractive.

As a consequence, there is established literature on how to understand and perceive environmental conflicts. Environmental conflict mediators Kirk Emerson et al. offer a representative definition of environmental conflicts, which are "fundamental and ongoing differences among parties concerning values and behavior as they relate to the environment… They usually involve multiple parties who are engaged in a decision-making process and disagree about issues traceable to an action or policy that has potential environmental effects."[24] Environmental conflicts are ultimately disagreements over which actions are right or wrong based on how they may impact the environment. This definition characterizes environmental conflicts as reflecting differences about what actions actors believe to be right or wrong with respect to the environment.[25] Conflicts like the St. Lawrence Island, Passamaquoddy Bay, and Frontenac County conflicts are good examples.

Environmental conflict mediators know examine how environmental conflicts as encompassing many smaller-scale disputes. Linda Putnam and Julia Wondolleck distinguish between conflicts and disputes by arguing that "'Conflict' refers to the fundamental and underlying incompatibilities that divide parties while a 'dispute' is an

[24] "The Challenges of Environmental Conflict Resolution" in *The Promise and Performance of Environmental Conflict Resolution*, ed. Rosemary O'Leary and Lisa B. Bingham (Washington DC: Resources for the Future, 2003), 4.

[25] For further references on definitions of environmental conflict, see The 1998 Environmental Policy and Conflict Resolution Act (P.L. 105-156); Alissa J. Stern and Tim Hicks, *The Process of Business-Environmental Collaborations: Partnering for Sustainability* (Westport, CT: Quorum Books, 2000); U.S. Institute for Environmental Conflict Resolution (USIECR), www.ecr.gov (accessed March 16, 2008); J. Walton Blackburn and Willa Marie Bruce, *Mediating Environmental Conflicts: Theory and Practice* (Westport, CT: Quorum Books, 1995).

episode that becomes actualized in specific issues and events."[26] Disputes, then, are smaller disagreements on particular issues and events that constitute a larger conflict.

The Passamaquoddy Bay conflict, for example, features (1) a legal dispute over the application of Indian law to land-use, (2) a cultural dispute over how the shoreline property ought to be valued, (3) a political dispute about which intertribal groups or U.S. agencies should influence tribal decisions, (4) a risk assessment dispute over how to ethically weigh the market value of the technology impacts, and (5) a technical dispute over what the baseline technology impacts will actually be and what guidelines should be followed to determine them.

Without doubt, a more fine-grained case presentation and analysis would reveal more disputes than (1)-(5) in the Passamaquoddy Bay conflict. The same could be said for a case analysis of the other technology-related conflicts. Some environmental conflict mediators and sociologists would also point out that (1)-(5) are not static disputes. Rather, the salience of the disputed issues are continually being reassigned, transformed, and reoriented according to complex institutional and social contexts against which the environmental conflicts are staged.[27] In light of these complexities, understanding the relevance of moral reasoning to conflicts like these appears akin to plowing the sea.

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[26] "Intractability: Definitions, Dimensions, and Distinctions" in Roy J. Lewicki, Barbara Gray, and Michael Elliot (eds.), *Making Sense of Intractable Environmental Conflicts* (Washington DC: Island Press, 2003), 37.

[27] See, Peter Machamer, Marcello Pera, and Aristides Baltas, eds., *Scientific Controversies: Philosophical and Historical Perspectives* (Oxford: Oxford University Press, 2000); H. Tristram Engelhardt and Arthur Caplan, eds., *Scientific Controversies: Case Studies in the Resolution and Closure of Disputes in Science and Technology* (Cambridge: Cambridge University Press, 1987); Robert White, ed., *Controversies in Environmental Sociology* (Cambridge: Cambridge University Press, 2004).

Here I focus on technical disputes. Technical disputes take place in the larger context of environmental conflicts. For environmental conflicts, a technical dispute is any disagreement over what, if any, baseline impacts and risks are attributable to a technology, whether newly implemented or retired. The baseline impacts and risks are the general human and environmental changes effected by a newly implemented or retired technology. Disagreements over baseline impacts and risks are also disagreements over what probabilities to assign to various occurrences. In this sense, technical disputes can be over risk characterization or risk estimation, where risk refers only to the probabilities assigned, not our evaluation of them.

Actors in conflicts typically express their positions on technology impacts and risks in the form of statements. (1)-(6) below are examples of statements expressing actor's positions on technology impacts and risks, where X stands for some technology, from a waste incinerator to a large-scale dam:

(1) Nitrogen dioxide levels released from X are below 40 micrograms per cubic meter of air (mcg/m3).

(2) Modified technological techniques X for burying uranium tailings will still leach radioactive substances into the environment.

(3) A 10,000 megawatt dam, X, will destroy salmon habitats to the degree that local consumption rates will be reduced.

(4) Local consumption rates of salmon are how 85.4 grams/day for adult members of a population owing to X, which has altered salmon runs.

(5) Due to X, the infant mortality rate is 200% higher than the U.S. national average.

(6) Exposure to dioxin, which is emitted by X, is correlated with carcinogenesis.

Each of these statements expresses a factual claim about the nature and extent of a technology's impacts and risks on humans and the environment, that is the human and environmental changes effected by a newly implemented or retired technology.

Some of these statements are couched in "Western" scientific and engineering terminology and unintelligible beyond it. Others are accessible to and can be used by different science and knowledge traditions, and can be expressed in lay-person's terms. Some of the statements are general, while some are more specific. Some claims allege direct and exclusive causation, while others are less causally deterministic. What (1)-(6) share in common is that they express some sense of what the baseline nature and extent of technology impacts and risks is, has been, or will be. They allege that certain facts are or will be the case due to a newly implemented or retired technology. These statements could also be referred to as 'impact and risk estimates' or 'impact and risk characterizations.' To various degrees, they convey some sense of what is expected, has occurred, or is to be expected from a newly implemented or retired technology in qualitatively or quantitatively probabilistic terms.[28]

Using the terminology just laid out, a technical dispute occurs when actors' impact statements (risk estimates or risk characterizations) are in disagreement with one another with respect to a technology. To be exact, a technical dispute occurs when two

[28] One conception of risk has it that the idea of technology impact has little to do with the idea of technology risk. However, some ethicists and social scientists do not see the problem in this. In "Modern Theories of Society and the Environment: the Risk Society", Eugene A. Rosa writes that, "Risk is the principle analytic tool for assessing human impacts on the environment. It comprises both an analytic orientation and a suite of methodologies for formally anticipating the untoward outcomes to the environment of technological and other human choices." *Environment and Global Modernity* (London: Sage, 2000). He goes on to write, "Risky outcomes, such as automobile accidents, occur with some probability – not certainty. The occurrence of outcomes produces consequences, such as the number of deaths from such accidents," 76.

conditions are met. (1) Actors express contradictory impact statements; (2) The actors take issue with the other actors' statements because they believe them to be inaccurate and misguided.

Conditions (1) and (2) are apparent on the surface of the environmental conflicts described earlier. Siberian Yupik community members state that the chemicals leaching from the retired Northeast Cape facility are the cause of higher rates of cancer in their community. The U.S. government scientists do not accept this statement as accurate. Instead, they offer an impact statement according to which it is smoking and lifestyle choices that are more accurate explanations of the cancer rates. Some studies show cancer rates on St. Lawrence Island are within the normal range when compared with cancer rates in other communities in Alaska.

In this case, the actors express conflicting impact statements. The actors also have different reasons for taking issue with the other actors' impact statements. The purpose of this dissertation is to determine how existing or proposed guidelines for resolving these disputes are justified. I am concerned with what conditions such guidelines have to meet for the members of the affected communities to endorse them as well as for the other actors to be bound by them. But these concerns may be problematic if the working definition of technical disputes is not relevant to moral reasoning. In the next section I explore and defuse this criticism.

4. Conflict Campaign Analysis

I have articulated a definition of technical disputes that draws, in part, on contemporary cases of environmental conflicts, an analytic distinction between

environmental conflicts and disputes, and the scholarship of environmental conflict mediators. The goal of the definition is to pick out those disputes within environmental conflicts that turn on epistemic disagreement over what impacts and risks are attributable to the technology in question. This definition is subject to objections. In this section, I describe and respond to the most critical objection, which is that technical disputes are not separable from the other issues and disputes in environmental conflicts. The implication is that the kind of moral reasoning I wish to do throughout this dissertation is problematic if it assumes that this definition of technical disputes accurately reflects real world conditions. My response is based on what I will refer to as 'conflict campaign analysis.' Conflict campaign analysis is an analytic method for understanding conflicts and applying moral reasoning to them.

Some objectors may claim that the definition of technical disputes is naïve. Their objections are based on the idea that technical disputes are not separable from legal proceedings or capable of being disentangled from the other issues and disputes in the environmental conflict. This idea is that there are no perfectly separable technical disputes. Rather, there are technical disputes framed in legalistic terms, or technical disputes rooted in environmental racism, or technical disputes that are strategic moves in struggles for power, or some combination of any of these.

The objection is that because I am articulating a separation of technical disputes, I am providing at best an artificial foothold in the actual environmental conflicts. For that reason, any guidelines that assume that technical disputes are separable are going to have no relevance to the stakeholders and other actors in any realistic environmental conflict.

Guidelines based on an overly reductive unit of analysis will be relevant only for a contrived technical decision dispute situation.

I want to respond to this objection by first conceding its principal point. Technical disputes are not separable from legal proceedings, or capable of being disentangled from the other disputes and issues in environmental conflicts. Actors in environmental conflicts face complicated and intertwined disputes and issues that, from their standpoint, are not reducible to neat lists of disputes like the legal dispute, the technical dispute, the political dispute, and the like.

Be this as it may, technical disputes remain identifiable within the discursive positions that actors take in relation to or against the other actors in the environmental conflict. Discursive positions are the publicly articulated stances offered by the actors in the environmental conflict. In articulating these positions, actors *do* make explicit statements about the impacts and risks attributable to the technologies in question. These impact statements reflect epistemic differences and disagreements about how to estimate impacts and risks. There is a lot at stake in how these impact statements are expressed, silenced, or qualified. The members of the Ardoch Algonquin First Nation do state that uranium mining technologies will cause local waterways to be polluted in a way that will alter human and environmental health. The representatives of Quoddy Bay LLC do state that their liquid gas terminal will produce minimally disruptive impacts and few risks to human or environmental health. How these statements are processed by the different actors in the environmental conflict will ultimately bear on who gets harmed or who benefits from the technology. These publicly articulated positions are identifiable by

looking at the public channels of press releases, newspaper features, commercials, speeches, activist media, interviews, litigation claims, and the like. They can also be identified through anthropological and sociological fieldwork or historical research that records actors' positions within an environmental conflict.

These impact statements are, of course, interwoven with other issues and disputes in the environmental conflict. Because the statements reflect technical matters, we can try to address them directly while still admitting that we are not even coming close to addressing everything. This is not problematic if we do not deny that technical problems and issues are intertwined with legal, political, and cultural problems and issues. Yet we are not forced to subsume the technical problems solely under legal, political, or cultural frameworks. The Ontario Mining Act may be judged immoral and requiring revision based on the type of moral reasoning that moral and legal philosophers and social scientists bring to legal matters. From the standpoint of political philosophy, the Yupik's sovereignty claim may be prior to all other disputes and, at some level, trump them. These examples do not imply that we should give up trying to make normative claims about what guidelines are appropriate for resolving technical disputes. We should still do so but without also believing that the entire environmental conflict is reducible to only the technical dispute.

In order to avoid losing sight of these complexities, I have designed an analytic method that I refer to as 'conflict campaign analysis.' This method maps out the different discursive positions that actors take in terms of 'conflict campaigns.' The mapping details how the different issues and disputes form part of an argumentative nexus that is

identifiable in the overall discourse produced by the actors in the environmental conflict. Using this analytic method provides us with the advantage of being able to focus on the technical dispute without abandoning sight of the big picture. In what follows I discuss conflict campaign analysis in more detail.

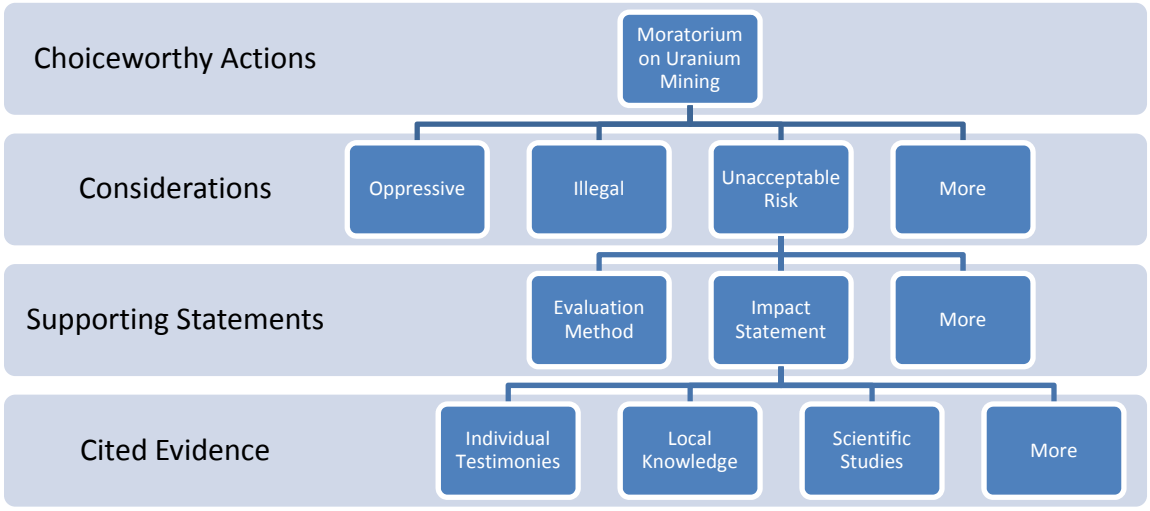
An actor's 'conflict campaign' refers to the publicly articulated action deemed to be choiceworthy for conflict closure (for the actor) plus the publicly articulated rationale forwarded in favor of that action. For example, in the Frontenac County conflict, Frontenac Ventures publicly articulates 'permission to explore and mine uranium' to be the action choiceworthy for closing the environmental conflict. This action entails that the other actors do not interfere with Frontenac's mining and exploration activities. The rationale offered in support of the choiceworthiness of this action includes legal, political, social, historical, and technical statements that are publically articulated and serve as reasons counting in favor of that action. One of the impact and risk statements is that the uranium tailings will not leach into the watershed. This statement serves as a consideration that counts in favor of granting permission to explore and mine uranium in Frontenac County.

The idea is that impact statements are included within conflict campaigns as supporting statements for considerations publicly articulated as counting in favor of what actions are held by some actors as choiceworthy. In this way, impact statements are directly linked to legal, political, social, historical, etc., considerations. Impact statements fit into a larger picture of conflict campaigns that are part of the discursive,

surface structure of environmental conflicts holistically conceived. Figure 1 illustrates the role of impact statements in campaigns.

In Figure 1, the top (shaded) horizontal bar refers to the actions prescribed as choiceworthy by a particular campaign. The example used in the figure is loosely based on that of the First Nations actors in the Frontenac County conflict. The campaign represents those actors who participate in it and endorse the choiceworthiness of the prescribed action(s). The next lower (shaded) horizontal bar refers to the articulated considerations that count in favor of this action.

Figure 1. Campaign Structure with Emphasis on Technical Dispute Phase



The articulated considerations may be categorized as being legal, technical, or political in nature. Each of these considerations can be subject (and usually is) to dispute by the other campaigns in the environmental conflict. These considerations are, in turn,

bolstered by supporting statements, which express alleged facts and concerns relevant to the considerations. Supporting statements are featured in the next lower (shaded) horizontal bar. Each of these considerations is connected to evidential materials that are publicly articulated as supporting them. Impact statements are derived from interpretations of available evidential materials. Evidential materials range widely, from anecdotes, to testimonies, to the results of scientific studies. The bottom bar (shaded) refers to evidential materials. A more complex figure would account for all such evidential materials that are deemed to endorse the supporting statements of participants in a campaign

What Figure 1 represents is that environmental conflicts break out when actors forward different actions as choiceworthy. The specific disputes within the environmental conflict are related to smaller clashes among the different considerations, supporting statements, and interpretations of evidential materials. In particular, technical disputes in environmental conflicts occur at the various points where actors' considerations, supporting statements, and interpretation of evidential materials clash in public discourse.

Technical disputes, then, can be philosophically examined as clashes among actors' supporting statements. Supporting statements are intended by the actors who express them to strengthen broader considerations articulated as counting in favor of actions held to be choiceworthy for resolution. Technical disputes are one kind of dispute, among other disputes, from legal to historical, that are philosophically analyzable within the structure of conflict campaigns.

Moral reasoning is relevant to technical disputes insofar as we can examine the impact statements from the publically articulated discourse. Existing and proposed guidelines for resolving technical disputes should be evaluated according to whether actors should appeal to them in their positions or explicitly demand that the other actors comply with them. A justified guideline, for example, is one that community members could add to their impact statements, claiming that the technology could potentially cause a set of impacts and that the actors should all follow a certain guideline to determine whether that is the case. Actors who do not comply with the justified guideline would be treating the community members unfairly and unsoundly.

5. Conclusion

Whether the normative framework aimed at in this dissertation is applicable to community members depends on whether the way technical disputes are defined is relevant to moral reasoning. I argued that technical disputes are understandable as part of larger environmental conflicts and that they occur at the point where actors statements and impacts and risks disagree with one another. Technical disputes show up in actors' conflict campaigns and are identifiable in their publically articulated discourse. Moral reasoning can provide a normative framework for the justification of existing or proposed guidelines which can then be applied to the actors' publically articulated impact statements in terms of demands on the other actors.

Chapter 4

1. Introduction

Existing or proposed guidelines must have epistemic presuppositions about actors' formulations of impact statements and why they disagree in technical disputes. Problematic epistemic presuppositions will not be endorsable by community members or binding on the other actors. In this chapter, I argue for the first condition that cannot be violated by guidelines if they are to be justified: guidelines cannot contain epistemic presuppositions that are inconsistent with the requirements of practice of dispute resolution, which I refer to as the 'condition of acceptability for dispute resolution.'

In section two, I define epistemic presuppositions and show how guidelines must have them. I then argue that epistemic presuppositions will only be acceptable to actors if they do not beg the question, which I refer to as the condition of acceptability for dispute resolution. In section three, I explore an example of epistemic presuppositions that violate this condition by referring to Cass Sunstein's theory of the cost-benefit state. I conclude in section four by claiming that epistemic presuppositions based on the concept of 'evidential pluralism' will not violate the condition of acceptability for dispute resolution.

2. The Condition of Acceptability for Dispute Resolution

Guidelines for community members in technical disputes have to have 'epistemic presuppositions' because the actors' statements about the impacts and risks attributable to

technologies are in disagreement. 'Epistemic presuppositions' are explanations, conceptions, or assumptions of why actors formulate particular impact statements and why they disagree on what the impacts and risks are or how evidence should be collected and configured. Epistemic presuppositions have to underlie existing or proposed guidelines insofar as they are prescriptions for how the actors should participate in the resolution of the technical dispute. Complying with the prescriptions may force some actors to reject or revise their impact statements, change their perspectives on the accuracy of other actors' impact statements, and trust the epistemic advice of other actors.

The types of guidelines being explored in this dissertation can be said to have the following general structure in terms of how they include epistemic presuppositions:

(1) Right, required practice, or standard X is justified as fair and sound for actors in technical disputes if it is presupposed that the actors disagree due to epistemic presupposition Y, where Y could be an explanation, conception, or assumption of how actors formulate their impact statements based on their interpretation of evidence, why they disagree with the other actors, or how they collect and configure evidence.

Examples of Y could be:

(Y1) The community members formulate their impact statements irrationally.

(Y2) The experts tend to manipulate their impact statements because of their biases in favor of the corporations that employ them.

(Y3) Community members have more accurate knowledge of the environment they inhabit than scientific experts who have been brought in from elsewhere.

I call these presuppositions 'epistemic' in order to emphasize that they are explanations, conceptions, and assumptions about how actors come to believe what they do about what

impacts and risks to attribute to a technology and how to collective and configure evidence about it.

All guidelines for technical disputes have epistemic presuppositions simply because they are to be followed when actors disagree over the technical details. A guideline that does not have any explicit epistemic presuppositions *ipso facto* carries the assumption that the epistemic dimension of technical disputes is irrelevant. For example, any guidelines that presuppose the 'proletarianization' of science from chapter two are committed to the assumption that whatever members of the public say about a technology is allowed, whether what the public says is accurate or not or based on the best expertise.

When we reflect on the kind of epistemic presuppositions that justified guidelines have and that unjustified guidelines do not have, we do not have to take a strict position on what criteria constitute accurate evidence, impact statements, and so on. Guidelines are intended to be endorsable by the community members and binding on the other actors. The first task should be to show how epistemic presuppositions have to be built into existing or proposed guidelines in such a way that the community members can endorse them and that would be binding on the other actors.

The difficulty is that epistemic presuppositions will, for the most part, indicate that certain actors are better suited to collect evidence or that certain experts should be deferred to. Onora O'Neill claims that moral reasoning about practical problems should start from "the ways in which the agents who are mainly involved would construe the

problems."[1] She goes on to state that "…construals of problems which neglect agents' views risk being unintelligible to those who may have to act. Our 'moral starting point', to use a phrase of MacIntyre's, must include construals of acts, situations and problems which are intelligible to agents whose construal of problems may seem deficient or ideologically biased."[2]

O'Neill's claim, although intended for a more general application, is relevant to the epistemic presuppositions that I am examining. The epistemic presuppositions underlying existing or proposed guidelines, especially those that make discriminations about accuracy or that rule out socially driven impact statements, have to be framed so that actors can see why they should be accepted. In other words, if an epistemic presupposition implies that the community members or other stakeholders are epistemically deficient – and perhaps in the case they really are – then it is not enough to simply state that they are deficient. Reasons have to be offered that the actors can understand and accept on the basis of their understanding.

Another aspect of O'Neill's claim is the idea that actors are embedded in particular kinds of situations. I am concerned with technical disputes; guidelines are intended to be appealed to and followed as a matter of dispute resolution. The practice of dispute resolution requires that actors be given grounds to accept the epistemic presuppositions that are being made, even when these presuppositions challenge their beliefs about the technology. Perhaps these limits were not immediately conceivable by them according to

[1] "How Can We Individuate Moral Problems," in *Applied Ethics and Ethical Theory*, ed. David Rostenthal and Fadlou Shehadi (Salt Lake City: University of Utah Press, 1988), 95.

[2] Ibid., 95.

how they used to think about their impact statements and the impacts and risks of the proposed technology.

In light of these considerations based on O'Neill, there is a preliminary condition that can be imposed on guidelines. I call it the 'condition of acceptability for dispute resolution.' The condition requires that epistemic presuppositions of guidelines have to be testable by actors because testability is required by the practice of dispute resolution. Guidelines are only endorsable by community members if they can test the epistemic presuppositions that may limit or extend their contribution to understanding the epistemic issues. Guidelines are can be *prima facie* justified only if they do not violate the condition acceptability for dispute resolution.

Violations occur when the epistemic presuppositions beg the question, which renders them untestable and inconsistent with the practice of dispute resolution. How can actors accept that their impact statements are not accurate if the only reason offered is that 'they are not accurate?' They also occur when the *ad hominem* fallacy is used. A proposed standard may prescribe that alternative expert analysis be used because the biases of one set of experts. Experts who are employed by corporations or governments may have biases, but it is not the biases themselves that make their impact statements accurate or not. The epistemic presupposition should be that having more experts analyze a problem provides better coverage of all of the significant variables, a reason which is at least testable by all of the actors.

Guidelines can violate the condition of acceptability for dispute resolution when their epistemic presuppositions are not testable. In the next section I provide an example

of how guidelines derived from Cass Sunstein's theory of the cost-benefit state could violate this condition unless they are adequately revised.

3. Appeals to Psychological Facts

Cass Sunstein's theory of the 'cost-benefit state' is a theory of how the members of the public should participate in the identification, estimation, and evaluation of impacts and risks. Sunstein claims that decisions about technologies and other potential hazards should be made according to cost-benefit analysis with strict requirements on the degree to which different stakeholders and members of the public get to participate. Sunstein's theory is attractive as a source for deriving guidelines for technical dispute resolution. In this section, I argue that Sunstein's epistemic presuppositions, if transferred to the context of dispute resolution, violate the condition of acceptability for dispute resolution and would have to be revised if they are to serve as the basis for rights, required practices, and standards that are fair and sound.

Cass Sunstein's *Risk and Reason* (2003) is concerned with how members of the public participate in technical decisions in the U.S., from pharmaceutical safety to environmental justice. His conclusion is that any members of the public should only participate once the technological hazards are identified, estimated, and evaluated by the appropriate experts. If the experts do their job correctly, then all the benefits, costs, and tradeoffs should be accurately put on screen for policy makers and voters to make informed decisions about. Sunstein's intends his version of cost-benefit analysis to ensure fair and sound decisions are made.

Sunstein's argument is based on epistemic presuppositions about why he thinks such discrimination is justified and should serve as the basis for claims. His argument begins with his observations of how technical decisions were made in the U.S. starting from the 1950s to the present today. In particular, he focuses on technical disputes about toxics, transportation safety, and air and water quality. Examples are Love Canal, Dichloro-Diphenyl-Trichloroethane (DDT), and air quality. Sunstein's concern is that most of these technical decisions were made by appealing to various statutes and regulations that were passed during the 1970s command-and-control era of environmental politics in the U.S. He claims that these environmental regulations have been effective in preventing many harms. However, they have also lead to some harms that would not have occurred without the regulations or that could have been controlled were the regulations formulated differently.

Sunstein's problem with most 1970s environmental statutes and regulations is that they were based on unacceptable amounts of input from members of the public. A poignant example is the Clean Air Act Amendments of 1970, which were responsible for strict regulations on air quality intended to achieve environmental protection. The amendments required car manufacturers to reduce pollution by no less than ninety percent within five years without addressing the economic or technical feasibility of this.[3] Only people who are completely ignorant of the relevant science and engineering required would find such goals acceptable. The policy makers who wrote and advocated

[3] Sunstein, 15.

these amendments did so in order to cater to the concerns expressed by members of the public.

Another example is the controversy over DDT in the 1960s and 1970s. Rachel Carson's *Silent Spring* raised awareness about DDT's physical harms to birds and that there were potential harms to human beings attributable to DDT. Carson appealed to scientific studies that showed how DDT affected birds, but at the time there was little research on what effects it caused in humans. Nonetheless, she argued that DDT should be banned. Members of the public rallied behind her position, opposing corporations who manufactured, sold, and used DDT and the government policies and laws that allowed DDT's distribution and use. The public technical dispute was settled with DDT being banned through heavy regulations in the 1970s.

Sunstein's problem with the DDT controversy was that its banning was not based on accurate facts about DDT. It was only based on how members of the public perceived the effects of DDT and made evaluations on the basis of it. What we know now is that DDT does have harmful effects on humans, but they are harms of the sort that, under certain circumstances, could be justifiable trade-offs for other benefits. For example, malaria is a leading killer in developing countries. But the American ban on DDT has been foisted on other countries. DDT can eliminate malaria. The costs on human populations are worth the trade off for many in developing countries. The facts about DDT, as articulated by experts, perhaps would have led to different decisions being made.

Sunstein claims that the hype over the Clean Air Act amendments and DDT wer based on the irrational views of members of the public. The reason why these views are irrational is that they were based on patterns of thinking about impacts and risks and not on the facts *per se*. According to Sunstein, ordinary people formulate impact statements according to psychological cues like the 'availability heuristic' and 'intuitive toxicology.' The availability heuristic is a cognitive decision model the makes it so that people tend to think that events are more probable if they can recall an incident of their last occurrence.[4] An event's last occurrence, of course, has nothing to do, unless it is proven, with whether it will occur again, and to what degree. A plane crash, which is relatively rare, will incite members of the public who hear about it to believe that plane crashes are more likely than they actually are. Another cognitive decision model that members of the public use, according to Sunstein, is intuitive toxicology. Intuitive toxicology refers to three cognitive assumptions about technology risks: (1) risk is an all or nothing matter, i.e. safe or dangerous with no middle ground; (2) products created by human beings are more likely to be dangerous than natural products; (3) it is possible and appropriate to abolish risk entirely.[5] The use of availability heuristics, intuitive toxicology, as well as other mental models, create information cascades. Briefly, an information cascade occurs when some impact statement about a technology begins to get disseminated widely. The more different people accept the statement as true, the more subsequent people accept it, but solely for the reason that others are perceived to accept it.[6]

[4] Ibid., 33.

[5] Ibid., 36.

Psychological facts about how members of the public view technology impacts, e.g. the availability heuristic, intuitive toxicology, and information cascades, among others that Sunstein refers to in *Risk and Reason*, are really behind the impact statements expressed by members of the public. These psychological facts are well established by social studies of risk perception and technical disagreement. In brief, the availability heuristic was articulated by psychometric studies of risk perception. Nobel Prize winners Amos Tversky and Daniel Kahneman performed some of the earliest studies of this kind. Intuitive toxicology is based on sociocultural studies of risk, such as those of Paul Slovic, Mary Douglas, and Aaron Wildavsky. Information cascades result from social studies by David Hirshleifer, as well as studies in the amplification of risk, such as those of Roger Kasperson. Sunstein interprets these studies as establishing conclusively that members of the public think about technology impacts according to these cognitive models as opposed to more accurate, expert estimation techniques.

Based on these psychological facts, Sunstein concludes that members of the public "often think poorly about dangers" and "fear the wrong things."[7] Technical disputes in the public domain break out because members of the public and stakeholders use non-technically relevant cognitive models for viewing technology impacts and risks. He claims that this cost-benefit analysis "should allow people to see if the problem at issue is small or large… It should place a high premium on science. It should ensure that experts, or technocrats, will have a large role…"[8] Sunstein's epistemic presuppositions

[6] Ibid., 37.

[7] Ibid., xiii.

suggest that rights, required practices, and standards of public participation ought to be based in part on the facts about how members of the public think about risks.

Sunstein also extends these epistemic presuppositions into disagreements over the facts about the identification and estimation of impacts and risks. He writes, of experts and members of the public, that

> When they disagree, experts are generally right, and ordinary people are generally wrong. Certainly experts are more often right than ordinary people are. When ordinary people make mistakes, it is usually for three now-familiar reasons: They rely on mental shortcuts; they are subject to social influences that led them astray; and they neglect tradeoffs…. A rapid, intuitive judgment operates as a substitute for the more careful inquiry… But I also believe that the public concern reflects serious confusions, and that when ordinary people disagree with experts, it is often because ordinary people are confused… But if ordinary people err in estimating the number of lives at risk, and if their perceptions of risk severity are correlated with their estimates, then their errors might well explain the divergences. Actually, there is much evidence on this point. On the purely factual issues, ordinary people make systematic mistakes.[9]

These epistemic presuppositions about how ordinary people think form the basis of his theory of the cost-benefit state, which is intended to form the basis of guidelines for technical decision-making. These epistemic presuppositions may be true, but if they are to be used as the basis for any existing or proposed guidelines, then they have to be revised to avoid violating the condition of acceptability for dispute resolution. The following breaks down how the epistemic presuppositions would work in any guidelines of the cost-benefit state:

(1) There are rational and irrational patterns of identifying and estimating impacts and risks.

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[8] Ibid., xiv.

[9] Ibid., 55, 56, 64.

(2) Members of the public tend to identify and estimate impacts and risks irrationally.

(3) Experts tend to identify and estimate impacts and risks rationally.

(4) Granted (2) and (3), experts are more accurate in impact and risk identification and estimation than members of the public.

(5) Guidelines have to be consistent with (4) in terms of what they prescribe of actors as part of the practice of dispute resolution.

(1)-(5) are problematic in terms of the condition of acceptability for dispute resolution, even if (1) and (2) are correct. First, Sunstein's account of the psychological facts pertaining to members of the public is not matched by an analogous account pertaining to technocrats: Sunstein defends a theory of illegitimate expertise but not a theory of legitimate expertise. Why would community members or other members of the public endorse a conception of rationality that only discusses the irrationality of their ways of identifying and estimating impacts and risks? A balanced argument would be crucial, especially provided Kristin Shrader-Frechette's criticism that Sunstein actually leaves out important conclusions that can be drawn about experts from the same studies that he appeals to. She claims that the same studies actually demonstrate that "experts are no better than laypeople at estimating risk probabilities."[10] Shrader-Frechette accuses Sunstein of taking on an interpretation of the social studies of risk that only focuses on their relevance to members of the public. Indeed, some of the same cognitive mechanisms used by Sunstein also adhere in the thinking of technocrats. Some of the psychometric studies of risk and many socio-cultural and amplification studies are about how expert judgments are mediated by psychological and social factors that do not

[10] Kristin Shrader-Frechette, "Untitled Review," *Ethics* 114, no. 2 (January 2004), 376-380.

account for the facts about impacts and risks. For Shrader-Frechette, Sunstein's account is rooted in his own unbalanced interpretation of the social studies of risk perception.

A second problem with (1)-(5) is that, if used specifically for dispute resolution, his epistemic presuppositions beg the question. For Sunstein, members of the lay public or lay stakeholders have nothing to contribute other than thinking that is dominated by heuristics and other mental shortcuts. But how can stakeholders come to terms with their own supposed mental models? If any member of the public were to claim to know something that experts do not, then he or she is, once again, relying on the mental model for that judgment. In addition, for all counterexamples where members of the public are correct and experts are wrong, Sunstein can only say that it was a coincidence. The problem with this that no actors, especially members of the public, could endorse epistemic presuppositions that are not testable by them. There is no way that they can verify whether Sunstein is right without being accused, once again, of relying on mental models or shortcuts mainly when they do not agree.

Third, it is dubious to claim that there are legitimate experts whose legitimacy can be claimed, *a priori*, to hold across all token technical disputes. I certainly concede that there is expert knowledge and that it is a mistake not to listen to experts in many different situations. It is also the case that many kinds of experts have proven track records across multiple cases. But none of these concessions should lead me to believe that for every technical dispute that I should appeal to the experts because they are experts. The reason why experts are effective is because of some properties of the knowledge they possess or the dexterity with which they perform proven techniques for studying impacts and risks.

Sunstein's epistemic presuppositions should be revised in order that they can be testable by actors in technical disputes, especially those whose participation may be limited or whose impact statements may be put in question by the presuppositions. In section four, I outline the concept of evidential pluralism as a solution for the problem of how epistemic presuppositions can avoid violating the condition of acceptability for dispute resolution.

4. Evidential Pluralism

How can epistemic presuppositions avoid violating the condition of acceptability for dispute resolution? In this section, I argue that the only basis for epistemic presuppositions community members would endorse and that would retain its binding power on the others in the practice of dispute resolution is 'evidential pluralism.' Using evidential pluralism allows us to adjust and revise epistemic presuppositions *based on* the logic of evidential pluralism. Evidential pluralism refers to the idea that actors in technical disputes collect and configure evidence differently and formulate their impact statements on the basis of that evidence differently. I will develop the significance of this idea in more depth throughout this section.

Evidential pluralism is based on the idea that we can reasonably assume that for there to be a technical dispute in the first place, actors are, at a minimum, inductively or abductively collecting and configuring evidence and then deriving their impact statements on the basis of that evidence. If actors are not doing this, then there is no technical dispute phase within the conflict. Community members and the other actors may collect evidence, configure evidence, and derive impact statements from that

evidence differently. They may draw on different skills sets, knowledge traditions, experimental techniques, etc. But insofar as that is what they are doing, then their impact statements are derived from some sort of inductive or abductive processes. Perhaps this another way of understanding what a technical dispute is. A technical dispute is a kind of dispute that only breaks out when disagreements arise when inductively or abductively derived impact statements fall into disagreement. Any other kind of disagreement about technology impacts and risks should be referred to as a different sort of dispute.

Insofar as this is what actors are doing in technical disputes, then the accuracy of their impact statements is contingent on the processes of induction or abduction that they are using. In addition, they must disagree on the technical details based on their inductive and abductive differences. If some actors reject induction or abduction all together, then how could we say that they are engaged in a technical dispute at some level in their conflict campaign? This question is relevant for guidelines of community member participation. If the guidelines do not presuppose or even reject inductive and abductive differences as the basis for actors' and why they disagree over the technical details, then they will have difficulty being held accountable for the epistemic issues of the technical dispute.

But what if we presuppose the most basic version of what at least has to be happening among actors for us to be able to say that they are in a technical dispute, among the other disputes in the environmental conflict? In inductive or abductive senses, when actors make impact statements in technical disputes, they are perceiving a connection between the available evidence that interests them with the impacts and risks

they attribute to the disputed technologies. Actors come across evidence in many different ways. They interpret, analyze, weigh, and assess that evidence in complicated ways. One way of accounting for this complexity is to use the social sciences term framing. In a technically relevant sense, framing evidence refers to ways of focusing, emphasizing, shaping, and interpreting pieces of evidence and determining their contribution to supporting or drawing conclusions about impact statements.[11] Framing evidence refers to the complex ways in which pieces of evidence are configured and given epistemic or technical significance.[12] To say that actors are inductively or abductively considering evidence does not commit us to any particular style of knowledge production or any thickly contrived sense of legitimate science. Rather, it only dismisses the kinds of considerations of evidence that are not minimally inductive or abductive. Moreover, any dismissals of this kind do not have to be dismissed altogether, but can be shifted to the other parts of the conflict campaigns in the environmental conflict and can, as a result, perhaps be better dealt using other kinds of moral reasoning.

As far as technical disputes go, what we can reasonably know about technical disputes then is that, regardless of which specific actors we are considering, is that they are (1) configuring evidence in some manner and (2) deriving impact statements on the basis of that evidence in some manner. Pinning down exactly why they are configuring evidence or deriving claims from that configuration is too difficult to do. Are actors

[11] Barbara Gray, "Framing of Environmental Disputes," in *Making Sense of Intractable Environmental Conflicts: Concepts and Cases*, ed. Roy J. Lewicki, Barbara Gray, and Michael Elliot (Washington: Island Press, 2003), 91-126.

[12] See Irving Goffman, *Frame Analysis: An Essay on the Organization of Experience* (Cambridge: Harvard University Press, 1974).

configuring evidence in such a way because they are irrational? Or because of psychological facts like heuristics?

Imagine a technical dispute in which one set of actors might believe that toxics produced by a coke facility have contaminated a lake depended on by the community. The representatives of this set of actors claim this contamination has had developmental effects on children in the community. We should realize that this set of actors has come to estimate the toxic impacts on the lake due to irreducibly complex framing that weights multiple types of evidence, from anecdotes about one child's change in developmental health, to local observations about children's development in the community in general, to publicly available scientific studies on a particular relationship between one of the pollutants produced by coke facilities and development, to the testimony of environmental health scientists from a nearby university who spent the last summer doing sediment samples in the lake.

In this example, policy makers may appeal to other studies by other scientists and believe that there is not nearly enough information available to make an informed policy decision. Moreover, the scientists they appeal to were not able to perform all of the studies that they desired because of budget cuts and time constraints arising from other projects that they are involved in. But the policy makers nonetheless appeal to these studies because they validate their claims against the stakeholders who are appealing to non-government endorsed studies. From the stakeholders' standpoint, however, it is wise to go with these studies because they demonstrate that the government does not have a

monopoly on scientific knowledge about the impacts and risks associated with the coke facility.

In this hypothetical case, the actors are in disagreement because they are configuring evidence differently. Different evidence is available to each of the actors. They gather this evidence, read it, understand it, and so on, in ways that are incompatible with the others. These different configurations of evidence are then used as the basis for making claims, or impact statements, about what impacts and risks are attributable to the technology in question. The basis of disagreement then concerns the fact that actors are attempting to draw conclusions from evidence and that they accept different methods, approaches, argumentative strategies for doing so.

These difference are the ones picked out by the concept of evidential pluralism, which is the idea that actors collect and configure evidence differently and derive impact from their configurations differently. The terms collect, configure, and derive refer to specifically inductive and abductive processes of thinking about evidence. Evidential pluralism can be the basis of presuppositions of why actors disagree as a function of the configuration and derivation of claims from evidence. Actors disagree because evidential pluralism obtains in the technical dispute. This explanation of why actors disagree is not a conclusive explanation insofar as it picks out the motivations, attitudes, heuristics, etc. that are the specific causes of a given technical dispute. Rather, this is the only basis of an epistemic presuppositions that would not violate the condition of acceptability in dispute resolution.

There are many advantages to evidential pluralism. First, it is not tied to a theory of legitimate expert judgment; but it does not rule out that there are legitimate experts. Evidential pluralism is the presupposition that actors are actively using evidence as the basis for shaping claims, and that they are coming across evidence in complicated ways. However, evidential pluralism does not presuppose more than this. Second, it is testable from the standpoint of all actors and, for this reason, does not set up thick dichotomies like rational/irrational. To accept evidential pluralism, actors need only accept that the other actors are using evidence and making claims on the basis of that evidence competitively. Any actor who presupposes that their risk and impact statements are rational and the other actors' impact statements are not will be subject to the same criticisms that I leveled against the family of positions that depend on strict standards of rationality.

Fourth, evidential pluralism is not tied to claims of epistemic relativism.[13] Evidential pluralism is an explanation of why actors perceive impacts in the ways that they do and disagree; agreement is not ruled out. But the question is narrowed to how should actors work together when each one configures evidence and derives claims from it differently. A solution can still be constructed and perhaps, in certain technical disputes, it may be that one set of experts is appropriate for providing the kind of information that all actors should rely on.

[13] It is important to note that evidential pluralism is not a version of epistemic relativism. Epistemic relativism is the view that standards of accuracy and expertise are based on particular cultures or even individual preferences. Evidential pluralism does not endorse epistemic relativism; it only endorses the idea that, within the complicated context of environmental conflicts, actors will frame evidence differently, will be unsympathetic to the frames of others, etc. It also reflects the general debates and confusion of what constitutes accuracy and knowledge with respect to estimating technology impacts.

This last point leads to the final issue that I want to take up in this chapter which is that evidential pluralism forms the basis for epistemic presuppositions that do not violate the condition of acceptability for dispute resolution. Let us return to the example of the right to a community health survey. The community health survey does not have to be shown as worthy of our consideration because community members are more rational than experts. Rather, we can propose a community health survey as expressed as a guideline of some kind; our epistemic presupposition would be that community health surveys provide important information for understanding the technical issues associated with impacts and risks; inductively speaking, community members have better access to their fellows than some of the other stakeholders, like the GE hired scientists. The right to a community health survey is based on the epistemic presupposition that community members are better able to exercise the inductive processes required for a community health survey. This guideline does not violate the condition of acceptability for dispute resolution because it does not beg the question or rely on *ad hominem* fallacious reasoning as its basis. A set of reasons is offered for its soundness and these reasons may be debated by the other actors.

5. Conclusion

In this chapter, the first preliminary condition is defended for community member participation in technical disputes, the condition of acceptability for dispute resolution. All guidelines must have epistemic presuppositions about why actors formulate impact statements, why they disagree with other actors in technical disputes, and how they collect and configure evidence. Guidelines that have these presuppositions often suggest

that discriminations are made in terms of which actors are better suited to contribute to understanding the technical issues. Because this is the case, the epistemic presuppositions have to be testable by all the actors insofar as the reasons offered in favor of them do not beg the question or rely on *ad hominem* fallacies. The condition of acceptability for dispute resolution requires that existing or proposed guidelines do not contain epistemic presuppositions based on these reasons. A guideline is *prima facie* justified if it does not violate the condition of acceptability for dispute resolution.

Chapter 5

1. Introduction

Actors in technical disputes are usually divided by power asymmetries. The actors with less power can be understood as being vulnerable in relation to the actors with more power. By vulnerability, I mean the susceptibility to being harmed or exploited by the other actors. Members of indigenous communities are usually vulnerable in technical disputes with corporate and government actors. In this chapter, I argue that guidelines should not violate four different requirements for accounting for vulnerability, which I refer to as 'performability,' 'non-manipulability,' 'unusual cases,' and 'irresolvable debates.' These four requirements form the 'condition of vulnerability.'

I begin in section two by describing a technical dispute case where the presence of vulnerability is problematic. I then move on, in section three, to discuss how vulnerability has been treated in ethics. I claim that for technical disputes in particular, the only way to take up vulnerability is with respect to the factual circumstances in any technical dispute case. In section four, I defend primary and secondary requirements for accounting for vulnerability as part of a broader condition of vulnerability for guidelines that serve to resolve technical disputes.

2. Vulnerability and the Campo Landfill Case

'Vulnerability' is the susceptibility to be harmed and/or exploited by other people. 'Harm' refers to any significant losses, broadly construed, from financial to physical to

environmental. 'Exploitation' refers to being taken advantage of for someone else or some other groups' gain. Vulnerabilities can be said to be tied to power asymmetries insofar as some actor or set of actors has the power to decide whether to harm and/or exploit another actor or set of actors without the latters' having the ability to prevent these harms or exploitative practices. We have intuitions that vulnerability should matter morally and should affect our moral judgments. But how do vulnerabilities figure in the moral reasoning about technical disputes? I want to start with a case example that raises some key issues.

Members of the Campo Band of Kumeyaay Indians (California) have been the victims of colonial injustices for hundreds of years. In general, Indians in California suffered greatly as a result of Mexican and American colonial expansion. The first wave of colonization carried out by Hispanics in the 18th century reduced most Indians to laborers. The second wave of colonization carried out by the Americans continued this tradition. A famous line in California was that Indian peonage "makes slavery wholly unnecessary here."[1] Having to fit into the colonial system of labor, most Indians were unable to live according to their traditional lifeways.

Peonage led to other injustices. In the 19th century, Americans began selling Indian laborers; in addition, regular acts of genocide were committed by California militias. Disease, as in other parts of the Americas, also decimated the Indian population. Before the discovery of gold in 1848, Indians outnumbered Americans and Mexicans in California at a ratio of ten to one. However, by the early 1850s, Americans outnumbered

[1] George Harwood Phillips, *Indians and Intruders in Central California* (Norman: University of Oklahoma Press, 1993), 122. Phillips quotes John A. Sutter, New Helvetia (May 18 1845), published in the *San Francisco California Farmer*, March 13, 1857.

Indians by a ratio of two to one. The first decade of American rule in California witnessed the extermination of many Indians. Of the 150,000 Indians living within the present confines of the state in 1845, only 50,000 survived in 1855.[2] The causes are alleged to be a combination of disease, shootings, and acute starvation.[3]

American colonization also transformed the environment Indians' traditional lifeways were dependent on. Americans established farms and villages in the most fertile valleys and along the richest river bottoms. Settlement forced Indians to abandon their rancherias and move to less productive lands. Silt from mining operations destroyed Indian fisheries, cattle grazing destroyed their grain grasses, hogs ate the acorns, which was a dietary staple. American run farms and mines destroyed game habitat and American laws prohibited Indians from starting brush fires or buying firearms. This denied them both traditional and modern means of competing with Americans for whatever game or arable land was left.[4]

By the end of the nineteenth century, the only way that Indians could survive was as laborers or through raiding the livestock and supplies owned by Americans. The retaliatory raids forced Indians further into the mountains where they became even more dependent on raiding for subsistence. The ensuing warfare disrupted the harvest of native plants, preventing the Indians from accumulating enough food for the winter. Moreover,

[2] Sherburne Cooke, "Historical Demography," in *Handbook of North American Indians Volume 8: California*, ed. by Robert Heizer (Washington D.C.: Smithsonian Institute, 1978), 93; James Rawls, *Indians of California: The Changing Image* (Norman: University of Oklahoma Press, 1986), 171.

[3] Cook, "Historical Demography," 93

[4] Edward Castillo, "The impact of EuroAmerican Exploration and Settlement," in Sturtevant, 108; Richard L. Carrico, *Strangers in a Stolen Land: American Indians in San Diego 1850-1880* (San Diego: Department of American Indian Studies San Diego State University, 1987), 44.

in their retaliatory raids, Americans usually destroyed the supplies the Indians had managed to store, further robbing the future.[5]

In the midst of this, the ancestors of today's members of the Campo Band were not given the protections of reservation land until two small reservations were created through an executive order from President U.S. Grant in 1870. But this protective relief was only temporary. The reservation lands were arable lands, which was not a good thing, ironically speaking. An American lawyer led an effort to have the executive order rescinded, which Grant eventually did on the grounds that it was warranted by citizen opposition and the opinion of the press. The members of the Campo Band were once again without land of their own and protection from American colonial activities. Finally, in 1872, Grant created a 52,400 acre reservation for all Indians who lived in San Diego country. However, the land was too small for the continuation of Indian lifeways. In addition, most of the water had already been diverted upstream for American agriculture. The Campo Band members were not even included as part of this reservation.[6]

As the turn of the century approached, most members of the Campo Band were living in conditions of starvation. Many Americans claimed that Campo Band members should be considered the responsibility of Mexico, although there was no doubt that Campo Band members were born and resided within U.S. borders. In 1893, the federal government finally established a reservation for the Campo Band members. Of course,

[5] Dan McGovern, *The Campo Indian Landfill War: The Fight for Gold in California's Garbage* (Norman: University of Oklahoma Press, 1995), 64.

[6] Ibid., 76.

there were only a few hundred members left who could occupy the reservation. What is more, the reservation land was worse than the land that they had been unsuccessfully trying to live on. No matter how hard members worked, it was widely reported that the land was entirely useless for any kind of subsistence. By 1905, all members had been moved to the small 710 acre reservation. Throughout the early 1900s it was reported that the members living there remained subject to starvation conditions.[7]

In 1911, the Campo reservation was enlarged with the addition of a separate 14,870 acre parcel of land that had been purchased from American settlers. But the living conditions of the members of the Campo Band did not improve. In 1932, it was reported that on the reservation Campo Band families were "living in hovels built of salvaged packing cases, hammered tin cans or grass" and that "their water had to be carried a quarter of a mile from a spring of questionable purity."[8] In 1955, the Campo reservation had no indoor toilets, no running water, no electricity, and no telephones. The only work opportunities were seasonal agricultural labor. At the time, most of those opportunities were being taken by Mexican immigrants.

Throughout the 20th century there are many instances of discrimination against the members of the Campo Band. There was the killing of two members by the Indian Agent, reported as an Indian uprising rather than as the killing of innocent people who were merely attending a fiesta on the reservation. There was also the presence of the Klu Klux Klan in the region. To make matters worse, welfare administrators swindled the money owed to Campo Band members, which made it even harder for the latter to take

[7] Ibid., 77-82.

[8] Melvin C. Mane, "San Diego Indians May Get Aid," *San Diego Union* (October2, 1932).

care of their basic needs. Regional schooling was segregated, which affected the attitudes and confidence of Campo children. By 1989, only seven of the three hundred Campo Band members who went to high school in San Diego County graduated.[9]

Today, the members of the Campo Band occupy a 24.2 square mile reservation about sixty miles East of the city of San Diego. Just over three hundred people live on the reservation. In the 1980s and 90s, reservation residents suffered from a 85% rate of unemployment.[10] Unemployment and poverty on the reservation are the legacy of colonization.[11]

In a previous assessment during the mid-1980s, the city of San Diego had identified the reservation as one of several potential dump sites for municipal solid waste. Mid-American Waste Systems, a waste management corporation, became interested and began considering a technically advanced landfill design for the reservation. Having the landfill on the reservation would mean that daily freight trains carrying loads of municipal solid waste and sewage would travel through the reservation and other communities on the way. Mid-American Waste Systems offered to pay the tribe for the use of its land. In the 1990s, the leaders of the Campo Band decided to consider the landfill as a means of economic development to curb unemployment and poverty on the reservation. They created their own environmental agency, the Campo Environmental Protection Agency (CEPA), and began negotiations with Mid-American's representatives.[12]

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[9] McGovern, 22.

[10] Ibid., XIX.

[11] See Ibid.

Thousands of Americans live around the reservation; one of the closest communities is the town of Boulevard, California. When town residents heard about the landfill, they got together and formed Backcountry Against the Dump (BAD). One of their biggest concerns arose from geological studies of the region, the evidence of which suggested that there were fissures in the rock beneath the proposed landfill. Any seepage from the landfill could contaminate the water supply of ranches that lie outside the reservation boundary and of Mexican communities across the international border just half of a mile to the South.[13] Groundwater contamination is a serious concern as contamination of the aquifer underlying landfill would ultimately poison the wells upon which the residents of Boulevard were entirely dependent. These are reasonable concerns to have for any potential landfill project. In light of these concerns, BAD's goal was to resist the landfill project on the basis that its impacts and risks were too hazardous.

No members of the Campo Band believed that, in an ideal world, they would be welcoming a landfill to their lands. However, there are important factual circumstances that pertain to the vulnerabilities experienced by the members of the Campo Band. As was stated before, there were few economic opportunities on the Campo Indian Reservation or in the surrounding area for members of the Campo Band. There were also the vulnerabilities attached to being a minority culture within a much larger dominant nation. But there are also vulnerabilities that have to do with the relationship between tribes and municipal solid waste.

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[12] The following case narrative is drawn from McGovern.

[13] Fergus M. Bordewich, "The Shadow of Chief Seattle," in *Killing the White Man's Indian: Reinventing Native Americans at the End of the Twentieth Century* (New York: First Anchor Books Edition, 1997), 129-130.

There are two types of waste, hazardous wastes and municipal solid wastes. 'Hazardous waste' refers to waste that poses serious harms to human and environmental health. Hazardous wastes are produced by large industrial facilities such as chemical manufacturers, petroleum refineries, and by more common businesses such as dry cleaners, auto repair shops, hospitals, exterminators and photo processing centers.[14] Municipal solid waste is any garbage or refuse, sludge from a wastewater treatment plant, water supply treatment plant, or air pollution control facility. It also includes any other discarded material, including solid, liquid, semi-solid, or contained gaseous material resulting from industrial, commercial, mining, and agricultural operations, and from community activities.[15] Municipal solid waste is also hazardous in the sense that hazardous substances are discarded by individuals.

What are usually referred to as tribal lands or Indian Country are lands held in trust by the federal government for tribes. Tribal lands are federal lands that are reserved for the free use of tribes unless this use somehow goes against the interests of the American people. The federal government is responsible for promoting economic development on tribal lands through the Department of Interior (DOI) via the Bureau of Indian Affairs (BIA) agency. Because they are federal lands, states have no jurisdiction over tribal lands. This is the origin of some of the popular stereotypes about Indians not having to pay taxes; various tax exemptions flow from the fact that trust lands are federal lands.

[14] U.S. EPA, "Hazardous Waste," http://elvis.slis.indiana.edu/EPA/ebtpages/wasthazardouswaste.html (accessed March 13, 2009).

[15] U.S. EPA, "Municipal Solid Waste," http://www.epa.gov/epawaste/nonhaz/municipal/index.htm (accessed March 15, 2009).

It is the responsibility of EPA to regulate hazardous waste. The superfund and other relevant hazardous waste issues are directly handled by EPA at the federal level. But managing municipal solid waste is the responsibility of the particular states where the waste originated; it is not the responsibility of the federal government. Because tribal lands are really federal lands held in trust by tribes, they are not subject to state authority. Thus, any municipal solid waste dumped on tribal lands is not subject to the jurisdiction of any state. In addition, because it is municipal solid waste and not hazardous waste, it does not fall under the jurisdiction of EPA. The only federal organization that has to underwrite any tribe's plans to construct a landfill is the Secretary of the DOI. However, because the DOI is mandated to promote the economic development of tribes, it is likely to support landfill or other waste projects.[16]

The upshot is that waste corporations can site landfills on tribal lands much cheaper than they can in states, which may have expensive regulatory mechanisms in place. This is why Mid-American approached the leaders of the Campo Band. Of course, the fact that landfills are not under the jurisdiction of state or federal authorities is not just a concern for the residents of Boulevard, but for the members of the Campo Band as well. The Band members did not want the landfill to pollute the groundwater either, as they have the most to lose from such an outcome occurs. In this sense, certain loopholes and ambiguities in Indian law place tribes and the communities near Indian lands in vulnerable positions vis-à-vis proposals to site large-scale technologies.

[16] McGovern, 16.

The Campo Band formed the Campo Environmental Protection Agency (CEPA) in order to fill the role that a state would normally have played. The agency would create a system of laws and code of regulations to govern the landfill. One of the goals was to make sure that Campo members had a say in all technical operations and would not have to rely only on what outside experts said. The position of running the agency was given to a member of the Campo Band. Due to their economic situation however, the only way to raise money for the CEPA was through Mid-American. The latter willingly agreed to finance the agency, its activities, a set of assessments, and the continued management of the landfill after its construction. Mid-American also agreed to different checks and balances so that the landfill project could be halted at any time should new information come to light.

CEPA and other Campo Band members also wanted to enlist the support of BAD. In fact, the members of the Campo Band were not convinced that the landfill was the right technology given that the impacts and risks were unknown. But they were unable to reach out to BAD for some strange reasons: the members of BAD thought that the Campos were not acting like real Indians. Dan McGovern tells some of this story in *The Campo Indian Landfill War*. He writes that "Ironically, the most inflammatory speakers at the rally were two Indian women."[17] These women were from different tribes in other parts of North America but were residents of Boulevard and members of BAD. In the rally, the women claimed that,

> For many years my people have been exploited by large corporations such as this. Many of our people have come up with cancer. Children. We have had

[17]McGovern, 13.

> sterilization among our young people, deformed babies. Just all kinds of things… We as Native People do not believe in the destruction of our Mother Earth. Here are some things you can look forward to, cancer, birth defects, miscarriages, mental retardation, and sterility.[18]

It was not just the Indian members of BAD who held these views about the Campo Band's proposed landfill project. One of the American members claimed that "Before all this, I had this ideal about Indian people and all they've been through. I used to think that they had this special feeling about the land."[19]

These testimonies indicate that the Americans and Indians involved in BAD believed that the members of the Campo Band were going to make an unsound technical decision unless they listened to the former's concerns. These concerns were based on their interpretation of geological studies and their conception of what behavior counts as being Indian. BAD took action and contacted the California legislature in order to find some way of blocking the landfill project. Sometimes states are able to gain limited or cooperative jurisdiction over tribal lands; states also have the option of passing injunctions against the transportation of municipal solid waste in other parts of the state which would indirectly preclude such waste from reaching any reservations with landfills. The members of the BAD refused to collaborate with the CEPA or other members of the Campo Band.

In response, Mike Connolly, head of CEPA, stated that

> An Indian tribe should listen to the arguments made by environmental justice advocates and other environmentalists against waste projects in general… And it should obtain the best expert opinion available to assess the merits of specific proposals. But the sovereign right of the tribe, subject to federal law, to make land

[18] Ibid., 13.

[19] Bordewich, 131.

> use decisions concerning its own reservation must be respected. [BAD] should have directly dealt with the Campos and tried to influence their decision, instead of asking the state legislature to take away the tribe's right to make the decision.[20]

Connolly's stance, as well as that of many members of the Campo Band, was that there should be guidelines of collaboration for determining the impacts and risks posed by the technology. In this case, the members of the Campo Band as well as the nearby non-indigenous residents have a lot at stake in the proposed landfill technology. Like the other disputes, they are each making impact statements that have fallen into disagreement. The Campo members' impact statement was that the landfill had potentially harmful impacts and risks attributable to it and the landfill required further collaborative study among experts, stakeholders, and the other actors. Boulevard residents countered with impact statements that it was going to leak, that sufficient studies had been done, and that the whole idea was un-Indian in relevant respects. Their impact statements were direct and conclusive about the impacts and risks attributable to the technology. They felt that, given their interpretation of the evidence, they could then appeal to the California State legislature to settle the technical dispute and the environmental conflict on the whole.

Like the other cases I have discussed, in the Camp landfill case, the question is how to justify guidelines that the Campo Band members could appeal to in order to resolve the technical dispute among them, the Boulevard Residents, Mid-American, and the California legislature. From the details of the case, it is unlikely that members of the Campo Band would endorse any guidelines that do not account for their vulnerabilities,

[20] Ibid., 25.

especially given their economic problems and the historical circumstances that engendered them. They were susceptible to harm and exploitation by Mid-American and even by BAD via the California legislature. But an account of vulnerability relevant to the Campo landfill case would also have to consider the fact that the members of BAD were vulnerable too. Any guidelines that the Campo Band members would endorse may not be binding on the members of BAD if the latters' vulnerabilities are not accounted for as well. Many technical disputes are like this insofar as different stakeholders and other actors have different vulnerabilities and that moral reasoning that does not endeavor to account for this plurality of vulnerabilities does so at the sacrifice of its binding power. How should vulnerabilities affect any guidelines for indigenous actors to appeal to in technical disputes in light of complex issues about vulnerability illustrated in the Campo landfill case?

3. Vulnerabilities

Actors are vulnerable when they are susceptible to harm or exploitation at the hands of other actors. In the Campo landfill case, both the members of BAD and the Campo Band were vulnerable in various ways to Mid-American, the state of California, and San Diego County. Our intuitions tell us that vulnerability should bear on guidelines in order that vulnerable actors may endorse and appeal to them in technical disputes. Community members are often concerned that they will be taken advantage of and harmed owing to their vulnerabilities. But how precisely should the issue of vulnerability be handled?

The role of vulnerability in our moral reasoning has been taken up by ethicists in several specific ways in the last twenty-five years. Robert Goodin, in *Protecting the Vulnerable: A Reanalysis of our Social Responsibilities*,[21] claims that we have "special responsibilities for protecting those who are particularly vulnerable to us."[22] Understood this way, the presence of vulnerability changes what obligations or duties we have to the vulnerable persons. It is not necessary to reconstruct Goodin's argument. I do, however, want to articulate some of his major claims in what follows.

One of Goodin's claims is that we have obligations to people when they are vulnerable that we would not normally have. We have special obligations to our children because they are vulnerable insofar as we have the power of responsibility over them. Unless they are in a situation of danger or have been placed under our responsibility, we do not have these special obligations to other peoples' children because they are not vulnerable to us, but to their parents. This example can be extended to any other people who are vulnerable to us in different situations, whether we are related to these people in some way, have voluntarily made contracts with them, or are complete strangers.[23]

According to Goodin, special obligations arise insofar as the other persons are vulnerable to us. He writes that "it makes perfectly good sense to speak of someone's being vulnerable either to harms that come about through others' omissions or neglect or

[21] (Chicago: University of Chicago Press, 1985).

[22] Ibid., 109.

[23] Goodin's intends his claim to respond to the tradition of tradition of moral reasoning that begins with H.L.A. Hart's "Are there any natural rights?" *Philosophical Review* 64 (1955), where special obligations are justified by voluntary actions, like promise making.

to harms that come about through others' positive actions."[24] Vulnerability is always a relational concept – people are vulnerable to others insofar as the latter have some powers to determine what happens to them. Goodin writes that "vulnerability implies that there is some agent (actual or metaphorical) capable of exercising some effective choice…over whether to cause or whether to avert threatened harm."[25] In this sense, vulnerabilities are tied to power asymmetries among people in various situations when some actors have power to harm or exploit others.

Goodin's claim extends into his larger argument about how we can say that the presence of vulnerabilities forms the basis of what obligations that we have to vulnerable persons owing to their vulnerability. While Goodin's argument frames the problem of how vulnerability should bear on our moral reasoning, it is not entirely relevant to the moral project that I am undertaking in this dissertation. I am not concerned with what special obligations are justified by the presence of vulnerabilities in the daily moral choices that we make. I am concerned guidelines for technical disputes that are endorsable by the community members and binding on the other actors. Guidelines need not be special in the sense that they can only be appealed to by indigenous actors owing to their vulnerabilities. All that I am looking for at this point are guidelines that could be appealed to in technical disputes and that have necessarily accounted for the presence of vulnerabilities like the ones in the Campo landfill case.

[24] Goodin, 110.

[25] Goodin, 112

Some might claim that because I am focusing on indigenous community members in technical disputes, the sorts of vulnerabilities that they encounter require special rights as do other vulnerabilities that indigenous peoples have in other situations, like religious freedom or cultural preservation.[26] Will Kymlicka, for example, claims for minority groups similar to the Campo Band that the effect of their being colonized and dominated by more powerful groups "has been to render cultural minorities vulnerable to significant injustice at the hands of the majority, and to exacerbate ethnocultural conflict. To resolve these questions fairly, we need… a theory of minority rights."[27] According to Kymlicka, vulnerabilities should be accounted for by special minority rights that protect those who are vulnerable as minority groups. The special rights impose special obligations on those who are not vulnerable that they would not ordinarily be bound by regarding other members of society. The fact that the Campo Band is a minority culture and has been colonized would on Kymlicka's view be a basis for special rights like minority rights. The context of the Campo landfill case appears similar because the Boulevard residents are part of the colonizing, dominant culture. They even hold prejudices against the members of the Campo Band. But here, I am not interested in Will Kymlicka's argument *per se*; I simply want to show that the general approaches of Goodin and Kymlicka are not entirely appropriate for guidelines for technical disputes involving indigenous community members.

[26] An example of this in the U.S. is that American Indians have a special right to carry bald and golden eagle feathers that other U.S. citizens do not have. American Indians use the feathers for religious purposes.

[27] *Multicultural Citizenship* (Oxford: Clarendon Press, 1995), 5.

I do not think that we should propose special guidelines for the vulnerable actors in technical disputes. Consider the Campo landfill case. The members of the Campo Band do have many vulnerabilities caused by their being colonized and being a minority group. In this case there are members of the majority, dominant culture who have likely enjoyed all of the privileges associated with their membership yet are also vulnerable in the environmental conflict. Special guidelines that only indigenous people could appeal to due to their minority status would then have to be subject to appeal by the other actors. However, the problem with doing so is that it is not colonized or minority status or the histories associated with them that are the basis of how guidelines should account for vulnerability. Rather, it would appear to be the factual circumstances particular to the case that best represent the vulnerabilities of the actors. In this sense, the BAD members may not be oppressed, but they are vulnerable.[28]

Technical disputes break out over technology impacts and risks. There is no necessary correlation between who may bear the burden of technology impacts and risks and their status with respect to minority/majority divisions or privilege/oppression. Although there are many cases where such correlations are in operation and where bearing the burden of technology impacts and risks can be shown to be caused by one group's minority or oppressed status, there is no necessary connection in all cases. This criticism is in the spirit of Ulrich Beck's conception of how technology impacts and risks

[28] This is an important distinction based on how some philosophers have taken up oppression. The non-Indian members of BAD were not oppressed, if by oppression we mean the conception given by Marilyn Frye in "Oppression," in Lisa Heldke and Peg O'Connor, eds. *Oppression, Privilege, and Resistance* (New York: McGraw-Hill, 2003). However, whether they are oppressed, they are still vulnerable in the particular technical dispute insofar as they are susceptible of being harmed and exploited. When we address these vulnerabilities we are not also addressing whether they are oppressed or not or whether they should be considered to be oppressed. We are merely addressing their vulnerabilities in the case at hand.

are distributed differently in the late 20th century in ways that do not conform to the traditional oppressive divisions of society, such as class, race, and the like.[29] Cases like the Campo land case are possible insofar as technology impacts and risks are not *necessarily* always faced according to other oppressive distinctions.

There is also no necessary relationship between vulnerability and technical soundness. The vulnerabilities of the members of Campo Band are not related to whether they can contribute to the technical details. There are certainly cases where some actors' experiences as vulnerable actors may be the basis for these contributions. But whether this is the case depends on whether we can show that the experiences themselves have furnished the vulnerable actors with the contributory skills. This is no different than when we must show how credentialed education in a particular science furnishes some of the actors with contributory skills. It is not vulnerability *per se* that furnishes epistemically relevant perspectives in technical disputes, though in some cases the experiences that go along with being vulnerable have not been epistemically relevant. This does not appear to be the case in the Campo landfill case, though it may be the case in others.

It should also be shown that the special rights that the members of the Campo Band already have or should have (for other situations) are unrelated to what contributory skills they may have. Most of us would agree that the members of the Campo Band should have some set of special rights to certain things like religious freedom, linguistic preservation, or sovereignty if these things are in peril and require the establishment of

[29] See, *Risk Society: Towards a New Modernity* (London: Sage Publications, 1992)

special rights without which they would not be protected. But how many of these sorts of rights have any bearing on determining what evidence should weigh on determining the impacts and risks attributable to a technology? As with the last criticism, there may be cases where we can show that this is indeed the case; but it is not these kinds of rights *per se* that have anything to do with it; rather, it may be the particular experiences that, for some persons in some situations, have been attached to the exercise of special rights (or the lack of them) that have furnished them with contributory skills.

Vulnerability can only be accounted for by the factual circumstances of the that differ from case to case. The BAD members are vulnerable due to the (perhaps peculiar) factual circumstances of their situation in the technical dispute. In most other environmental conflicts the BAD members would likely not be vulnerable. Whether they are or not is contingent solely on the particular factual circumstances of whatever case being examined.

For the purposes of this dissertation, vulnerability should bear on existing or proposed guidelines based on the factual circumstances alone. What is required is a method for judging guidelines in terms of the factual circumstances of vulnerabilities that attach to various actors, not just to the indigenous community members (who may tend to be vulnerable in most cases). In the end of this section and throughout section four I outline an approach for doing so. Before doing this, I want to first discuss two categories of factual circumstances that can be understood as relevant vulnerabilities for technical disputes.

First, actors can be vulnerable in the sense that they have comparatively diminished access to argumentative resources. 'Argumentative resources' refer to the means of public expression required to make demands on other actors, express injustices, and exercise rights, guidelines, or standards. Many vulnerable actors do not have the financial resources to hire lawyers, scientists, and other consultants. The other actors in the technical dispute who have these resources will be able to harness the rhetorical and persuasive power of these consultants and other parties.

The actors with more argumentative resources have a greater opportunity to settle the technical dispute on their own terms because of these resources. A guideline that accounts for vulnerabilities in argumentative resources would have to impose a binding obligation on those who are not vulnerable or on some part of society as a whole to allow the vulnerable actors access to sufficient argumentative resources or at least not to use their silence against them. I refer to this kind of vulnerability as 'argumentative vulnerability.'

Second, actors can be vulnerable in the sense that they have the most to lose from the technology the impacts and risks of which are being disputed. Having the most to lose can mean two things. It can mean that the effects produced by the technology will cause more physical harms, environmental degradation, and community destruction from them than for the other actors – many of whom will merely be affected financially or in some other less severe sense. It can also mean that, whatever the allocation of the effects, the vulnerable population has less ability to recover or restructure their community. The prominent problem with this kind of vulnerability is that actors decision-making abilities

are limited because of the high stakes. In most cases, actors would tend to resist the conflict campaigns forwarded by the other actors owing to the fact that they have the most to lose. This is an unfair decision situation and prevents collaboration. I will refer to this kind of vulnerability as 'worst loss' vulnerability.

It should be determined whether the vulnerability, according to the factual circumstances, has any bearing on the technical dispute phase. Does vulnerability prevent informed consent? Does it prevent access to important knowledge? Once the facts are established, then guidelines are justified if actions they prescribe are performable, are non-manipulable by the other actors, account for unusual cases, and are not based on irresolvable debates. In the next section I describe the requirements of these conditions.

4. Four Requirements

In this section, I claim that there are four requirements that cannot be violated if guidelines are justified in the abstract. They the requirements of (1) performability, (2) non-manipulability, (3) constraint by unusual cases, (4) non-reliance on irresolvable debates. Guidelines cannot violate (1)-(4) if they are justified, although as I describe below, not all guidelines may be subject to every requirement. The 'condition of community member vulnerability' is that guidelines cannot violate the requirements of accounting for vulnerability.

The requirements function only in relation to the factual circumstances of vulnerabilities of different actors in particular technical disputes. The first two requirements are primary insofar any guidelines cannot violate them, whether these

guidelines are structured to account for vulnerabilities or not. The second two requirements are secondary insofar as they have to be demanded of guidelines that are specifically structured to account for actors' vulnerabilities.

First, a guideline cannot be *prima facie* justified if it is not (1) performable by the vulnerable actors. 'Performability' refers to whether an actor or set of actors can exercise the rights, required practices, and standards that fall under the guideline. We can assess performability in relation to the factual circumstances of vulnerabilities that surround certain actors' situations. We should assess whether, based on the factual circumstances of an actor's vulnerabilities, he or she can exercise the prescriptions of the guideline. If the factual circumstances clearly show that this actor cannot exercise the prescriptions, then the guideline is not performable. The guideline should either be revised so as to become performable or ruled out if revisions are impossible.

There are some clear cases of guidelines that prescribe actions that cannot be performed when we assess performability against the factual circumstances, many of which are argumentative vulnerabilities. Consider a set of actors who are economically impoverished; if a guideline requires the appeal to alternative expert analyses to promote fair and sound dispute resolution, then it is possible that the economically impoverished actors cannot afford to search for or retain alternative experts. They cannot perform the prescriptions of the guideline based on the factual circumstances of their 'argumentative' vulnerabilities. The guideline could be revised to become performable if it imposes financial obligations on the other actors or on society as whole (like a general social fund

for alternative expert analyses) based on the rationale that such impositions render an otherwise endorsable and binding guideline performable by the vulnerable actors.

Performability also relates to 'worst loss' vulnerabilities. Consider a guideline that certain experts should be relied on in a technical dispute because of their immersion in the particular discipline relevant to the technology being disputed. In many cases, such a guideline might be endorsable. However, there are many factual circumstances of vulnerability that could render this guideline incapable of being performed by the vulnerable actors. What if some of the potential impacts and risks involve disastrous degrees of environmental degradation that would force the relocation of the entire community? Community members in such a situation have limited decision options given some of the potential disastrous impacts. Such a guideline would not be performable by these actors who are vulnerable because they have the most to lose. It would not be reasonable for them to simply leave the technical matters to that set of experts without any further checks and balances.

It needs to be emphasized that performability does not suggest special rights that only certain actors can appeal to. The Campo landfill case illustrates that it is possible that vulnerabilities apply to multiple actors in technical disputes in different ways. For this reason, guidelines for certain technical disputes should be revised if they are not performable by the vulnerable actors, or should be ruled out altogether. Performability as an requirement helps to make any guidelines binding on the other actors in terms of the factual circumstances of the technical dispute.

With respect to the other actors, the second primary requirement is whether existing or proposed guidelines are capable of being manipulated by the other actors. A classic example are the guidelines of notification that were codified in California state law during the Kettleman City case in the 1980s. Chemical Waste Management, Inc. had implemented one of the largest toxic waste dumps West of Alabama within proximity of Kettleman City without any of the residents, who were primarily agricultural workers, having knowledge that the facility was there. The corporation had effectively avoided any community member participation, but had not violated any of the guidelines codified by the state of California. Environmental lawyers Luke Cole and Sheila Foster summarize what happened:

> In California, under state environmental laws, government agencies are required to provide public notice in three ways: (1) through notices printed in a newspaper of general circulation, which in Kettleman City means a small box in the classified ads in the Hanford *Sentinel*, published forty miles away; (2) by posting signs on and off the site, which means on a fence post three and a half miles from Kettleman City; and (3) by sending notices through the mail to adjacent landowners. The adjacent landowners to the [Chemical Waste Management] facility are large agribusiness and oil companies such as Chevron.[30]

The guideline of notification here is manipulable by the other actors insofar as they can satisfy it but not fulfill its normative purpose. If the guideline is not revised, then they will be able to appeal to the fact that they have satisfied it and are not guilty of any injustices at the hands of the stakeholders.

These primary requirements should be applied to any guidelines in order to see whether they are endorsable by the vulnerable actors. Guidelines that are not performable, or are manipulable by the other actors cannot be guidelines that indigenous

[30] Luke W. Cole and Sheila Foster, *From the Ground Up* (New York: NYU Press, 2001), 2.

community members or any actors would endorse. The primary requirements also serve to have binding power on the other actors insofar as part of their justification rests on the factual circumstances of particular technical disputes.

The secondary requirements concern what happens when guidelines are structured specifically to account for the factual circumstances that attach to vulnerabilities. These secondary requirements could also apply to other ways of accounting for vulnerability that are not related to the sort of assessment of factual circumstances that I have mentioned here. The first of these requirements is that guidelines that are structured to account for vulnerability cannot ignore 'unusual cases.' An 'unusual case' refers to one in which the vulnerable actors make impact statements that strike the other actors as counterintuitive given the vulnerabilities that that the former have. The Campo landfill case is an example of an unusual case insofar as the members of the Campo Band are advocates of the landfill technology whereas it is often assumed by some that members of indigenous communities reject all technologies like landfills.

Unusual cases are particularity problematic with respect to what I refer to as 'trends of oppression.' There are many good reasons for believing that there is an oppressive trend of technical disputes involving indigenous peoples and non-indigenous corporations, governments, and scientific organizations. We could argue that a trend exists due to the fact that economies and markets are expanding. In the face of dwindling resources and available land, many business leaders are considering indigenous lands as sites for extractive and other large-scale environmental technologies. Examples of this are uranium mining and oil drilling, pharmaceutical exploration, logging, and eco- and

adventure tourism facilities. In addition to corporate interests, federal and local state departments and agencies wish to implement technologies on indigenous lands that promise to improve the well-being of their citizenry, develop economic advantages, and secure re-election and re-appointment through popular policy-making decisions. State projects often fall under rubrics like infrastructure development, direct economic opportunity, or resource management. Examples of this are nuclear waste storage facilities, nuclear power plants, dam projects, defense facilities, and forest and watershed management. Finally, the pursuit of scientific knowledge, which often is aligned with corporate or public interests, affects indigenous lands as well. Privately or publicly funded scientific organizations are interested in siting large-scale technologies on indigenous lands. Examples of this are giant telescope projects, like the Thirty Meter Telescope Project organized by Caltech, or weather control technologies, like the High Frequency Active Auroral Research Program (HAARP). Both of these scientific projects are proposed to be sited on or nearby indigenous lands.

We have good reason to believe that these trends of oppression exist. The problem is how these trends of oppression, related to vulnerability, should bear on guidelines for technical disputes. If an account of vulnerabilities is based on these trends, then the guidelines are not going to be binding on the other actors who can cite counterexamples. In this sense, trends themselves or factual circumstances based on trends should not be cited as the basis for accounting for vulnerabilities. The factual circumstances of vulnerabilities have to be *sui generis* in the case itself and not rely on what we think in general about certain groups or about what the trends of oppression are. Trends of

oppression are relevant as the basis for other sorts of moral claims that may be useful in other parts of indigenous stakeholders' conflict campaigns; I do not mean to say that they are not applicable at all. But for the sorts of guidelines that could be appealed to and followed in resolving technical disputes, such trends of oppression cannot be endorsed by stakeholders who may be acting counter to the trends or binding on the other actors who may be vulnerable or be potential victims of such actions.

The next secondary requirement concerns what I want to refer to as irresolvable debates produced by the historical circumstances responsible for vulnerabilities. 'Irresolvable debates' refer to disputes phrased in terms that are vague or ambiguous and which are introduced as the byproduct of the very historical circumstances responsible for the vulnerabilities. By 'historical circumstances,' I do not mean any particular historical circumstances or that we have to know what such circumstances are. All that we have to assume is that the community members or other actors have not ended up with vulnerabilities for no reasons whatsoever. In the Campo landfill case, the members of the Campo Band have ended up with the vulnerabilities that they have due to long and drawn out historical processes that were oppressive to their ancestors and now to them.

Part of the fallout of these historical circumstances is that, for example, it is not clear who has responsibility over tribal lands, what tribal lands are, or which people should be considered indigenous to have local knowledge, or the like. Claims of responsibility over indigenous lands are ambiguous. The same land is tribal land and federal land and state land and county land. Claims of indigeneity are vague insofar as the non-indigenous stakeholders who live there, and perhaps have lived there for several

generations, are certainly rightful occupants now, even if the historical circumstances that eventually led to their being born there are marked by illegitimacy and oppression. And it is not as if these stakeholders can just go somewhere else.

Terms such as 'tribal lands' and 'indigenous' derive their ambiguity or vagueness from the historical circumstances that created them. These terms also map on to the vulnerabilities claimed by the stakeholders and actors. How these terms are understood and invoked in spite of their inherent vagueness or ambiguity carries serious stakes for some of the stakeholders and actors. Of course, the problem is that these terms, in addition to their vagueness or ambiguity, are hotly contested. The conflict campaigns in the Campo landfill case feature different positions taken by the actors on the understanding of these terms. Resolving terminological disputes of these types is not easy. To draw the line on who gets to be indigenous or whose land it is, and so on, may subject those on the wrong side of the line to exclusion, and perhaps immorally so.

Problems with the terms in the Campo landfill case also apply when we are talking about any indigenous community – in any environmental conflict. Part of the problem in discussing indigenous peoples is that, before colonization, no indigenous person referred to themselves as indigenous. After colonization, 'indigenous' is not something that people say to refer to themselves within their own group. The idea of indigenous peoples, then, has little traction. It is also a term that enjoys a wide array of hotly contested definitions. The term indigenous peoples[31] refers to human groups the

[31] The term *peoples*, when referring to indigenous groups, is controversial in international law. The term *peoples* suggests *sovereignty*. Sovereignty, in turn, suggests the right of succession. Many politicians and legal scholars are unwilling to grant the right of succession to indigenous communities. In this dissertation,

members of which descend directly from pre-invasion inhabitants of lands currently dominated by others.[32] Examples of indigenous peoples are Aborigines in Australia, First Nations, Inuits, and Métis in Canada, American Indians, Alaska Natives, and Inuits in the U.S., Amazonian Tribes and Uncontacted Peoples throughout South America, Andaman Islanders in India, and Pacific Islanders in Polynesia, Micronesia, and New Zealand. Many indigenous peoples, especially in North America, are members of both their indigenous peoples and citizens of the nations established by newcomers. American Indians in the U.S., for example, since the Indian Citizen Act of 1924[33], can be both enrolled members of federally or state recognized tribes and citizens of the U.S..

Indigenous lands are the environments occupied and valued by members of indigenous peoples in various ways. Some indigenous lands are formally recognized by both indigenous peoples and newcomers, for example reservations, communities, pueblos, rancherias, villages, and OTSAs[34] in the U.S., and reserves in Canada, Australia, and Brazil. Unceded territories are indigenous lands, for example Walpole Island and the Black Hills in North America, North Sentinel Island in the Great Andaman Archipelago

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I will not defend my use of the term peoples with respect to this controversy as it does not bear on my analysis.

[32] My definition of *indigenous peoples* is influenced by S. James Anaya's definition of the term *indigenous*, in *Indigenous Peoples in International Law* (Oxford: Oxford University Press, 1996), pg. 3; UN Rights Committee, *UN Sub-Commission on Prevention of Discrimination and Protection of Minorities*, Res. 1994/44, Aug. 16 1994, UN Doc. E/CN, 4/1995/2, E/CN.4/Sub.2/1994/56 (1994) Article 7; C. Metcalf, "Indigenous Rights and the Environment: Evolving International Law, " *Ottawa Law Review*, vol. 35, vol 35, no 1, winter, pgs 101-140 (2004); International Labour Organization's (ILO) *Convention on Indigenous and Tribal Peoples*. No. 69 0f 1989, International Labour Conference (entered into forfce 5 September 1991). See also M. Tomei and L. Swepston, *Indigenous and Tribal Peoples: A Guide to ILO Convention No. 169*, Geneva, ILO. (1996).

[33] 43 U.S. Stats. At Large, Ch. 233, p. 253 (1924).

[34] OTSA is an acronym for Oklahoma Tribal Statistical Area.

"near" India, and regions occupied by Uncontacted peoples within the Amazon rainforest in South America, etc. Indigenous lands are also places that are not owned by indigenous peoples, but are endowed with significance in other ways. Sacred sites are examples of this, i.e. burial grounds, places of worship, monuments, and so on, that are considered private or public property of a non-indigenous person or institution. Other examples are customary bases of thriving, which include fisheries, forests, pastures, etc. In the U.S., for example, although many of these sites are considered private or public property, indigenous peoples were granted special access to them.[35] For example, American Indians in the Pacific Northwest were granted treaty rights to fish at their "usual and accustomed places", even when these places "belonged" to non-Indians or were accessible only by passing through non-indigenous lands.[36]

The implication of this definition of 'indigenous lands' seems to be that it includes all of North America. This can likely be said of indigenous lands on other continents. The irony of course is that this is accurate: indigenous lands are all of North America. Most boundaries are questionable. Reservations are not real indigenous lands, only ones held in trust for indigenous people by the federal government of the U.S. Towns with no indigenous residents, if the land was stolen from indigenous peoples, are in that sense

[35] For the U.S., information on the varying statuses of indigenous lands can be found in legal and historical scholarship on the special relationships between the U.S. federal state and different tribes. For some of the most recent scholarship, see Robert T. Anderson, Bethany Berger, and Phillip P. Frickey, *American Indian Law: Cases and Commentary* (Washington D.C.: West, 2008); Stephen L. Pevar, *The Rights of Indians and Tribes: The Authoritative ACLU Guide to Indian and Tribal Rights* (New York: NYU Press, 2004); David H. Getches, Charles F. Wilkinson, and Robert A. Williams, *Cases and Materials on Federal Indian Law* (Washington D.C.: West, 2004); David E. Wilkins, *Uneven Ground: American Indian Sovereignty and Federal Law* (Norman: University of Oklahoma Press, 2002);

[36] See Joseph Cone and Sandy Ridlington, eds., *Northwest Salmon Crisis: A Documentary History* (Corvalis, Oregon: Oregon State University Press, 1996). This is an anthology of primary source documents, some of which include the treaties as well as reports of treaty negotiations.

indigenous lands too. What counts as indigenous land, then, undoubtedly raises irresolvable debates that strike at the heart of relations between indigenous and non-indigenous peoples. The fact of the matter today is that non-indigenous people live on formerly indigenous lands. Some of them have established special relationships with the land and have cultural traditions on those lands. Despite this, it may be the case that the former indigenous community that occupied this land has never formally extinguished their rights to it on their own terms. It may also be the case that the non-indigenous residents have titles to that land authorized by the larger nation state, which, in their mind, trumps the indigenous land titles.

I could go on with this discussion of the problems raised by terms like 'indigenous lands' and 'indigenous peoples.' The implication is not, however, to give up a goal of working to formulate and judge guidelines on behalf of indigenous stakeholders. The implication is rather that guidelines that try to account for the vulnerabilities of indigenous stakeholders and the other actors should not derive their justification – any of it – from such vague or ambiguous terms. Guidelines are not justified if their endorsability and binding power are contingent on taking a side in one of these 'irresolvable debates' that arises from the historical circumstances that engender vulnerability. To do so only casts the claims that should be relevant to the technical dispute into another part of the conflict campaign. In this sense, no guideline can be justified if its account of vulnerability relies on any irresolvable debates.

5. Conclusion

Guidelines can only be endorsable by vulnerable actors if they adequately account for their vulnerabilities. Yet guidelines structured to account for vulnerability have to be binding on the other actors who may be vulnerable to lesser degrees. In terms of vulnerability, guidelines are only endorsable and binding if they do not violate the primary and secondary requirements of the condition of vulnerability, which are (1) performability by the vulnerable actors, (2) non-manipulability by the other stakeholders, (3) non-avoidance of unusual cases, and (4) non-reliance on irresolvable debate.

Chapter 6

1. Introduction

Fair and sound guidelines require that we consider how community members' participation relates to justice. Guidelines for technical dispute resolution do not easily fit into the traditional conceptions of justice that focus on the allocation of goods among members of a society because they have to do with how community members and other stakeholders participate. In this chapter, I argue that recognition justice is an appropriate conception of justice for constraining existing or proposed guidelines for technical dispute resolution. I formulate the final condition in terms of recognition justice and claim that guidelines are justified if they do not violate the principle of recognition justice.

In section two, I outline recognition justice in contrast to a general conception of distributive justice. I argue, in section three, that the primary demand that the principle of recognition justice makes on guidelines is that they cannot exclude actors without offering relevant reasons for consideration. In section four, I discuss some of possible ways in which existing or proposed guidelines violate the principle of recognition justice.

2. Distributive Justice and Recognition Justice

Justice is often conceived as having to do with the equal and fair distribution of things like income, prestige, and the like, which is referred to as 'distributive justice.' The issues in this dissertation, however, concern what guidelines should govern actors'

fair and sound participation in resolving technical disputes. That is to say, they are about how actors participate in the resolution of technical disputes, not how things should be allocated to them. In this section, I discuss the concept of 'recognition justice' in contrast to distributive justice and make the case for its relevance for constraining guidelines for technical disputes.

Distributive justice is not the only kind of justice. Iris Marion Young writes that discussions of justice have tended to focus "on the distribution of material resources, income, or positions of reward and prestige,"[1] inequalities in wealth and access to health care being salient examples distributive problems that require justice. According to Young, there are advantages with focusing on distributive justice:[2] distributive justice is needed in order to account for disparities in

> the amount of material goods to which individuals have access, where millions starve while others can have anything they want, any conception of justice must address the distribution of material goods. The immediate provision of basic material goods for people now suffering severe deprivation must be a first priority for any program that seeks to make the world more just. Such a call obviously entails considerations of distribution and redistribution.[3]

Distributional problems like poverty are pertinent to a kind of justice that focuses on allocations, the solution to these problems being a re-distribution schema that defends a fair re-allocation of things to individuals.

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[1] (Princeton: Princeton University Press, 1990), 18.

[2] A similar claim is made by David Schlosberg in *Defining Environmental Justice: Theories, Movements, and Nature* (Oxford: Oxford University Press, 2007), 11.

[3] Young, 19.

Distributional problems are not the only problems that justice claims seek to address and correct, however.[4] Justice is not exclusively about the allocation of material resources, although these things form an important aspect. Young provides examples of justice claims that are about more than distribution and redistribution, one of which is an environmental conflict involving a technical dispute. She writes, "Citizens in a rural Massachusetts town organize against a decision to site a huge hazardous waste treatment plant in their town. Their leaflets convince people that state law has treated the community unjustly by denying them the option of rejecting the plant."[5] In the case that Young is referring to the leaflets are not actually about removing the health dangers associated with the treatment plant; they are about whether the community members could participate fairly in legal and other proceedings. Young's analysis is that the case "concern[s] not so much the justice of material distributions as the justice of decision-making power and procedures.[6] This case is about more than measuring and evaluating disparities in how things are allocated to individuals: it is about how members of affected communities are represented in decision-making, whether their participation is meaningful, and what barriers to participation they experience just for being who they are. The kind of justice at issue here has to do with how people participate and are recognized in societal decision-making.

[4] See Charles Taylor, *Multiculturalism and "The Politics of Recognition"* (Princeton: Princeton University Press, 1992); Nancy Fraser and Axel Honneth, *Redistribution or Recognition? A Political Philosophical Exchange* (London: Verso, 2003).

[5] Ibid., 20. For more information on this case, see, Iris Marion Young, "Justice and Hazardous Waste," *The Applied Turn in Contemporary Philosophy: Bowling Green Studies in Applied Philosophy* 5 (1983): 171; Christian Hunold and Iris Marion Young, "Justice, Democracy, and Hazardous Siting," *Political Studies* 46 (1998), 82.

[6] Young., *Justice and the Politics of Difference*, 20.

Young offers other examples of similar issues of justice, like when "Black critics claim that the television industry is guilty of gross injustice in its depictions of Blacks… Arab Americans are outraged at the degree to which television and film present recognizable Arabs only as sinister terrorists or gaudy princes…"[7] These examples raise the some critical questions: Do Blacks or Arab Americans have sufficiently meaningful participation in society in order to avoid being stereotyped in the media? Should Blacks and Arab Americans have to live in a society that does not have a positive image of them? Do the concerns of members of these groups matter when they are expressed in the public domain or to those responsible for invoking the stereotypes? For Young, these questions are less about the allocation of things and more about the "social structures and institutional contexts"[8] that prevent meaningful participation and recognition. Whether a group of concerned community members is recognized in legal procedures has to do with what social structures and institutions are responsible for governing their participation, explicitly or implicitly. Whether a minority group suffers from prejudice and stereotyping has to do with the social structures and institutions that endorse the expression of stigmas and other stereotypes in the public domain. Young defines social structures or institutions as including "any structures or practices, the rules and norms that guide them, and the language and symbols that mediate social interactions within them, in institutions of state, family, and civil society, as well as the workplace."[9] These

[7] Ibid., 20.

[8] Ibid., 20.

[9] Ibid, 21.

structures and institutions are significant in terms of justice when they are invoked in order to account for disparities in participation and recognition.

Young's principal claim is that "[t]hese are relevant to judgments of justice and injustice insofar as they condition people's ability to participate in determining their actions and their ability to develop and exercise their capacities."[10] The kind of justice here concerns (1) peoples' participation in decisions that affect them and (2) the way in which people are treated as participants I refer to both (1) and (2) as 'recognition justice.'

In terms of (1), recognition justice concerns how people are recognized as participants in the decisions that affect them. This kind of justice could also referred to as 'participative justice' because it is about the opportunities that people have to participate on their own behalf. In terms of (2), recognition justice concerns how people are recognized in terms of their differences from other members of society when they participate. Social institutions can prevent outright the participation of some members of a society or render their participation less meaningful than that of others. Social institutions are responsible for endorsing unjust recognition of difference when they are ethnocentric, homogenous, and discriminatory.

Nancy Fraser, in *Justice Interruptus* (1996), claims that recognition justice is closely linked to cultural and symbolic meanings that mediate how people participate and how they are perceived by others within social institutions. She writes that recognition injustices are

[10] Ibid., 21.

> cultural or symbolic. Here injustice is rooted in social patterns of representation, interpretation, and communication. Examples include cultural domination (being subjected to patterns of interpretation and communication that are associated with another culture and are alien and/or hostile to one's own); nonrecognition (being rendered invisible by means of the authoritative representational, communicative, and interpretative practices of one's culture); and disrespect (being routinely maligned or disparaged in stereotypic public cultural representations and/or in everyday life interactions)."[11]

Reflecting on Fraser, when we talk about recognition justice we are talking about actual participative disparities that occur owing to how legal codes structure participation or widely held prejudices stigmatize certain people. In general, recognition justice appeals to our beliefs that people should not be prevented from participating in decisions that affect them because they are not recognized in society as meaningful participants. In addition, differences among individuals, like race and gender or other group memberships, should not be behind denying them fair opportunities to participate.

Distributive justice is independent from recognition justice, since it is possible to conceive of distributive justice without recognition justice. We could imagine a society with no pollution, poverty, or other distributive injustices. But this society may nonetheless be thoroughly racist, implicitly segregated, and the structure of society may have been chosen by the dominant group without consideration of the concerns of those in the less dominant groups. While such a society might be desirable over ours, even in such imaginary circumstances, deep injustices would remain – recognition injustices in need of identification and correction. Conceptions of justice with a distributive orientation tend not to address *who* gets to participate in the very procedures that evaluate the fairness of present distributions and determine re-distribution schemes.

[11] (New York: Routledge), 14.

Recognition justice is relevant to technical disputes involving indigenous community members and governments and corporations. Guidelines about what rights, required practices, and standards should be appealed to by disputants is primarily a matter of participation. Consider an example of a recognition injustice in a technical dispute occurring at Celilo Falls in the 1950s. Indigenous peoples in the Pacific Northwest used to be dependent on the Columbia River and its tributaries for salmon fishing. Not only did they consume the salmon, but they also traded it for other goods from other parts of North America with other indigenous peoples. Some of fisheries along the Columbia River are known to have supported indigenous peoples for thousands of years as well as being some of the best fisheries ever to have existed in North America.[12]

When the Cold War started, the federal government considered dam projects as a possible source of energy for expanding agriculture and industry. The Columbia river was a prime location for large-scale dams.[13] The ancient fishery at Celilo Falls was still depended on by the members of many tribes when the Army Corps of Engineers (ACE) approached them about building a dam. A technical dispute broke out over whether the dam would effectively end the salmon runs. Once the tribal members got a sense of the scale of the dams and the workings of the turbines, it seemed clear to them that the salmon would not be able to pass through them. Of course, this technical dispute occurred in the midst of a larger environmental conflict over land use, treaty rights, environmental economics, among other issues.

[12] See Jim Lichatowich, *Salmon Without Rivers: A History of the Pacific Salmon Crisis* (Washington D.C.: Island Press, 1999).

[13] See Richard White, *The Organic Machine: The Remaking of the Columbia River* (New York: Hill and Wang, 1993).

Before the construction of the Dalles dam, near the town of The Dalles, Oregon, the ACE had a guideline for technical decision-making that was used with the stakeholders in this case. One of the required practices was that public meetings had to be held in which ACE representatives sat down with stakeholders and discussed the problems, impacts and risks, and alternative solutions related to constructing the Dalles dam. The public meetings were intended to engage the perspectives of those who resisted the dam as well as indigenous peoples and other stakeholders. ACE typically held preliminary public hearings of this sort before passing its recommendations up the chain of command for authorization. At its meetings, the Corps would define a problem (such as the demand for electricity) and then suggest one or more solutions in order to gauge public opinion regarding them. The nature of the questions was quite technical insofar as it was about whether the technologies on the table would be able to have the necessary impacts to solve some of the problems without producing other negative impacts.[14]

The ACE Portland office held meetings concerning the Dalles dam from 1945 to 1949. The district office sponsored a meeting with the indigenous community members to discuss plans for the dam in April of 1945 and a second meeting for the same people in September of that same year.[15] These public meetings are interesting to consider as guidelines for resolving technical disputes. As mentioned in chapter two, public meetings for the participation of community members are often claimed in mandates and expressed in agency rules in the U.S. and in other countries.

[14] Katrine Barber, *Death of Celilo Falls* (Seattle: University of Washington Press, 2005), 64-124.

[15] Ibid., 69.

A problem with public meetings, however, may be the structure of the meetings. In the case of the meetings in 1945, none of the stakeholders understood much about the technical aspects of the proposed dam technology. Nor did they have any idea about what the ACE should or should not be doing, what sorts of studies were required or what knowledge lay people might be able to add. Yet it had not been settled that the indigenous community members, who had sustained experience on the river and, were not able to have contributed to understanding the technical issues regarding the salmon runs. Establishing this would have been important given that the indigenous community members believed that the dam would effectively end the salmon runs. During the meetings, however, the ACE representatives did not offer any alternative solutions, did not consider any ideas that did not implicate the necessity of the dam, and failed to discuss the concerns or possible knowledge of the indigenous community members. Thomas Yallup was one of the community members present, a member of the Rock Creek Band of Yakama Tribe. He described one of the meetings as follows: "most of the talks made were by the agencies, which seemed to me to be like a group of friends, with a pat on the back – 'You might say this,' and so on."… There was no opposition at the hearing. All the talks were made so as to back one another in regard to the building of the Dalles dam."[16] The public meetings were undoubtedly a good idea and it could be argued that most technical decision procedures should include some kind of public meetings or hearings as part of a fair and sound guideline. But the way in which these meetings were structured did not recognize the indigenous community members and

[16] Ibid., 69.

meaningful participants, which is especially problematic given what was at stake for them. In addition to the public hearings' manipulability by ACE, ACE representatives did not recognize the perspectives of the indigenous community members or any of the other stakeholders. They coopted the problem formulation, the possible solutions, and the organization of the meeting, and the responses to questions. The indigenous community members did not have meaningful participation and were not recognized in a positive light. While the public meetings were important, their articulation and structure permitted recognition injustices to go unchecked.

The ACE participants did not consider what knowledge could be contributed by the community members nor did they disclose the technical issues in ways that were understandable. ACE claimed to want to know more about how the dams would affect salmon populations, but excluded the indigenous community members and other stakeholders, like salmon canners, both of whom had extensive indigenous and local knowledge of salmon in the Columbia river basin, from contributing to understand the impacts on the salmon. ACE participants were likely set in their scientific and engineering methods; they were not open to differences in collecting and configuring evidence that may have been capable of contributing to understanding the dam technologies being proposed.

The injustice in this case is not captured by a distributive conception of justice. The justice at issue here is a matter of having a fair opportunity to participate meaningfully. The ACE representatives excluded the indigenous community members from having meaningful participation. In addition, the public meeting was not structured

with checks and balances that were fair in terms of participation of all of the stakeholders, especially the indigenous community members. The ACE participants treated the meeting as if it was a matter of convincing everybody to agree to the dam project, as opposed to a meeting to gain useful information as to whether the dam should be constructed.

Recognition justice is concerned with the social institutions that govern recognition, like racism and sexism, and that effectively prevent some members of society from having an fair opportunity to participate and voice their opinions in decision-making. The analysis in this section reflects commonly held beliefs about recognition justice, but it remains unclear what imperatives on proposed or existing guidelines are demanded by the 'principle of recognition.' In the next section, I argue that the only demand that the principle of recognition justice can make on guidelines is that participative disparities cannot be tolerated without relevant reasons being offered for the exclusions. This demand forms the basis of what I refer to as the 'condition of recognition justice' for rights, required practices, and standards of technical decision-making.

3. The Principle of Recognition Justice

What should the principle of recognition justice be understood as demanding of guidelines for technical disputes? The demands of recognition justice are often difficult to conceive because they have to do with social institutions that are describable in many different ways, from ideologies to group biases, and so on. I argue that the only demand of recognition justice that guidelines cannot violate is that they cannot imply any

participatory exclusion or discriminatory treatment without reasons being offered that warrant the exclusion. That is to say, guidelines are inadequate if they exclude certain stakeholders solely according to who they are and for no other reasons.

The problem with understanding recognition injustices is that they can be conceived of according to various criteria. For a participatory issue to count as a recognition injustice, there has to be some exclusion occurring with respect to an actor or set of actors' participation. The goal of identifying recognition injustices is to place some participatory exclusion in high relief in order that it be corrected. By 'criteria' I mean the moral standards against which we judge a participatory exclusion to be a recognition injustice as opposed to a permissible exclusion.

Whether a guideline implies or permits a recognition injustice is subject to varying criteria. For example, in the Celilo Falls case, the transcripts and testimony of the public meetings indicate that the ACE representatives did not allow the indigenous actors both to participate fairly in the technical decision-making or express their different perspectives on their own terms. The historical evidence shows rather clearly that this is what happened. The meetings were not structured so as to include all of the stakeholders, especially the indigenous community members.

The problem is where to draw the line regarding our criteria as to what the injustice was about. Perhaps racism was behind the structure of public meetings, but racism can be understood according to many criteria. Racist beliefs can be held by individuals and not reflect deeper cultural patterns; random acts of racism may fit this explanation. Racist beliefs can be the product of social conditioning that, despite the fact that people

have the opportunity to know better, they still cling to these beliefs for community solidarity and identification. White supremacy and other racist beliefs that are held in particular towns or communities may be examples of this. More broadly, racist beliefs may reflect some invisible ideological structure that governs our social relationships in society and that cannot be escaped. This ideological structure orders society in such a way that privileges members of some races over members of other races. The irony of this structure is that those who are privileged are not aware that they are privileged.

Which one of these descriptions captures the recognition injustice? In the Celilo Falls case, did the ACE members exclude the others because of prejudicial beliefs held only by the non-indigenous individuals in the room? That is to say, were the ACE representatives in that room randomly subject prejudices? Or, were the prejudicial beliefs a matter of social conditioning necessary for Americans to coalesce as a community in advocacy of the domination of the Columbia River watershed? Or, were the prejudicial beliefs indicative of an invisible power structure that, unbeknownst to non-Indians, presumes that Americans are the rightful owners of North America and indigenous participation is not wanted or legitimate?

In the case, all of these things, or none, could have been responsible for the prejudicial beliefs. There is really no way of knowing. I could make a claim that alleges that ideological structures were responsible for the ACE members' prejudicial beliefs, basing that claim on certain facts that, if interpreted appropriately, make the case: The dam project was part of the Cold War efforts, the Stevens treaties were not recognized, and the Dalles high school's name was 'The Indians,' among other facts. But do these

facts substantiate the claim that the public meeting was an example of social prejudice or a component of a deep ideological structure?

It is important to consider these questions when we are judging a guideline such as a public meeting and trying to determine whether it implies or is structured to produce recognition injustices. Should we apply criteria of judgment that propose that guidelines reflect recognition injustices when they are inscribed in invisible ideologies? Criteria of this kind are difficult to prove and will complicate the efforts to establish preliminary conditions that help us understand the normative basis of guidelines for technical disputes.

A principle of recognition justice should not demand that we account for all the possible explanations of why recognition injustices occur or that apply all of the possible criteria. Recognition justice need only demand that exclusions and problematic disparities in participation that are not justified by any relevant reasons cannot be implied by any proposed guidelines for resolving technical disputes. By relevant reasons, I mean reasons that have to do with the requirements of disclosure and the contribution of stakeholders to understanding the technical issues. An exclusion could be appropriate if there are good reasons for the exclusion: reasons that (1) show why the exclusion is ethical and in the best interest of all actors and (2) do not violate the other two preliminary conditions in chapters four and five.

I propose that the demands of recognition justice be operationalized in the following way. Any individual or group difference that is excluded *qua* that difference and for no other relevant reason counts as a recognition injustice. This would include all

three sources of prejudice, but it does not commit us to having to accept the corollaries of those claims, for example individual pariahs, ideological structures, and the like. Any technical decision situation can be given this simple condition: we can check to see if there are groups that are being excluded in the claim on the basis of group differences. If there are no further relevant reasons offered, then there is a *prima facie* recognition injustice. If there are reasons offered as relevant, then they have to be incorporated into guidelines that do not violate the conditions of acceptability for dispute resolution or vulnerability.

There could also be a recognition justice guideline for dispute resolution. The guideline could state that recognition injustice occurs when an actor's impact and risk statement is excluded merely because it is that actor who is making that impact statement. If an indigenous actor's impact statement is excluded in this way, this means the impact statement is excluded because it comes from an Indian or because it is derived from indigenous knowledge or the ACE, and the like. By 'Indian,' 'indigenous knowledge,' and 'ACE', I am not using significant meanings for these terms. A relevant significance for 'indigenous knowledge' may be that it is the local knowledge gained over hundreds of years of local experience. A relevant reason could then be offered that because the indigenous knowledge was more in tune with aquatic ecosystems, let us say, it is not relevant to a technology that affects air quality. Based on this reason, the indigenous community members should be given full understanding of the technical issues but not expected to contribute to establishing knowledge of them.

There is a tendency to view the principle of recognition justice as belonging to the sphere of minority or small community politics, which implies that it is not binding on the other affected actors. But this is not the case when it comes to how I use the principle for technical disputes. STS, for example, has documented many cases where indigenous or other marginalized knowledge traditions should have been recognized. Some of these studies also show how so-called "Western" science has made serious errors in estimating the impacts and risks attributable to a technology, which has led to harms against many people. It is wrong to conclude from these cases studies that recognition justice for technical disputes means that a "non-Western" groups' contributory knowledge gets recognized as superior to the dominant science, say Western science. Within the framework of technical disputes, "Western" science has many uses. It is a recognition injustice to exclude it *qua* Western science or based only on how it is implicated in colonization and oppression. Relevant reasons have to be offered to exclude Western science or indigenous knowledge.

The principle of recognition justice demands that guidelines cannot be justified if they exclude any stakeholders from participating meaningfully without offering relevant reasons. In the next section, I provide more detail about how the condition of recognition justice, based on the principle, can be violated by existing or proposed guidelines. I then offer a case of a set of rights, required practices, and standards that builds in checks and balances that do avoid violating the principle of recognition justice.

4. Violations of the Principle of Recognition Justice

The recognition justice condition is that guidelines are inadequate if they violate the principle of recognition justice. In this section, I outline more specifically how certain proposed guidelines might violate this condition as well as some ways in which violations can be avoided. I begin with a hypothetical case of a technology designed by a certain set of engineers.

Consider a proposed standard that only a certain set of engineers should be responsible for estimating the impacts and risks of a technology of which they were the principal designers. They designed it; they must know everything about it or at least more than anybody else. When the same engineers are part of a project to implement the technology somewhere, they dismiss the claims that some of the members of the affected community make about how the engineers have gathered insufficient evidence. The engineers claim that because they are engineers and are responsible for the technology that they should only contribute to understanding the technical issues and should also bear sole responsibility for disclosing the technical issues. Here the guideline is a standard that only the engineers who created the technology should play a contributory role in understanding the technical issues. The only reasons offered in support of this standard are that the engineers have the knowledge and experience that goes along with inventing the technology and have the appropriate expertise.

This proposed standard violates the principle of recognition justice insofar as it excludes consideration of the contribution of the community members, even if their contribution is in some sense different or less than that of the engineers. The contribution of the community members and the accuracy of their impact statements, even when they

do not have the appropriate credentials, should not be judged without some dialogue the outcome of which is that the community members' contributory role is adequately adjusted or ruled out. For the standard to avoid violating the principle of recognition injustice, it has to either allow for consideration of the community members or provide reasons that can be debated about how the community members should be ruled out. Using the principle of recognition justice works in conjunction with the other conditions. In the example just given, any revisions to the proposed standard cannot violate the other conditions as well. The revisions have to be consistent with the practice of dispute resolution and account for the vulnerabilities in the case in question.

It may be claimed that this adequacy condition leads to some absurd ideas. What if a guideline is proposed that a certain group should be allowed to use their dreams as evidence that the other actors have to take seriously. The reasons are that the dreams are a method of knowledge production used by this group and that there is an established track record of these dreams being correct. This absurd example will actually violate the principle of recognition justice unless it is binding on the other actors. Let us say that this guideline is made in the case of technical dispute and the other actors are corporate and government actors. If one of the actors makes the claim about dreams, then this means that, because their dreams are allowed, then the other dreams of the other actors have to be allowed as well in order that the guideline is binding. If the case is made about dreams, then the same case has to be made for the other actors' dreams as well. It is unlikely that the community members desire to allow the dreams of the other actors to be accepted as evidence counting toward the accuracy of their impact statements.

Still, in this example, it could be claimed that the group claiming to legitimize dreams has a special tradition of dreaming that the other actors do not have and thus cannot gain insights from them in the same way. In addition, it is claimed that the other actors will never be convinced of the power of dreams even if they are shown how it works. Perhaps this guideline could be couched in terms of recognition justice; however, it violates the condition of acceptability for dispute resolution. Any knowledge tradition that is so esoteric that it only belongs to one group and that the other group cannot divulge the workings of that knowledge tradition does not belong in the technical dispute phases of an environmental conflict. Any theory of rationality or knowledge production that cannot be shared with the other actors and cannot be seen as a way of configuring evidence and making claims on the basis of that evidence has no binding power, epistemically speaking, on the other actors. Even if the norm to allow the dreams of one set of stakeholders could be shown to be consistent with recognition justice, it will not pass the condition of acceptability for dispute resolution.

What sorts of guidelines definitely avoid violating the principle of recognition justice? Consider a case example, similar to the Mohawk Environmental Division in chapter one, where different stakeholders work together by following an established set of rights, required practices, and standards, each of which includes checks and balances that ensure recognition injustices are not committed.

Kuujjuaq is part of the arctic portion of Quebec. It includes Nunavik, which is comprised of 14 Inuit villages of between 280 to 2,000 residents each and are located mostly along the Ungava Bay and Hudson Bay coasts. In Nunavik, climate change is

having an undeniable impact. According to residents, winter weather does not start until December as opposed to October and the sea ice melts earlier in the Spring, making it so that polar bears are coming inland in May instead of late June or July. The region's position in the arctic also makes it susceptible to airborne pollutants riding the winds from industrial parts of the world and mining activities that may cause local contamination.[17] This context raises many technical problems between Nunavik residents, scientists, the Canadian government, and corporations. Many disputes have been avoided due to the establishment of the Nunavik Research Centre (NRC) in 1978. The NRC operates using a guideline that recognizes both "Western" and indigenous knowledge traditions.[18]

One of the biggest technical issues concerns technology effects that may have produced contamination of wildlife populations. The Inuit wish to ensure optimal harvesting levels for their subsistence hunts, which requires there to be healthy wildlife populations with healthy proportions of individuals distributed among all age classes. It is vital to have data on population health; having this data provides grounds for the Inuit community members to evaluate what choices they have to make and what tradeoffs should be considered. The data also forms the basis for negotiating with the government in regard to hunting and fishing quotas.

[17] Stephanie Woodard, "Blending Science and Tradition in the Arctic," *Indian Country Today* (March 30, 2005).

[18] Nunavik Research Centre, http://www.makivik.org/nrc/eng/index.htm (accessed April 5, 2009); Adam Lewis, "Using Indigenous Knowledge in Monitoring Ice Cover," *Ice & Snow, Arctic, Water, & Oceans*, Interviews (December 29, 2008).

The NRC generate this data in-house, which means that the Inuit had to trust the expertise and advice of the scientists from outside the community. In-house data provides the community members, regardless of their expertise, with input and access to the technical decision-making. This was previously a problem because researchers used to come to the community, engage in a study, and then leave without informing the Nunavik residents what they had found out.

NRC scientists and employees also follow guidelines that ensure the concerns of different members are part of the technical decision-making process. Members of the community first convey open questions to the NRC. These questions are then expressed to the Nunavik Regional Board of Health and Social Services, which is responsible for public health. The questions then get turned over to the NRC lab, the staff of which devises studies, often in collaboration with Health Canada, Environment Canada and the Canadian Food Inspection Agency. The results go back to Nunavik Regional Board of Health and Social Services, which in turn makes recommendations to the community members. These recommendations have to pass through the elders before going to the community. The principle of recognition justice is not violated, as the different roles are recognized on their own terms and based on their own potential contributions, from the scientists to the elders, to the tribal authorities for Inuits and to the Canadian government.[19] Feedback loops ensure that the different stakeholders' participation is given its proper place. Community members who are likely to identify questions are given a forum in which to voice these questions; other actors are informed along a chain

[19] See Woodard.

which eventually returns to the community members in the form of recommendations that are understandable to them. The set of guidelines also suggests certain rights that the actors have; the community members have a right to express their concerns and have them vetted; the elders have a right to review the recommendations, and so on.

This system of guidelines rights has led to some surprising technical outcomes. In one case, members of a village asked that water, snow, and soil from around a nearby mining site be analyzed for pollutants. Usually such issues are the basis of technical disputes marked by distrust. Once the claims had been processed through the system, it turned out that the mining company had been doing a good job of monitoring the environment and controlling the contaminants that it released. These findings were not disputed by those who originally asked for the studies the guidelines for collaborating on such questions had been followed.[20]

The safety of the local food supply has also been accurately handled. High pollution levels have been discovered in the region because volatile materials such as mercury, PCBs, brominated flame retardants, and aerosol pesticides are carried on the wind from other areas and descend back to earth when they condense in the cold of the arctic region. Many Inuit have worried that their traditional foods were contaminated. To see whether the concern was warranted, the NRC started a toxicology lab that looks for the presence of heavy metals in addition to its study of diseases.[21] There are striking examples of the participation by community members in NRC research. In case beluga samples are desired, the NRC contacts local hunting and fishing associations and sends

[20] See Woodard.

[21] See Woodard.

kits with labeled bags, measuring tape, writing instruments, and instructions. This includes everything the hunters need to collect the samples. In one case, a scientist accompanied hunters to a region where a higher proportion of walruses appeared to be infected with trichinellosis, which is caused by a worm related to that found in pork. It can be killed by cooking meat well; however, the Inuit consider raw or fermented walrus a delicacy, and communities that habitually hunt in this area may find that half of the walruses they harvest are infected and can be eaten only after being cooked.

During the trip, the scientist assessed an existing field condition for trichinellosis that the hunters hoped could be used to check the walruses themselves. If the condition proved effective, they would not have to send a sample of the animal – ordinarily the tongue – to the NRC for analysis. The condition proved unreliable, so the scientists began to evaluate the accuracy of traditional means of determining if walruses are sick, including the presence of yellowed skin and extra-long tusks. The traditional means will then be conditioned for accuracy from both the scientist and hunters' standpoints. Everyone's participation is recognized in established guidelines like this, from the hunters, to their associations, to the health board, and to the NRC. It offers a system of checks and balances that ensures the demands of recognition justice are fulfilled by including each actor's differences in relevant ways. Irrelevant exclusions are not tolerated. The system of rights, required practices, and standards employed by the NRC involves collaborations that are usually lacking in technical disputes. Proposed guidelines for technical disputes could reformulate the examples from the NRC case as

rights, required practices, and standards that community members and other actors could demand that the others comply with.

The final preliminary condition is that rights, guidelines, or standards are *prima facie* justified if they do not violate the principle of recognition justice. To avoid violations, guidelines cannot imply participatory exclusions without offering relevant reasons for debate. Guidelines can build in checks and balances and other measures that ensure all actors are participate and are recognized meaningfully.

5. Conclusion

It is important that one of the preliminary conditions for guidelines relates to justice. Traditional distributive justice is not relevant to formulating and evaluating guidelines for technical disputes because it is focuses on allocations of things among individuals. Recognition justice better suits this situation because it has to do with fair participation in decision-making. The principle of recognition justice demands that all participatory exclusions without relevant reasons are impermissible. The condition of recognition justice constrains existing or proposed rights, required practices, and standards insofar as they cannot violate the principle of recognition justice.

Chapter 7

1. Introduction

I conclude that the normative framework defended in chapters two through six provides preliminary criteria for evaluating guidelines of community member participation in technical disputes. In this chapter, I outline the relevant types of guidelines that the normative framework applies to. I then show what additional connections need to be made in order that the normative framework will be relevant to the larger issues in technology assessment and environmental conflicts.

2. Applying the Normative Framework

The normative framework I established in this dissertation is only a beginning for continued normative analysis of guidelines of community member participation in technical decision situations like collaborations and disputes. In this section, I outline the basic steps of applying the normative framework and then describe the other aspects of technical decision-making it has to be connected with.

The first step in applying the normative framework is that we have to clarify the kind of guidelines that are the objects of analysis. There are three types of guidelines that the normative framework is relevant to, which I refer to as (1) 'guidelines currently in use,' (2) 'emerging guidelines,' and (3) 'concepts for guidelines.' 'Guidelines currently in use' are rights, required practices, and standards that are influenced by statutes and executive orders or other issued mandates and have already been codified in

administrative rules or other legal systems for technical decision making. The National Institutes of Health (NIH) has codified guidelines of community-based participatory research (CBPR) for collaborative technical decision-making and dispute resolution.[1] NIH researchers follow these CBPR guidelines when they seek to understand the technical issues along with community members. It is important to be able to judge whether these existing guidelines are including community members fairly and soundly and whether they should be revised according to the particular conditions. For example, a guideline may be *prima facie* justified according to the normative framework but require specific revisions to render it performable by vulnerable community members.

'Emerging guidelines' are rights, required practices, and standards that have been recently mandated by an authoritative institution; however, the formulation and structure of the guidelines are still being developed by the various government organizations, policy-makers, public advocates, and other stakeholders charged with the task of doing so. 'Emerging guidelines' are on the agenda; working versions of them may be in use experimentally by government organizations, but they have not been codified as rules. An example of emerging guidelines is the environmental justice relationship among the U.S. federal government, states, municipalities, and Indian tribes. Tribal governments have been mandated, when possible, to create their own guidelines for technology assessment. These guidelines have to be compatible with those of federal agencies, states, and municipalities.[2] Concerning the participation of enrolled members of tribes,

[1] See Liam R. O'Fallon and Allen Dearry, "Community-Based Participatory Research as a Tool to Advance Environmental Health Sciences," *Environmental Health Perspectives* 110, supplement 2 (April 2002): 155-159.

guidelines are currently emerging in discussions, tribal and U.S. codes, and actual practices. These emerging guidelines are subject to the normative framework as well insofar as they should be formulated in accordance with the three preliminary conditions.

'Concepts for guidelines' refer to any philosophical or policy ideas for mandates or specific guidelines of community member participation. This could be referred to as 'guideline theory,' as it is about determining what types of guidelines should be in place where there are currently none. Some discussions are in participatory action research, ecofeminism, and environmental justice are examples of this.[3] One of these issues is how women's' roles in communities and gender discrimination should be accounted for in guidelines pertaining to women's' participation in technical collaborations and disputes. It is hoped that these ideas will eventually be put on policy agendas, mandated, and codified as enforceable guidelines. Applying the normative framework to these concepts for guidelines will assist, in part, to clarifying how they will be endorsable by different community members and binding on the other potential actors.

The second step applying the normative framework is that the norms and preliminary conditions could be used as criteria for judging the normative adequacy of 'guidelines currently in use' and 'emerging guidelines,' as has been indicated previously.

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[2] See Judith V. Royster, "Native American Law," in *The Law of Environmental Justice*, Michael Gerrard and Sheila Foster, eds., 2nd edition (Washington D.C.: American Bar Association, 2009): 157-181.

[3] ACP-EU Technical Centre for Agricultural and Rural Cooperation, *Advancing Participatory Technology Development: Case Studes on Integration into Agricultural Research, Extension, and Education* (New York: International Institute of Rural Reconstruction, 2008); Deane Curtin, "Women's Knowledge as Expert Knowledge: Indian Women and Ecodevelopment," *Ecofeminism: Women, Nature, Culture*, Karen J. Warren, Nisvan Erkal, eds. (Bloomington: Indian University Press, 1997):82-98; Peggy M. Shepard, Mary E. Northridge, Swati Prakash, and Gabriel Stover, "Preface: Advancing Environmental Justice through Community-Based Participatory Research," *Environmental Health Perspectives* 110, supplement 2 (April 2002): 139-140.

Are the required practices used in NIH's CBPR guidelines performable by community members and non-manipulable by the other actors? Do the participatory rights granted to enrolled members by their tribal governments violate the condition of recognition justice in order to preserve compatibility with the EPA's rules? If so, how should the rights be restructured to avoid violating the condition? Answering questions allows us to make normatively salient judgments about existing guidelines as well as constraining ongoing discussions on how proposed guidelines can fulfill their mandates fairly and soundly.

The normative framework could also contribute to 'concepts for guidelines' that are being debated. Often, these discussions are framed entirely in terms of the interests of the community members. There are often goods reasons for focusing on these issues. But if the goal is that 'concepts for guidelines' will move toward some policy or legal codification, then the interests of community members has to account for the interests that other actors might have in the technical dispute. The normative framework poses important questions about how epistemic differences should be communicated, how vulnerability should be accounted for, and how participation should be structured to avoid discrimination for all stakeholders.

The third step, which transcends the scope of this dissertation, is to integrate the normative framework with the other dimensions and aspects of technology assessment and environmental conflicts. There are some important examples that should be noted. First, guidelines of community member participation in technical decisions occupy a limited space in the larger area of technology assessment, which includes, most importantly, the evaluation of technology impacts and risks. Community member

participation in identifying and estimating impacts and risks is only relevant to technical issues concerning how we come up with the basic facts used to understand impacts and risks, without attaching these facts to things that humans value like income, property values, and the like. There are many philosophical problems that need to be addressed with regard to how value tradeoffs and other comparisons are put on screen for community members and the other stakeholders to express their preferences about. What are the preferences of community members? Do they know what these preferences are? Should experts try to account for these preferences when they put the costs and benefits on screen? How should things that people value different be represented as tradeoffs?[4] I have intended my normative framework to be compatible with the sorts of evaluative decision-making that takes place in cost-benefit analysis and other evaluative methods. Further work needs to be done to show how guidelines for community member participation in technical decisions will fit into the larger framework of technology assessment. In *Risk and Rationality*, Kristin Shrader-Frechette forwards a set of guidelines for impact and risks evaluation that focuses on the participation of members of affected communities. It should be shown how the normative framework defended in this dissertation is compatible with that advanced by Shrader-Frechette.

Second, and closely related to risk evaluation, is the issue of distributive justice. Environmental conflicts over determining how environmental goods, bads, and risks should be allocated among members of a society. An environmental conflict over the siting of a toxic waste facility may also be about whether some communities, regardless

[4] See Sarah Lichtenstein and Paul Slovic eds., *The Construction of Preference* (Cambridge: Cambridge University Press, 2003).

of the actual hazards, tend to be closer in proximity to toxic waste incinerators of this kind. In this sense, the issue is not only about how community members should participate in technical decision-making, but more about whether the technology should be there in the first place given the sorts of communities that traditionally hose these technologies. Disputes of this kind are both about technical issues like whether the technology actually causes harmful effects and about distributive issues, like whether there is a trend of facilities to be hosted by communities that are similar in some respects. The normative framework does not claim that these distributive problems can be worked out by through community member participation in determining the impacts and risks of the technology. Rather, the normative framework is useful in the instances when guidelines of community member participation are related to the distributive issues. But insofar as they are not, and the conflict is more about whether the technology should be there in the first place, then the specific limits on the normative framework should be specified.

Third is the issue of technology design. The cases I have looked at are primarily about technologies that have been already designed and are implemented or scheduled to be implemented. There is a school of thought called 'constructive technology assessment' which suggests guidelines for how stakeholders and different publics are to participate the design phases.[5] The idea is that technologies should not simply be foisted on community members once the plans behind them have already been solidified; rather, democratic practices should be employed to ensure that members of the public are

[5] See Arie Rip, Thomas J. Misa, and Johan Schot, *Managing Technology in Society: The Approach of Constructive Technology Assessment* (New York: Pinter, 1995).

included as much as possible in the processes of conceiving and designing technologies. The normative framework should be adapted to these discussions in order that its relevance to technology design is established.

3. Conclusion

The normative framework defended in this dissertation can be applied as part of criteria for judging existing and proposed guidelines of community member participation. Its application is specifically limited to technical decision making in terms of guidelines that government organizations have already codified, guideline that have been mandated but not formulated, and discussions and debates about what guidelines ought to be in place when there are none. Finally, the normative framework must be connected to the larger issues in environmental conflicts, which include impact and risks evaluation, distributive justice, and technology design.

Bibliography

Abels, G. "Experts, Citizens, and Eurocrat – Towards a Policy Shift in the Governance of Biopolitics in the EU." *Europe and Integration Online Papers (EIoP)*. http://www.eiop.or.at/eiop/texte/2002-019a.htm (accessed April 1, 2009).

ACP-EU Technical Centre for Agricultural and Rural Cooperation. *Advancing Participatory Technology Development: Case Studes on Integration into Agricultural Research, Extension, and Education.* New York: International Institute of Rural Reconstruction, 2008.

Adamson, Joni, Mei Mei Evans, and Rachel Stein, eds. *The Environmental Justice Reader: Politics, Poetics, and Pedagogy*. Tucson: University of Arizona Press, 2002.

Akwesasne Task Force on the Environment Research Advisory Committee. "Superfund Clean-up at Akwesasne: A Case Study in Environmental Injustice." *International Journal of Contemporary Sociology* 34, no. 2 (1997): 267-290.

Alaska Community Action on Toxics. http://www.akaction.org (accessed November 20, 2008).

Alaska Contaminated Sites Program. "Department of Defense Sites in Alaska." http://www.dec.state.ak.us/SPAR/csp/dod_sites.htm#fuds (accessed November 20, 2008).

———. "Saint Lawrence Island." http://www.dec.state.ak.us/spar/csp/sites/stlawrence.htm (accessed November 20, 2008).

Anaya, S. James. *Indigenous Peoples in International Law*. Oxford: Oxford University Press, 1996.

Annunziata, J.W., Haudenosaunee Environmental Task Force, and Uradyn Erden Bulag. *Haudenosaunee Environment Restoration: An Indigenous Strategy for Human Sustainability.* Cambridge, U.K.: Indigenous Development International, 1995.

Arquette, Mary, Maxine Cole, Katsi Cook, Brenda LaFrance, Margaret Peters, James

Ransom, Elvera Sargent, Vivian Smoke, and Arlene Stairs. "Holistic Risk-Based Environmental Decision-making: A Native Perspective." *Environmental Health Perspectives* 110, no. 2 (April 2002): 259-264.

Barber, Katrine. *Death of Celilo Falls*. Seattle: University of Washington Press, 2005.

Beck, Ulrich. *Risk Society: Towards a New Modernity*. London: Sage Publications, 1992.

Blackburn, J. Walton, and Willa Marie Bruce. *Mediating Environmental Conflicts: Theory and Practice*. Westport, CT: Quorum Books, 1995.

Bordewich, Fergus M. *Killing the White Man's Indian: Reinventing Native Americans at the End of the Twentieth Century*. New York: First Anchor Books Edition, 1997.

Brown, Phil. "Popular Epidemiology: Community Response to Toxic Waste-Induced Disease in Woburn, Massachusetts." *Science, Technology and Human Values* 12, no. 2 (1987): 76-85.

Brown, Phil and Edwin J. Mikkelsen. *No Safe Place: Toxic Waste, Leukemia and Community Action.* Berkeley: University of California Press, 1990.

Bullard, Robert D., and Glenn S. Johnson. "Environmental Justice: Grassroots Activism and its Impact on Public Policy Decision-making." *Journal of Social Issues* 56, no. 13 (2000): 555-581.

Bunce, H.W.F. "Fluoride in Air, Grass, and Cattle." *Journal of Dairy Science* 68 (1985): 1706-1711.

Carrico, Richard L. *Strangers in a Stolen Land: American Indians in San Diego 1850-1880*. San Diego: Department of American Indian Studies San Diego State University, 1987.

Chavkin, Wendy, ed. *Double Exposure: Women's Health Hazards on the job and at Home*. New York: Monthly Review Press, 1984.

Clapp, Richard W. "Popular Epidemiology in Three Contaminated Communities." *Annals of the American Academy of Political and Social Science* 584 (November, 2002): 35-46.

Cole, Luke W., and Sheila R. Foster. *From the Ground Up*. New York: NYU Press, 2001.

Collins, Harry, and Robert Evans. "The Third Wave of Science Studies: Studies of

Expertise and Experience." *Social Studies of Science* 32, no. 2 (April 2002): 235-296.

Collins, Randall. "Ethical Controversies of Science and Society: A Relation Between Two Spheres of Social Conflict." In *Controversial Science: from Content to Contention*, edited by Thomas Brante, Steve Fuller, and William Lynch, 301-317. Albany: SUNY Press, 1993.

Cook, Sherburne. "Historical Demography." In *Handbook of North American Indians Volume 8: California*, edited by Robert Heizer. Washington D.C.: Smithsonian Institute, 1978).

Curtin, Deane. "Women's Knowledge as Expert Knowledge: Indian Women and Ecodevelopment." In *Ecofeminism: Women, Nature, Culture*, edited by Karen J. Warren and Nisvan Erkal, 82-98. Bloomington: Indian University Press, 1997.

Derby, Stephen, and Ralph Keeney. "Risk Analysis: Understanding 'How Safe Is Safe Enough?'" *Risk Analysis* 1, no. 3 (September 1981): 217-224.

Diehl, Peter. "Uranium Mining and Milling Wastes: An Introduction." http://www.wise-uranium.org/uwai.html (accessed March 12, 2009).

Emerson, Kirk, Tina Nabatchi, Rosemary O'Leary, and John Stephens. "The Challenges of Environmental Conflict Resolution." In *The Promise and Performance of Environmental Conflict Resolution*, edited by Rosemary O'Leary and Lisa B. Bingham, 3-26. Washington DC: Resources for the Future, 2003.

Engelhardt, Tristram H., and Arthur Caplan, eds. *Scientific Controversies: Case Studies in the Resolution and Closure of Disputes in Science and Technology*. Cambridge: Cambridge University Press, 1987.

Environmental Protection Agency. "EPA Bans PCB Manufacture; Phases Out Uses." http://www.epa.gov/history/topics/pcbs/01.htm (accessed March 5, 2009).

———. "Hazardous Waste," http://elvis.slis.indiana.edu/EPA/ebtpages/wastharzardouswaste.html (accessed March 13, 2009).

———. "Municipal Solid Waste," http://www.epa.gov/epawaste/nonhaz/municipal/index.htm (accessed March 15, 2009).

———. "Public Involvement in Advisory Activities."

http://yosemite.epa.gov/sav/sabproduct.nsf/Web/PublicInvolvement?OpenDocument (accessed April 3, 2009).

Epstein, Steven. *AIDS, Activism, and the Politics of Knowledge*. Berkeley: University of California Press, 1996.

European Union Commission. *Science, Society and the Citizen in Europe*, Working Document, 2000.

Feenberg, Andrew. *Questioning Technology*. London: Routledge, 1999.

Food and Drug Administration, U.S. Department of Health and Human Services. http://www.fda.gov (accessed January 5, 2009).

Foreman, Christopher. *The Promise and Peril of Environmental Justice*. Washington D.C.: The Brookings Institute, 1998.

Fraser, Nancy. *Justice Interruptus*. New York: Routledge, 1996.

Fraser, Nancy, and Axel Honneth. *Redistribution or Recognition? A Political Philosophical Exchange*. London: Verso, 2003.

Frye, Marilyn. "Oppression." In *Oppression, Privilege, and Resistance*, edited by Lisa Heldke and Peg O'Connor, 183-192. New York: McGraw-Hill, 2003.

Fuller, Steve. "A Strategy for Making Science Studies Policy Relevant." In *Controversial Science: From Content to Contention*, edited by Thomas Brante, Steve Fuller, and William Lynch, 107-126. Albany: SUNY Press, 1993.

Gedicks, Al, and Zoltan Grossman. "Exxon Returns to Wisconsin: The Threat of the Crandon/Mole Lake Mine." *The Circle* (April 1994).

Gerrard, Michael B. *The Law of Environmental Justice: Theories and Procedures to Address Disproportionate Risks*. Washington D.C.: American Bar Association, 1999.

Gibbons, M., and C. Limoges, H. Nowotny, S. Schwartzman, P. Scott, and M. Trow. *The New Production of Knowledge*. London: Sage Publications, 1994.

Goffman, Irving. *Frame Analysis: An Essay on the Organization of Experience*. Cambridge, MA: Harvard University Press, 2003.

Goodin, Robert. *Protecting the Vulnerable: A Reanalysis of our Social Responsibilities*. Chicago: University of Chicago Press, 1985.

Gray, Barbara. "Framing of Environmental Disputes." In *Making Sense of Intractable Environmental Conflicts: Concepts and Cases*, edited by Roy J. Lewicki, Barbara Gray, and Michael Elliot, 91-126. Washington D.C.: Island Press, 2003.

Grinde, Donald A. *Ecocide of Native America: Environmental Destruction of Indian Lands and People*. Santa Fe, NM: Clear Light Books, 1998.

House of Lords. *Science and Society.* London: Stationary Office, 2000.

Hart, H.L.A. "Are There Any Natural Rights?" *Philosophical Review* 64 (1955): 175-91.

Harremoes, Poul, David Gee, Malcolm MacGarvin, Andy Stirling, Jane Keys, Brian Wynne, and Sofia Guedes Vaz. *The Precautionary Principle in the 20th Century: Late Lessons from Early Warnings*. London: Earthscan, 2002.

Henifin, Kai A. "Toxic Politics at 64N, 171W: Addressing Military Contaminants on St. Lawrence Island, Alaska." Thesis, Oregon State University, 2007.

Indigenous Environmental Network. http://www.ienearth.org/ (accessed November 20, 2008).

International Labour Organization. *Convention on Indigenous and Tribal Peoples*. No. 69 of 1989, International Labour Conference (entered into force 5 September 1991).

Hogan, Mimi, Sandra Christopherson, and Ann Roth. "Formerly Used Defense Sites in the Norton Sound Region: Location, History of Use, Contaminants Present, and Status of Clean-Up Efforts." Alaska Community Action on Toxics, National Institute of Environmental Health Sciences Grant # ES014308 July 1, 2006.

Hunold, Christian, and Iris Marion Young. "Justice, Democracy, and Hazardous Siting." *Political Studies* 46 (1998): 82-95.

Jasanoff, Sheila. *Designs on Nature*. Princeton: Princeton University Press, 2005.

Kasperson, Jeanne, Roger Kasperson, Nick Pidgeon, and Paul Slovic. *The Social Amplification of Risk Cambridge*: Cambridge University Press, 2003.

Kleinman, Daniel Lee, ed. *Science, Technology and Democracy.* Albany: State University of New York Press, 2000.

Krook, Lennart. *Industrial Fluoride Pollution: Chronic Fluoride Poisoning in Cornwall*

Island Cattle. Ithaca, NY: New York College of Veterinary Medicine, Cornell University, 1979.

Kubasek, Nancy, and Gary Silverman. *Environmental Law*, 3rd ed. Upper Saddle River, NJ: Prentice Hall, 2000.

Kymlicka, Will. *Multicultural Citizenship*. Oxford: Clarendon Press, 1995.

LaDuke, Winona. *All Our Relations: Native Struggles for Land and Life*. Boston: South End Press, 1999.

Lewis, Adam. "Using Indigenous Knowledge in Monitoring Ice Cover." *Ice & Snow, Arctic, Water, & Oceans*, Interviews (December 29, 2008).

Lichatowich, Jim. *Salmon Without Rivers: A History of the Pacific Salmon Crisis*. Washington D.C.: Island Press, 1999.

Lichtenstein, Sarah, and Paul Slovic eds. *The Construction of Preference*. Cambridge: Cambridge University Press, 2003.

Machamer, Peter, Marcello Pera, and Aristides Baltas, editors. *Scientific Controversies: Philosophical and Historical Perspectives*. Oxford: Oxford University Press, 2000.

Mann, Eric, and The Labor/Community Watchdog Organizing Committee. "Class, Race and Gender: the Unspoken Categories of Public Health." In *L.A.'s Lethal Air: New Strategies for Policy, Organizing and Action*. Van Nuys, CA: Labor/Community Strategy Center, 1991.

Maylin, George A., Richard H. Eckerlin, and Lennart Krook. "Flouride Intoxication in Dairy Calves." *Flouride* 20, no. 3 (July 1987): 142.

McGovern, Dan. *The Campo Indian Landfill War: The Fight for Gold in California's Garbage*. Norman: University of Oklahoma Press, 1995.

Metcalf, C. "Indigenous Rights and the Environment: Evolving International Law." *Ottawa Law Review* 35, no. 1, (Winter 2004): 101-140.

Moeller, Dade W. *Environmental Health*, Rev. ed. Cambridge, MA: Harvard University Press, 1998.

Narloch, B.N., K.M. Rodriguez, and L.K. Geist, MWH ,and USACE. "Human Health Risk Assessment and Risk Communication for a Subsistence Population using the Northeast Cape, Saint Lawrence Island, Alaska." Society for Risk Analysis Annual Meeting, 2004.

National Research Council. *Environmental Epidemiology – Public Health and Hazardous Wastes*. Washington D.C.: National Academy Press, 1991.

New York Power Authority. "St. Lawrence-Franklin D. Roosevelt Power Project." http://www.nypa.gov/facilities/stlaw.htm (accessed March 2, 2009).

Newton, Lisa H., and Catherine K. Dillingham. *Watersheds: Classic Cases in Environmental Ethics*. New York: Wadsworth Publishing Company, 1993.

Novotny, Patrick. "Popular Epidemiology and the Struggle for Community Health: Alternative Perspectives from the Environmental Justice Movement." *Capitalism, Nature, Socialism* 5, no. 2 (June 1994): 29-42.

Nowotny, H., P. Scott, and M. Gibbons, eds. *Re-thinking Science: Knowledge and the Public in an Age of Uncertainty*. London: Polity Press, 2001.

Nunavik Research Centre, http://www.makivik.org/nrc/eng/index.htm (accessed April 5, 2009).

O'Fallon, Liam R., and Allen Dreary. "Community-Based Participatory Research as a Tool to Advance Environmental Health Sciences." *Environmental Health Perspectives* 110, supp. 2 (April 2002): 155-159.

O'Leary, Rosemary, and Lisa B. Bingham, eds. *The Promise and Performance of Environmental Conflict Resolution*. Washington D.C.: Resources for the Future, 2003.

O'Neill, Onora, "How Can We Individuate Moral Problems," in *Applied Ethics and Ethical Theory*, edited by David Rostenthal and Fadlou Shehadi, 84-99. Salt Lake City: University of Utah Press, 1988.

Phillips, George Harwood. *Indians and Intruders in Central California*. Norman: University of Oklahoma Press, 1993.

Putnam, Linda, and Julia Wondolleck. "Intractability: Definitions, Dimensions, and Distinctions." In *Making Sense of Intractable Environmental Conflicts*, edited by Roy J. Lewicki, Barbara Gray, and Michael Elliot. Washington D.C.: Island Press, 2003.

Rawls, James. *Indians of California: The Changing Image*. Norman: University of Oklahoma Press, 1986.

Rip, Arie, Thomas J. Misa, and Johan Schot. *Managing Technology in Society: The*

Approach of Constructive Technology Assessment. New York: Pinter, 1995.

Rosa, Eugene. "Modern Theories of Society and the Environment: the Risk Society" *Environment and Global Modernity*, edited by Gert Spaargaren, Arthur P. J. Mol, and Prof Frederick H Buttel (London: Sage, 2000).

Judith V. Royster. "Native American Law." In *The Law of Environmental Justice*, edited by Michael Gerrard and Sheila Foster, 2nd edition, 157-181. Washington D.C.: American Bar Association, 2009.

Schell, Lawrence M. and Alice M. Tarbell. "A Partnership Study of PCBs and the Health of Mohawk Youth: Lessons from Our Past and Guidelines for Our Future." *Environmental Health Perspectives* 106, no. S3 (June 1998): 833-840.

Schlosberg, David. *Defining Environmental Justice: Theories, Movements, and Nature*. Oxford: Oxford University Press, 2007.

Shrader-Frechette, Kristin. "Untitled Review." *Ethics* 114, no. 2 (January 2004): 376-380.

Shepard, Peggy M., Mary E. Northridge, Swati Prakash, and Gabriel Stover. "Preface: Advancing Environmental Justice through Community-Based Participatory Research." *Environmental Health Perspectives* 110, supplement 2 (April 2002): 139-140.

Shrader-Frechette, Kristin. *Risk and Rationality*. Berkeley: University of California Press, 1991.

Smith, Justine. "Custer Rides Again – This Time on the Exxon *Valdez*", *Defending Mother Earth: Native American Perspectives on Environmental Justice*, 59-71.

Stern, Alissa J., and Tim Hicks. *The Process of Business Environmental Collaborations: Partnering for Sustainability.* Westport, CT: Quorum Books, 2000.

Stern, Paul C., and Harvey V. Fineberg, editors, *Understanding Risk: Informing Decisions in a Democratic Society*. Washington D.C.: National Academy Press, 1996.

Sunstein, Cass R. *Risk and Reason*. Cambridge, U.K.: Cambridge University Press, 2002).

St. Regis Environmental Division, http://www.srmtenv.org/ (accessed April 3, 2009).

Swamp, Lornie. "Background of Environmental Contamination at Akwesasne."

http://www.albany.edu/sph/superfund/akwes.html (accessed March 28, 2009).

Tarbell, Alice, and Mary Arquette. "Akwesasne: A Native Community's Resistance to Cultural and Environmental Damage." In *Reclaiming the Environmental Debate*, edited by Richard Hofrichter, 93-113. Cambridge, MA: MIT Press, 2001.

Taylor, Charles. *Multiculturalism and "The Politics of Recognition*." Princeton: Princeton University Press, 1992.

Taylor, Dorceta. "The Rise of the Environmental Justice Paradigm." *The American Behavioral Scientist* 43, no. 4 (2000): 508-580.

Thorpe, Charles. "Political Theory in Science and Technology Studies." In *The Handbook of Science and Technology Studies*, edited by Edward J. Hackett, Olga Amsterdamska, Michael Lynch, and Judy Wajcman, 63-82. Cambridge, MA: MIT Press, 2007.

Tomei, M., and L. Swepston. *Indigenous and Tribal Peoples: A Guide to ILO Convention No. 169*, Geneva, ILO (1996).

U.N. Rights Committee. *UN Sub-Commission on Prevention of Discrimination and Protection of Minorities*. Res. 1994/44, Aug. 16 1994, UN Doc. E/CN, 4/1995/2, E/CN.4/Sub.2/1994/56 (1994) Article 7.

White, Richard. *The Organic Machine: The Remaking of the Columbia River*. New York: Hill and Wang, 1993.

White, Robert. *Controversies in Environmental Sociology*. Cambridge: Cambridge University Press, 2004.

Young, Iris Marion. *Justice and the Politics of Difference*. Princeton: Princeton University Press, 1990.

———. "Justice and Hazardous Waste." *The Applied Turn in Contemporary Philosophy: Bowling Green Studies in Applied Philosophy* 5 (1983): 171-83.