

FACING WATER SCARCITY: PERCEPTIONS OF PLACE, RISK AND IDENTITY
IN THE PACIFIC NORTHWEST

by

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This thesis investigates perceptions of place, risk, and water within the Willamette Watershed of western Oregon. Western Oregon is often characterized by its abundance of water, and is associated with images of wide, salmon-filled rivers. However, throughout the region streams and rivers are over-tapped, resulting in current and future conflicts between people and ecosystems. Twenty-five qualitative interviews were conducted with farmers, ranchers, engineers, and other stakeholders in the watershed's water supply. The findings demonstrate that stakeholders perceive water to be a scarce and contentious resource, they indicate deep attachments to local water-bodies and livelihoods, yet demonstrate little incentive in making personal sacrifices to safeguard water supplies. This case study suggests that neither an established "sense of place" nor increased perception of environmental risk necessarily results in environmentally

responsible behavior. Instead, these relationships are complicated by stakeholders' reliance on natural resources, as well as their acceptance and perpetuation of dominant ideologies.

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CHAPTER I

INTRODUCTION

Water is one of our most precious resources. As the source of all life, its presence has allowed the development of civilizations and its absence has led to the downfall of others. Orlove describes water as “the most commonplace of liquids and the most essential, it quenches our thirst and brings green to our world...We can cup it in our hands and drown in its depths” (2002, p. xii). Around the world, the creation of mythologies and the worship of deities have been inspired by water.

The global supply of water is facing ever-increasing demands, and this has precipitated research on the social and biological uses of water and the conflicts that arise around them. Almost none of the world’s major rivers are potable, and more than a billion people do not have access to safe water. All over the planet, aquifer levels are dropping and many countries and communities have larger water demands than can be met with their limited supply (DeVilliers, 2000; Barlow, 2002; Gleick, 1993). In addition, pollution, climate change, and the demands of industrial agriculture affect current and future water resources (Shiva, 2002; Barlow, 2002; Rind, 1984; Foster, 1994).

The Pacific Northwest is a region often characterized by its abundance of water, and it is associated with images of lush forests and wide, salmon-filled rivers. In this

“Pacific North-wet,” rain is frequently referred to as “Oregon sunshine.” Western Oregon is a geographical term (though applied loosely) that refers to the portion of the state of Oregon that is west of the Cascade Range (“Pacific Northwest,” 2003). As a region within the Pacific Northwest, it is included in these impressions of plentiful water and glistening salmon. It is not, however, exempt from water concerns. Studies show that streams and rivers throughout Oregon are overtapped. Even cities on the rainy coast such as Newport, Yachats and Lincoln City expect that their supply will be able to keep up with population growth for only another twenty years (Barlow, 2002). In addition, many scientists predict that impacts of global warming will result in a pattern of wetter, warmer winters and subsequent drier summers due to diminished snowpack in this region (Rind, 1984; Shelton, 2001). If current behaviors remain unchanged, hundreds of stocks of Oregon salmon are destined to become extinct in the next decade (Nehlsen, Williams & Lichatowich, 1991).

Nearly everyone in the Pacific Northwest is directly or indirectly impacted by a season of limited water supply. In times of drought, hydropower becomes increasingly expensive. The most obvious stakeholders are those who depend upon large amounts of water for their livelihoods. Farmers in Oregon are considerably affected by limited water availability, as are those who own and manage recreation-dependent businesses, such as ski lodges and boating operations. Many Native Americans depend on salmon runs and natural resources to sustain their cultural traditions.

Ecological needs are equally compromised. Maintaining minimum instream flows to safeguard endangered species and water quality standards may be difficult and

cause political conflicts. Previous dry summers in Oregon have led to conflicts between various stakeholders as water is split between irrigation, recreation, energy, endangered species, and consumptive interests. The 2001 Klamath Basin controversy is an example of the conflicts that arise when limited water supply impacts people and ecosystems (Hurley, 2004).

Thesis Questions and Framework

There appear to be different perceptions of water and water availability within western Oregon. I argue that within this region water scarcity is a legitimate environmental and human concern and that appropriate and acceptable policy and management strategies will be increasingly important. A question that remains is: what are the perceptions of local residents with respect to their local watershed, the water within it, and issues pertaining to water policy and availability?

In order to investigate the ways in which Oregonians perceive water within the local landscape, I focused my studies on the Willamette watershed in western Oregon. My research was guided by several questions: How do people perceive their local current and future water supply? How do they envision and describe the landscape and their place within it? How do dominant ideologies of place and risk fit into local understandings of water? What are the relationships between the ways in which people describe their “sense of place” and the ways in which they understand themselves?

In investigating these questions, I rely upon two theoretical frameworks which I claim are intrinsically interdependent: the study of environmental risk perception and the study of “sense of place.”

Previous research suggests that expert and lay opinions differ in their valuations of environmental risks (Slovic, 2000). Risk perception can thus be understood as a cultural construction, contingent upon individuals’ and communities worldviews. Social psychologists have found risk perception to be dependent upon a variety of variables, including emotional and affective imagery and personal experience (Slovic, Finucane, Peters, & MacGregor, 2004), and have demonstrated that risk perceptions may be indicators of environmental behaviors and attitudes (Margolis, 1996; Leiserowitz, 2003). This study investigates the relationships between a sense of risk with respect to water availability, subsequent behaviors, and perceptions of place.

Of equal importance to this study are the ways in which people understand and relate to their region – in effect, their “sense of place.” Many theorists believe that our perceptions of places are inseparable from our perceptions of ourselves, and that our relationships with places influence our actions and beliefs (Tuan, 1974; Massey, 1994; Carter, Donald, & Squires, 1993; Mitchell, 2000). Ideas of place and identity bring with them ideas of nationalism, exclusivity, and boundaries, which in this case manifest in conflicts over water resources and policy priorities.

Similar to the study of risk, places can be perceived as culturally constructed, subject to dominant ideologies. Thus, studying the ways people perceive and relate to

place may contribute to a greater understanding of conflicting values, attitudes, and motivations with respect to water, the watershed, and water scarcity.

In addition, several theorists suggest that a strong “sense of place” or attachment to a locale may encourage responsible environmental behaviors (Beatley, 2004; Norton, 2003, Nabhan, 2004). Both the study of risk perception and “sense of place” may thus be regarded as influential factors in guiding stakeholders’ environmental behaviors.

Learning from key actors involved in the struggle over water provides a window into the ways in which risk perception, sense of place, and regional identity exist in the context of water scarcity. From interviews with water managers, I found that policy makers do not have an understanding of the various ways in which their stakeholders experience local water scarcity and water policy issues. For example, the Eugene Water and Electric Board (EWEB) Director of Conservation is perplexed as to why the company’s top municipal water-users do not take advantage of freely offered conservation packages. Reviews of local newspaper reports indicate that people have quite different investments in and ideas about local water resources. The question of what shapes these differences and how they may be communicated to one another remains to be answered.

Methods

In examining the ideas, narratives, and perceptions that people hold with respect to water and the watershed, I propose that concepts pertaining to the environment are socially constructed. Political ecologists have often demonstrated that environmental

“problems” or crises can be politically useful to agencies or stakeholders seeking funding, hoping to capture resources or divert attention away from other issues. An even more constructionist approach, which I utilize in this study, emphasizes the non-conscious ways in which stakeholders hold normative views of the environment and how these are naturalized (P. Robbins, 2004).

In order to investigate stakeholders’ conscious and non-conscious constructions of place and water, I used several different methods, all pertaining to discourse analysis. Discourse analysis can be described as “a qualitative method of investigation focused on the representation and creation of meaning through language and visual imagery” (P. Robbins, 2004). A discourse, or a construction of the environment “represents a combination of ‘narratives, concepts, ideologies and signifying practices’ (Barnes & Duncan, 1992), including the things people say and do” (P. Robbins, 2004, p. 121).

For this study I reviewed the previous two years of local water issues as they were reported in the local newspapers. I also completed a review of local environmental history, water policy, and hydrology issues to assist in framing my questions. In that narratives are often, if not always, based upon the influence of historical events and ideologies, I investigated several events and policies that have served as legacies upon the ways in which water is perceived in the western United States. These include the colonization of the American frontier, the development of western water law, and the increasing privatization of water resources. This discussion is included in the literature review.

This research provided me with a better understanding of pertinent water conflicts and assisted me in identifying stakeholders to then interview. I opted to use qualitative, open-ended interviews to investigate the place and water related narratives utilized by stakeholders, with the understanding that observing both their purported agreements and lack of consensus would elucidate the ways in which they perceive water issues and place.

Subjects, Recruitment, and Interviews

Though it is clear that everyone has a stake in water availability, in order to focus my study, I chose to interview only those whose livelihoods are directly connected to various aspects of the local water supply. This includes water managers and engineers, farmers, ranchers, fishermen, recreation facilities owners, and watershed council coordinators. These stakeholders are key players in negotiating the ways in which water is managed within the Willamette watershed. Because of this, their perceptions of water, place, and risk, as well as their subsequent behaviors, are particularly important in addressing water related conflicts and potential collaboration. In that all of these stakeholders directly rely upon water and specific water-bodies for their livelihoods, resource reliance is an equally important variable in this study. I interviewed twenty-five adult residents of the Willamette Watershed. Of these, six were women. All but one man, who was Chinese-American, appeared to be of European-American descent. See Table 1 below.

Table 1: Interview Subjects

Pseudonym	Occupation
Sam	Director of Conservation at Eugene Water and Electric Board (EWEB)
Darren	Administrator of the Field Services Division of Oregon's Department of Water Resources (ODWR)
Rob	Hobby cattle rancher
Ken	Produce farmer
Sheila	Rainwater harvest system engineer and educator
Jess	Biologist/researcher for Pacific Rivers Council
Gil	Dairy farmer
Steve	Vineyard operator
Joel	Retired dairy farmer
Julie	Department of Environmental Quality (DEQ)
Pat	Water Quality Control Supervisor for the city of Albany
Tony	Fishing guide
Matt	Manager of the Santiam Water Control District
Gordon	Fish biologist for Army Corps of Engineers (ACOE)
Peter	Director of Lane County's Soil and Water Conservation District
Gwen	Biologist for National Oceanic and Atmospheric Administration (NOAA)
Chris	Willamette Basin Coordinator for the Army Corps of Engineers (ACOE)
Dave	Director for Oregon Department of Water Resources (ODWR)
Neil	Cattle rancher
Larry	Engineer for Oregon Department of Water Resources (ODWR)
Lawrence	Director of Detroit Lake's Recreation Committee
Susan	Watershed council coordinator
Michael	Watershed council coordinator
Dennis	Water expert
Nathan	Lane County's Water Master

In recruiting stakeholders, I made initial contact through employees of relevant government agencies (the Army Corps of Engineers, Oregon Water Resources Board, etc.) and local watershed councils. By attending watershed council and other public meetings, I met people on an informal basis and explained the purpose of my research. After attending events and introducing myself and my work, I verbally recruited

participants. The sample was constructed through snowball techniques, wherein initial participants suggested that I contact other stakeholders. In attempting to include representation from all aforementioned stakeholders, I excluded interviewees only if an imbalance emerged in the distribution of participants.

I conducted unstructured interviews, using interview guides (see Appendix B). These were most often conducted at the participants' work places, and at a time chosen by the participant. At the start of the interview, I explained the rights of participants: the voluntary nature of the interview and the participant's right not to answer any question or withdraw at any time from the interview. They were asked to sign a consent form (see Appendix A). The interviews generally lasted between one-half to two hours in length, and often including tours of landowners' properties, workplaces, and local water-bodies. If the participant agreed, the interviews were audio taped. Though each of these interviews followed its own course over the time we conversed, I began by asking questions about the subject's perspectives of water, water supply, and place. For the findings represented in this study, the names of the participants have been replaced with pseudonyms.

I recognize that given the research design, this is not a random sample, and therefore I cannot generalize to the general public or to this type of stakeholders. This is a case study, and I am aware that the relationships that each interviewee has with place, water, and risk are different from one another.

Data Recording and Analysis

Upon completing each interview, I took written notes of my experience and downloaded the audio tracks to my laptop computer, which I then transcribed. In order to organize my findings, I read through all of my written and transcribed notes and identified key themes. I then coded each interview for these themes, paying attention to the context and frequency of each. Themes that appeared under-represented (fewer than three stakeholders indicated it) were dismissed. My findings chapters present the themes that emerged, organized into three separate categories: the ways in which stakeholders perceived water and place, the ways in which they perceived others within the watershed, and suggestions they offered for water related problems.

Thesis Overview

Chapter Two presents a review of relevant literature. Because this study attempts to bridge a number of disciplines, the literature review includes contributions from geography, anthropology, biology, history, and psychology in describing the concepts “sense of place,” environmental risk perception, and regional identity of the Pacific Northwest. Chapter Three provides a physical description of my case study area, the Willamette watershed, and an analysis of current and future water issues.

Subsequently, I present the voices of water stakeholders living in the Willamette watershed. Chapter Four describes stakeholders’ articulated perceptions of water, place, and risk. In that all stakeholders perceived water availability to be a current and growing risk, they also implicated others as responsible for water allocation problems and

provided suggestions to mitigate these perceived problems. Because of this, Chapter Five looks at the ways in which those interviewed characterize “others” in the watershed, while Chapter Six introduces the most frequently cited suggestions offered by the participants. Chapter Seven offers my own suggestions for future water collaboration efforts, as well as provides concluding thoughts with respect to the two principle themes: “sense of place” and environmental risk perception. Throughout, I use quotations to allow the participants speak for themselves.

Principal Findings

Stakeholders in the Willamette watershed indicated intimate connections with both water and the watershed, and these relationships informed the ways in which they regarded place, resources, and risk. They demonstrated sophisticated understandings of the local watershed and of water policy. This heightened awareness can almost certainly be attributed to the large role that water plays in maintaining their livelihoods. In addition, all participants perceived water as precious and of great value, and regarded its supply to be limited and at risk.

In response to their perception of water as an increasingly scarce resource, stakeholders were adamant in defending both their physical water sources as well as their water rights. They expressed resistance to change, and accused those not directly reliant upon water resources of being ignorant and irresponsible users of shared water sources.

Stakeholders often provided alternatives for remedying water-related problems. Though reluctant to make personal sacrifices to this end, they did encourage others to

increase public education, rely upon scientific evidence, cultivate an ethic of responsibility, cooperate, use technological advancements, use political advocacy and offer economic incentives. No stakeholder directly objected to the system of western water rights, but instead offered suggestions that could be initiated within the current system. In addition, almost everyone considered the increasing commodification and privatization of water as inevitable.

This thesis serves to identify perceptions of water, place, and mitigation efforts posited by those working with the local watershed. I suggest that these alternative practices and visions hold promise for addressing local water issues in ways that are realistic, environmentally sustainable, and democratic. In addition, this thesis demonstrates the intimate connection between a well established sense of place and attachment to and care for that place and the waters within it. My findings suggest that, contrary to many assumptions about the ethical implications of "sense of place," a strong attachment to one's locale may at times prevent people from taking proactive environmental measures at larger time scales and with greater scope.

CHAPTER II

LITERATURE REVIEW

To help contextualize the Willamette watershed's water concerns within a larger scope, this chapter provides a review of water as it relates to salient global and local issues. Environmental justice, privatization, and climate change are three current threats to water sources around the world, and directly and indirectly contribute to conflicts in the Willamette watershed. I then introduce the theoretical groundings of this thesis, and explore the ways in which regional identity, "sense of place," water in the American West, and environmental risk perception have been articulated in the relevant literature.

Water Scarcity: A Looming Crisis?

The availability of clean water can be considered one of the most pressing environmental issues of our time. Vandana Shiva claims that "The water crisis is the most pervasive, most severe, and most invisible dimension of ecological devastation of the earth" (2002, p. 1). Accessible fresh water constitutes less than one-half of one percent of all water on the planet (Barlow & Clarke, 2002). Massive pollution, deforestation, destruction of wetlands, global warming, and diversion of natural water

systems have all contributed to diminishing and contaminating this limited supply, leading to what many ecologists define as a global water crisis (De Villiers, 2000; Barlow and Clarke, 2002; Postel, 2003; Gleick, 1993).

According to the United Nations, thirty-one countries are already facing water scarcity (Barlow & Clark, 2002). Over one-billion people do not have access to clean drinking water, and in the next quarter century between one-half and two-thirds of the population may be living with severe fresh water shortages (Barlow & Clarke, 2002). Michael Klare predicts that the world's clean water supply will be completely consumed by the mid-twenty-first century (2001).

Water and Justice

The increasing scarcity of fresh water is an issue of environmental justice. It is primarily the world's poor who lose access to clean water supplies. Three-quarters of the population living under conditions of water stress are located in Third World countries. In *maquiladora* zones on the U.S. Mexico border, clean water is so scarce that mothers give their babies and children Pepsi and Coke instead (Stevenson, 2006a). The slums surrounding the developing world's huge urban centers frequently have no access to clean water or sanitation services. By 2030, slum dwellers are expected to comprise over half of these cities' populations (Barlow & Clark, 2002).

North Americans, with their relatively larger numbers of washing machines, dishwashers, lawns, and swimming pools, use vastly more water per capita than people residing in any other nation (Barlow & Clarke, 2002). And when they choose to travel to

countries where the per-capita consumption of water is far below their standard, North Americans and others who can afford it are often given access to the amount of water to which they are accustomed. For example, during a drought in Indonesia in 1994, Jakarta's tourist golf courses were kept green while residents' wells ran dry (Barlow & Clarke, 2002).

These examples illustrate that the notion of water as a basic human right can be and has been undermined. As water becomes increasingly scarce, ensuring that it is equitably available for all people (and non-human life) is a consideration that all communities must address.

Water and Conflict

"If the wars of this century were fought over oil, the wars of the next century will be fought over water" --
Ismail Serageldin, Vice President of the World Bank

In addition to being an environmental justice issue, water also has critical geopolitical importance. Michael Klare, in *Resource Wars*, claims that "For almost every country in the world, the pursuit or protection of essential materials has become a paramount feature in national security planning" (2001, p. 14). Escalating demand for limited resources has led to the pursuit and protection of these as a chief goal of national security interests and international power. Water, as a scarce and vital resource, has the potential to precipitate conflict between and within countries.

Where water is scarce, combat over sources can be regarded as a legitimate function of national security, and these kinds of conflicts can only be expected to grow.

Historically, water has played a large role in international conflicts (Klare, 2001). A study conducted by Oregon State University found that 261 of the world's major river basins extend over two or more international boundaries (Wolf, Yoffe, & Giordano, 2003). Water from the Nile, for example, is shared by nine countries (Klare, 2001). As available water supplies diminish, we may well see increasing international conflict between countries that share waterways.

Conflicts emerge within countries as well. For example, during a drought in 2001 violent controversies erupted over water allocation in Oregon's Klamath Basin between farmers, Native Americans, and environmental policy makers (Hurley, 2004). The same drought sparked a heated conflict in Oregon's Willamette watershed over the decreasing levels of water in Detroit Lake, a reservoir managed by the Army Corps of Engineers (ACOE representative, personal communication, June 2005).

The aforementioned literature is a reminder that conflicts arise over competition for limited resources. As we cannot live without it, disputes over water have the potential to be violent and devastating. This thesis investigates the potential for water-related conflicts within the Willamette watershed, but also explores how envisioning water not as just a resource but as situated in places informs these predictions and hypothetical outcomes.

Water as a Commodity

"Water is an efficient product. It is a product which normally would be free, and our job is to sell it. But it is a product which is absolutely necessary for life" -- Gerard Mestrallet, CEO of Suez

Within the capitalist framework, resources and services that can be considered the common heritage of humanity are for sale. As clean water supplies diminish, they are increasingly being privatized and commodified by governments and international institutions. Vivendi and Suez, for example, are two French based transnational corporations who own or control interests in water companies in over 130 countries (Barlow & Clarke, 2002). According to trade agreements like the North American Free Trade Agreement (NAFTA), these conglomerates may even be permitted to sue governments in order to gain access to their domestic water sources (Rodrik, 2002).

Poor governments are often eager to lease or sell their public water services to private companies as solutions to their financial problems. Unfortunately, once privatized, the price of water is almost always higher than what it had been when it was provided publicly. In addition, corporations often request profit guarantees, which are financed by taxpayers. For example, in Cochabamba, Bolivia, the Bechtel Corporation was given a long-term contract by the public water utility. Water rates increased by thirty-five percent, making the resource unavailable to poor sectors of the population, while at the same time Bechtel prohibited the government from giving subsidies. After four days of protests, Bolivian president Hugo Banzer placed the country under martial law and broke the contract, resulting in a US\$40 million lawsuit brought by Bechtel

against the Bolivian government (Barlow & Clarke, 2002). In January 2006, after four years of global public protest, the Bechtel corporation dropped the case (Earthjustice, 2006).

The bottled water industry is another example of the commodification of water. Currently more than fifty percent of Americans drink bottled water, and that number is steadily increasing, even though the price is 500 to 1,000 times more expensive per gallon than tap water (Suffet, 2000). The world bottled water market is expanding at a rate of twenty percent every year, with companies selling close to ninety billion liters around the world (Stevenson, 2006a). Though the industry markets an image of purity, it emits large amounts of pollution and waste (National Resources Defense Council [NRDC], 1999). In some cases, the pumping of water from wells or municipal water supplies can actually threaten ground-water resources by overexploiting the source or polluting it in the process (Shiva, 2002). In addition, bottled water companies have a track record of buying up and depleting water systems in farmlands, indigenous lands, and wilderness tracts, particularly in developing countries (Barlow & Clarke, 2002).

Other water privatization schemes involve constructing massive pipelines, supertankers, and giant sealed water bags to transport water to customers who can afford to pay for the commodity (Postel, 2003; Barlow & Clarke, 2002). This interference with natural water systems can also have enormous environmental impacts, as water is displaced from the ecosystem to which it belongs. And as water is increasingly regarded as a commodity, the result is that its price can skyrocket, as it becomes a target for foreign speculators (Barlow & Clarke, 2002; Ferrier, 2001).

The increasing commodification of water is relevant to this particular study in that the people I interviewed referred frequently to this phenomenon, and some of their behaviors and suggestions for resolving anticipated conflicts were attributed to the recognition of water's increasing role in the marketplace.

Water and Climate Change

In 1996 the UN-sponsored Intergovernmental Panel on Climate Change concluded that there was evidence that human actions have begun to alter the earth's climate. Though speculations concerning the specific impacts of global climate change vary, there is a general consensus that the increase of carbon dioxide levels will result in an increase in average temperatures, changing the hydrologic cycle by increasing both precipitation and evaporation. Some areas are projected to become drier, while other regions are projected to become wetter, and all areas are projected to have more climatic variability (De Villiers, 2002). This further complicates the pressing conflicts of water availability and allocation.

It is predicted that Oregon, for example, will experience wetter, warmer winters and drier summers (National Science Foundation [NSF], 2000). The increased winter precipitation in the winter will fall as rain rather than snow. Melting snow replenishes Oregon's river systems and artificial storage capacities in the summers, and with less snow to provide this recharge, climate change is expected to increase drought conditions and water scarcity in the northwest (Shelton & Fridirici, 2001).

Local Issues

The United States faces problems of water scarcity and allocation at the national scale. The US Department of the Interior describes water as “the scarcest resource in some of the fastest growing areas of the country” (2005), while a 2001 Service report for Congress on water resource issues states, “Water supply and management issues are becoming increasingly important as the demand on existing water supplies continues to grow” (US Department of the Interior, 2005).

For example, twenty-one percent of irrigation water in the US comes from pumping groundwater at rates that exceed the aquifers’ ability to recharge. Perhaps best-known is the Ogallala aquifer in the American High Plains. The largest water-bearing unit in North America, it is estimated to be already half gone (Barlow & Clark, 2002). Shortfalls throughout the country are projected to confront cities and states in the near future. Even the rainy Seattle suburbs may be faced with water shortages within the next twenty years (Barlow & Clarke, 2002). In certain regions, existing water supplies under normal conditions are already inadequate for meeting the demands of people, agriculture, cities, and the environment (US Department of the Interior, 2005).

Oregon, though regarded as a damp, rainy place, is not exempt from water worries. The entire state of Oregon averages twenty-eight inches of precipitation a year, which is about the same as Texas, and almost every year, water supply falls short of demand. Between 1990 and 2000, many of Oregon’s rivers had so much water removed

that their flows fell below the legal minimum. In 2000, one-third of Oregon's critical rivers had less than sufficient flow at least once during every month of the year (Sinclair, 2005).

Oregon also uses groundwater to supplement the water obtained from surface water supplies. Like most states, Oregon uses this water more quickly than it is replaced, causing the water table in some areas of the state, including the Willamette watershed, to drop drastically. To further illustrate Oregon's water woes, in the year 2000, a quarter of the Oregon population's public water supply failed to meet health standards (Oregon Public Broadcasting, 2005).

Sense of Place

"Our relation to the natural world takes place in a place" – Gary Snyder, *The Practice of the Wild*

Central to my questions concerning water is the notion that discourses are shaped by perceptions of place and landscape and vice versa. Greiter and Garkovitch define landscape as "the symbolic environment created by a human act of conferring meaning on nature and the environment" (1994, p. 1). Walker and Fortmann (2003) emphasize the importance of these perceptions in their examination of the conflicts that escalated between "consumption" or "aesthetic" views of landscape and resource production based views of landscape in Nevada County, California. Discussions pertaining to "sense of place" are also important in elucidating how people make sense of their dwellings and natural resources. In order to investigate these subjects more thoroughly, I provide a brief discussion of literature relating to "sense of place."

The study of place crosses a number of disciplines and has been approached from a number of perspectives. Writers and theorists have given voice to the importance of place, and suggest that our perceptions of places are inseparable from our perceptions of ourselves, and influence our actions and beliefs. Anthropologist Keith Basso asks, "What do people make of places? The question is as old as people and places themselves, as old as human attachments to portions of the earth...Places, we realize, are as much a part of us as we are a part of them" (1996, page xi).

The concept "sense of place" is abstract as well as interdisciplinary. It has been primarily promulgated by cultural geographers, who have focused on the cultural constructions of place as well as on lived experiences that inform the relationship between people and places (Basso, 1996; Beatley, 2004; Norton, 2003; Mitchell, 2000; Tuan, 1974; Harvey, 1996). Modern philosophical thought has also participated in place-related discourse, borrowing primarily from phenomenology and environmental ethics. Social theory has utilized Neo-Marxist cultural critique and global postmodern theory in examining the struggles over power, resistance and social control inherent in places (Basso, 1996). And anthropology, sociology, and the social sciences use the tools of ethnography, narrative, and ecological history to theorize about places and their meanings (Norton, 2003). There is also increasing participation by those in the fields of architecture, planning, and design. (Johnson & Hill, 2002).

Terminology

In geographic literature, “spaces” are described as generic and nonspecific, while “places” are immediate and lived in, and carry meaning and significance (Beatley, 2004). Beatley, for example, describes places as “those spaces and environments (built or natural) imbued with personal and cultural meanings” (2004, p. 25). Yi Fu Tuan (1974), a humanistic geographer, suggests that spaces become places as they become more familiar to us.

“Sense of place” is one of the more popularized (and vague) terms used by scholars and writers. Beatley (2004) describes “sense of place” as being comprised of a subjective and objective perspective. Objective qualities of place include buildings, community features, landscaping, etc., while the subjective features include the meanings we ascribe to these physical features. Thus, “sense of place” involves “a personal orientation toward place, in which one’s understandings of place and one’s feeling about place become fused in the context of environmental meaning” (Beatley, 2004; p. 29).

“Attachment to place” is also used to describe ways in which people relate to and understand places. Place attachment refers primarily towards the emotional commitments that individuals have toward place and involves a positive emotional bond, or rootedness (Beatley, 2004). For example, it is assumed, and studies have indicated, that residents with greater levels of place attachment will be more likely to conserve, care for, and improve their locales (Beatley, 2004; Norton, 2003; Nabhan, 2004). “Place knowledge,” the depth of understanding we have about certain places, is also often correlated with the level of commitment we have toward those places (Beatley, 2004).

This concept is particularly important to my study, in that I interview people who have direct experience with water and the watershed, and thus anticipate that they will exhibit relatively deep connections to place.

“Home,” another slippery term, connotes a sense of security, of belonging, and familiarity. Snyder (1990) has argued that we should define “home” in biophysical terms (for example, by bioregion) to encourage residents to develop a regional dimension to their language, thinking, and lives.

“Landscape” has been used synonymously with “place,” but often refers more explicitly to the ways in which we culturally construct physical environments. Mitchell (2000) regards landscape as a form of ideology. Comprised of both a place and a “way of seeing” that place, a landscape is produced through social relationships and is a way of representing the world so as to give it a particular meaning (Mitchell, 2000). Greiter and Garkovitch describe landscape in similar terms; “the symbolic environment created by a human act of conferring meaning on nature and the environment” (1994, p. 1).

Place and Identity

Much of the inquiry into place suggests that places are directly linked to the ways in which we see ourselves. Keith Basso (1996), for example, uses ethnography and narrative to represent ways in which people invest places with certain significance, and explores the relationship of place to the creation of identity. Much of this work involves investigating particular cultural communities around the world.

Yi-Fu Tuan (1974) describes a sense of place as integrating thought and feeling. Like Basso, he emphasizes the links between our immediate environments and our cultural worldviews. Environmental problems, he claims, are fundamentally human problems, and in order to achieve any enduring solutions we must first understand our own selves. To this end, he has coined the term "topophilia," which is defined as "the affective bond between people and place or setting" (1974, p. 4). Central to this exploration is a study of prominent values and attitudes, experienced and expressed at both the individual and cultural levels.

Edward Casey is frequently referred to in the field for his philosophical contributions to sense of place. Like Basso and Tuan, he also emphasizes the interdependence of place and identity:

However lost we may become by gliding rapidly between places, however oblivious to place we may be in our thought and theory, and however much we may prefer to think of what happens in a place rather than of the place itself, we are tied to place undetachably and without reprieve (1993, p. xiii).

Casey suggests that it is place's very importance that has in effect rendered it invisible in philosophical history. The terror of "placelessness" or "the void" has encouraged early thinkers to avoid it, and examine the ideas of "being," "space," and "time" before or instead of contemplating the idea of "place" (Casey, 1993).

In suggesting that there is a radical interdependence between place and identity, Casey refers to Maurice Merleau-Ponty, a twentieth century French philosopher who greatly contributed to the field of phenomenology. Merleau-Ponty claimed that the

human body is our means of belonging in space; the physical body can be seen as a door through which we can explore our place in the larger world (cited in Casey, 1993). Thus our physical traits of perception directly participate in creating understandings of place. Influenced by space and time, places are always dynamic, and the creation and conceptualization of place is an ongoing and iterative process. Doreen Massey, for example, insists that identities of place are always “unfixed, contested, and multiple” (1994, p. 5). Rejecting the prevalent notion of place as bounded and static, Massey develops an argument for thinking of place in terms of social relations and networks that are imbued with power dynamics and meaning. This configuration of social relationships is always changing and extends through space and time. Our place-dependent identities in turn are also continually in flux; “Just as personal identities are argued to be multiple, shifting, possibly unbounded, so also...are the identities of place” (1994, p. 7).

The bulk of place related theory has depended heavily on the argument that places are continually being culturally constructed. It has only been recently that anthropologists and geographers have begun investing equal energy in investigating the ways in which places are invested with power, meaning, and significance (Basso, 1996; Massey, 1994; P. Robbins, 2004). This is important in that definitions of place, being multiple, are continually contested and imposed by those with power. Paul Robbins writes, “In the context of landscapes, power is the capacity to impose a specific definition of the physical environment, one that reflects the symbols and meanings of a particular group of people” (2004, p. 17).

Thus, study of place also provides an opportunity to study social, cultural, and political relationships and negotiations. Singular and bounded ideas of place and identity bring with them ideas of nationalism, exclusivity, and boundaries. For all theorists mentioned in this brief discussion, identity is regarded as relational; “shaped by embodied and embedded narratives, located in particular places and times” (Carter et al. 1993, p. x).

Meaningful Places

In claiming that places represent the spaces, landscapes, and environments to which we attach meaning, Beatley posits that “Meaningful places are essential for meaningful lives” (2004, p. 52). Valuing place and peoples’ relationships to place can thus have radical and transformative potential. Places can foster social and environmental relationships that enliven and enrich individuals’ lives.

Building strong place relationships can also be regarded as crucial to successful environmental work. Norton and Hannon (2003) claim that local, place-relative values must be developed with intimate knowledge of local conditions and that these play a large role in helping to create a democratic approach to environmental policy and planning. In positing that place values (which include social networks, personal relationships, emotional attachments, memories, etc.) are “the very essence of any positive connection between a human culture and its place” (p. 509) they suggest that strengthening a sense of place can in fact strengthen a sense of local responsibility.

In addition to being dynamic, places are also difficult to isolate as discrete things. Particularly in an era that is increasingly global, the connections between places can not be ignored. Water, food, and other resources travel great distances before reaching their ultimate destinations. Many writers advocate for bioregionalism and reestablishing a "sense of place" in emphasizing the relationship between local connections to place and greater environmental care and responsibility (Snyder, 1990; Nabhan, 2004; Berry, 1981). By developing a greater consciousness of the local region we may be more likely to work on its behalf. Studies have also indicated that certain facets of place, such as a strong sense of community, uniqueness, and religious attachments, also encourage deeper commitments to place (Mesch & Manor, 1998; Florida, 2002).

Water management and perceptions of water in the Pacific Northwest provide compelling examples of the interrelationships between place, power, dynamism, and identity. Engineered waterways in the region have transformed the landscape, resulting in the decimation of native plants, animals and peoples, the complete drying up of rivers, lakes and aquifers, and the explosion of urban centers, dams, and irrigated agriculture. It can be argued that our ideas and perceptions of place influence our actions within the landscape. What is the dominant image of the Pacific Northwest and how may this affect the perceptions and actions of those living in the Willamette watershed? Below, I explore the concept of regional identity as it applies to the Pacific Northwest and offer an example that illustrates how dominant ideologies manifest on the landscape: that of the American Frontier and the subsequent creation of western water law.

Regional Identity of the Pacific Northwest

The concept of “regional identity” is unavoidably vague. Regionalism necessarily implies geographic and spatial boundaries. Within this vein, the Pacific Northwest is often defined by scholars in terms of the Columbia River system (W. Robbins, 2001). But a region’s identity is also influenced by current and historical narratives and imaginaries. The Columbia River, for example, has been reshaped by hydroelectric dams, resulting in a physical identity that has been anthropocentrically engineered and whose creation has destroyed indigenous representations of place.

To account for the ways in which ideas and culture influence our conceptions of geographic regions, William Robbins describes regions as “mentally bound places” (p. 1, 2001). The ways in which we perceive a region’s identity are influenced by stories and myths that have been passed down through history. For the Pacific Northwest, many of these narratives relate to the role and perceptions of water. Several scholars have critiqued this reputation of the region.

For example, Marcia Sinclair, in looking specifically at the Willamette watershed, claims,

The stereotype of western Oregon is that it’s rainy and wet, and water is plentiful. But seventy to eighty percent of the annual precipitation in the Willamette Basin falls between October and March; less than five percent in July and August. Stream levels drop during these summer drought periods, limiting supply at the time of the year when demands are greatest. So, even in

a region of the state known for its abundant rainfall, water is scarce at certain times of the year in certain locations (2005, p. 25).

Northwest author David Laskin also refers to the region's rainy reputation as a myth, noting that western Oregon and Washington receive far less average annual rainfall than New England, the mid Atlantic, most of the Midwest, and almost the entire Southeast. He notes that, "Rain is the mascot and the symbol of the Pacific Northwest...the region has been stuck for at least two centuries now with a rainy reputation that has been impossible to shake" (2001, p. 107).

Laskin claims that "the damp myth" has been formed through "circumstance, luck, and sheer human gullability" (p. 116) and has been perpetuated by regional novelists and poets; "foul weather quickly becomes an inevitable, all but compulsory, deeply conventional element in Northwest novels and poems" (p. 116). He also speaks to the power and influence of shared notions of regional identity; "In the end, myth is more important, more enduring, than reality... there is no question that incessant rain is essential to the dreams, memories and, yes, the desires of those who live in the Pacific Northwest" (p. 116).

Timothy Egan, a journalist, concurs that water is an important facet of the regional identity of the Pacific Northwest. In *The Good Rain: Across Time and Terrain in the Pacific Northwest*, Egan writes that "The Pacific Northwest is simply this: wherever the salmon can get to" (p. 3, 1990). Bioregional descriptions of the Northwest, from organizations such as Cascadia Institute and Ecotrust's Salmon Nation, encourage conservation by emphasizing the region's reliance upon water. Salmon Nation's website,

for example, states: "Each drop of rain is a starting point for seeing the shape of our region in a new light. Raindrops build streams, and streams are nudged this way and that by the contours of the land" (2005, Introductory section). It is difficult to find a description of the Pacific Northwest that does not include a reference to the rivers, streams, and salmon that live within its boundaries.

Foucault demonstrated that many of the concepts that cultures assume are naturally "true" are promulgated and perpetuated by authorities and institutions that benefit from these constructed realities (Mitchell, 2000). Contemporary political ecologists, in investigating environmental management and perceptions of place, have been compelled to look at the social origin and construction of environmental processes and places. The assumption commonly held by political ecologists is that these hegemonic concepts, ideas, and definitions embody a dominant narrative that can often be traced to an elite community whose power is secured by its adoption (P. Robbins, 2004).

How do stakeholders perceive the Pacific Northwest and its water supply? Answering this question involves exploring a discourse, which Paul Robbins defines as "a combination of 'narratives, concepts, ideologies, and signifying practices,' including the things people both say and do" (2004, p. 121). In examining different discourses, or narratives, political ecologists may discover that a lack of consensus may not be as much about a divisiveness concerning a potential outcome, but is caused by differences in the ways in which people perceive environmental processes or ideas.

The Myth of the American Frontier

Mark Fiege writes that "Every American landscape embodies a myth; to discover the physical place is to discover the great story that its inhabitants told about it" (1999, p. 8). One of the most influential ideologies that has shaped water supply discourse in the western United States is that of the American frontier. The myth of the American frontier signifies both an allegiance to an anthropocentric and utilitarian ethic, as well as portrays the west as a realm of wealth and wild abundance. These ideas continue to influence current perceptions of natural resources and water in the west.

The idea of the American west as a place of natural wealth and abundance was crucial in attracting settlers and filling the frontier. In the 1800s, the railroad launched a campaign to reinforce the idea that the west was welcoming, bountiful, and destined for American colonists. Though this was initially successful in encouraging westward expansion, settlers were often dismayed by the unanticipated hardships not included in this advertisement of plenty. In order to maintain this mythic perception of the west, huge dams and irrigation subsidies were built for the new settlers at the public's expense (Reisner, 1986).

The manipulation of water in the west has been described by some as an effort to create a "Garden of Eden" out of a desert landscape (Merchant, 1996; Worster, 1985; Limerick, 1987). Carolyn Merchant cites John Quincy Adams's 1846 call for expansion into Oregon: "to make the wilderness blossom as the rose, to establish laws, to increase, multiply and subdue the earth, which we are commanded to do by the first behest of the God Almighty" (1996, p. 143). Merchant proceeds to link the creation of the frontier and

the domestication and conquest of the American west with power and gender: "These meanings of nature as female and agency as male are encoded as symbols and myths into American lands" (1996, p. 137). Western wilderness, equated with female and the feminine, is tamed by men: "the unruly energy of wild female nature is suppressed and pacified" (1996, p. 147).

The extensive dams and irrigation systems perpetuated an image of abundance necessary in attracting new settlers, and at the same time reinforced an anthropocentric, utilitarian relationship with the natural world. And though this "capitalist-expansion mystique" (Reisner, 1986, p. 41) helped justify and encourage the exploitation of the natural environment, the idea of the frontier simultaneously embodied an image of primitive, wild country, fostering rugged individuality.

For William Cronon, the problem with the myth of the frontier is not its assumptions of exploitation and expansion, but its legacy upon the ways in which we conceptualize "wilderness" and "nature." Today the idea of wilderness is one of uninhabited land, as a place of freedom, and as an escape from responsibility, and it perpetuates "a dualistic vision in which the human is entirely outside the natural" (1996, p. 80).

It is clear that the idea of the West as a place of freedom, individualism, and entitlement paved the way for the reconfiguring of the landscape. The irony is that the myth of the Western frontier persists today. For many westerners, not to mention millions around the world, the West continues to represent a land of freedom and opportunity, rather than a land of authority, restraint, and exploitation. This

representation assumes that resources should be exploited for the growth of the human economy. It has been a dominant force in shaping current and past water management practices in the west (Postel & Richter, 2003, p. 37).

The idea of the American frontier provides a compelling example of how our perceptions of place are influenced by dominant discourses, and how our subsequent environmental behaviors are informed by these perceptions. Understanding this legacy provides an important perspective in investigating current perceptions of water and place in the Northwest.

Western Water Laws

Water laws in the eastern United States were based on the traditional concept of riparian rights, which emphasized sharing and conserving a common water source. Instead of adopting this traditional system, western settlers chose to set up the doctrine of prior appropriation. This doctrine, still in place today, perpetuates the individualistic and utilitarian logic of the western frontier.

The “cowboy logic” of western water law encourages private ownership and commodification of water, with disregard for ecological or social limitations. Founded in order to prioritize economic growth and development within a rapidly expanding western frontier, it legitimizes unsustainable and unjust water-use. Western water law’s notion of “first in time, first in right,” grants the first user exclusive rights to the water, regardless of latecomers’ needs. Native Americans were denied these rights, as colonizers and miners were regarded as the region’s first inhabitants.

The doctrine of prior appropriation also contains a “use it or lose it” clause, which forces appropriators who do not use their water to forfeit their rights (Shiva, 2002). These policies have persisted over time, regardless of higher demand, depleted resources, and the ecosystem through which water flows. Western water law perpetuates a similar ethic to that intrinsic to the development of the American frontier. In this respect, it provides an example of how ideas of place are actualized upon landscape.

Risk Perception

Place narratives and discourses hold enormous power. Contrary to popular notions of the Northwest as a place of wild and abundant resources intended for human use are the predictions that water supply is in fact limited. Before investigating how the local landscape and water supply are articulated by those dependent upon it, it is helpful to briefly review literatures that investigate the psychology of how people experience environmental risk. When and why do people worry about water availability or other environmental risks? What are the relationships between direct experience of environmental risks, perceptions of them, and the likelihood of taking preventative actions? Below I introduce the concept of risk, socio-cultural and psychometric approaches to understanding risk, and studies that investigate the aforementioned questions.

Defining Risk

Perceptions and definitions of risk have changed over time and continue to be contested today. Though risk may be technically understood as the “conditions in which the probability estimates of an event are able to be known or knowable” (Lupton 1999, p. 7), the more popularized notion of risk does not represent simply the likelihood of something happening, but is instead value laden, and often connotes a sense of danger or threat (Botterel & Mazur, 2004). Mary Douglas describes this evolution of the concept of risk; “From a complex attempt to reduce uncertainty it has become a decorative flourish on the word ‘danger’” (Botterel & Mazur, 2004, p. 1).

Studies of risk analysis, in this case, are conducted to determine the likelihood of harm, and their increasing prevalence has been inspired primarily by the plethora of new risks introduced by modern technologies. But how is it that we, as individuals and societies, define and perceive risk? Lupton suggests that “Risk selection, and the activities associated with the management of risk, are central to ordering, function, and individual and cultural identity” (1999, p. 14).

If our concept of risk contributes to the construction of our identity and, within it, our conceptions of the world, then exploring the field of risk perception is a fundamental inquiry into examining perceptions of place and regional water issues.

Social Construction and Risk

As noted above, the technical scientific definition of risk, which is applied to modern risk assessments and analyses, fails to account for the inherently subjective

nature of the concept of risk, and the implicit social values within it. According to this technical model, risks are objective facts, and people are presented as “hedonic calculators calmly seeking to pursue private interests” (Douglas, 1992, p. 13). It also assumes that there is a linear relationship between factual knowledge of a risk and the adoption of a self-defensive practice (Lupton, 1999).

A number of theorists have claimed that risk is inherently a social and cultural construction, and can never be known outside of a set of beliefs and moral values (Beck, 1992; Adams et al. 2000; Douglas, 2002; Cohen, 1997). “Expert” opinions responsible for defining and classifying risks are equally constructed through social and cultural processes. In looking at risk from a constructionist perspective, which acknowledges that individuals and groups participate in creating their own reality, a number of questions arise. How are certain kinds of knowledges about risk privileged? How do institutions and individuals address and discuss risk? How do new discourses on risk emerge and replace other discourses? In examining these questions, socio-cultural perspectives emphasize the inherently social and cultural contexts within which risk is defined.

Mary Douglas, for example, suggests that risk is linked with the idea of pollution, which is a universal concept in all human societies. Pollution embodies a certain risk, and the social construction of this risk is used to establish conceptual boundaries between self and Other (Lupton, 1999). Thus, the concept of “risk” has evolved in the contemporary west as the primary strategy for addressing a universal experience of “Otherness,” whether this is manifested as a contamination of the physical body, of community, or of place.

Ulrich Beck offers another socio-cultural perspective of the construction of risk. Beck posits that risk is a formulation of rules that institutionalize social accountability, compensations, and precautions in the face of uncertainty. Contemporary western societies have introduced a number of risks whose magnitudes in both time and space have never before been experienced. These threats (for example, those introduced by bio-chemical or nuclear technology) are different in a number of ways. Their results are often unable to be directly perceived, they may not have a foreseeable end, and they exceed any current traditional capacity for compensating the victims (Cohen, 1997). This paradox of industrial culture, or modernity, being incapable of dealing with the unforeseeable future consequences of its own inventions compels Beck to identify it as the "Risk Society" (Beck, 1992).

A third socio-cultural constructionist perspective of risk, influenced heavily by the writings of Michel Foucault, emphasizes the concept of "Governmentality" (Lupton, 1999). According to this theory, by the 18th century, states began to see their citizens as bodies (populations, societies, etc.) that require intervention and management to maximize wealth and productivity. This intervention, however, was characterized by a championing of individual freedoms and rights; a strategy to convince individuals that they were making autonomous decisions when they were really being manipulated by governments and "expert knowledges."

From this perspective, risk may be understood as a governmental strategy of regulatory power. The concept of discourse is central to this theory, as it claims that risk is known through different modes of hegemonic communication. The interests and needs

of the state are communicated to citizens through messages from the media and from government and social institutions. The public's "independent" decisions then result in a natural compliance with these interests (Lupton, 1999). Herein the concept of risk is used to guide people's movements and interactions within the world. When this behavior does not conform to the established norms, it is seen as "a failure of the self to take care of itself – a form of irrationality, or simply a lack of skillfulness" (Lupton, 1999, p. 91).

In acknowledging that risk is culturally and socially constructed, we are forced to look at who is defining risk and how. "Expert" knowledges are responsible for defining and disseminating what should and should not be considered risky, and the general populace is regarded as being responsible for taking these recommendations seriously and rationally. It is the people with power who have always commissioned risk assessments, and these tend to legitimate the decisions of elites in private and public sectors (Perrow, 1999). In approaching risk from a social theory perspective, we are forced to examine and question these relationships of power.

Psychometric Risk Perception

Social theorists present both risk and knowledge as constructions, contingent upon cultural worldviews and paradigms. And yet many of these same theorists admit that there are "real" risks out there – that the dangers posed by nuclear technology and global warming do indeed have implications for human and non-human life. But why is it that the average citizen's perspective of risk often varies from those offered by science? And why is it that people engage in behavior that has been culturally defined as being

risky? An area of research has developed within psychology that addresses these questions. This psychometric perspective attempts to identify the mental strategies that people use when making judgments about risks.

Psychometric risk perception research has found weak relationships between knowledge and risk perception (O'Connor, Bord, & Fisher, 1998; Leiserowitz, 2003), as well as between general perceptions of risk and measured probabilities of risk (Leiserowitz, 2003). For example, people voluntarily build their homes along floodplains and smoke cigarettes, though these are culturally defined as risky activities. In addition, public opinion research has indicated that people rate nuclear power as a high risk, while alcohol is rated as a low risk, though scientific studies indicate that the risks of drinking alcohol are quantitatively much higher than accidents related to nuclear power industries (Slovic et al. 2004).

According to psychometric theories, all individuals faced with uncertainty tend to rely on heuristics; "speculative frameworks that they use to guide their investigation of possible solutions to problems or to make sense of the world" (Botterel & Mazur 2004, p. 4). An example of this is the notion of "optimistic bias" (Ross, 1999), which identifies people's tendency to believe that their own skills are above average, which makes them less at risk.

In addition, public perceptions are often influenced by risks that have a particularly catastrophic downside or which have had a high profile (Slovic, 2000). In this case the media may play a large role in amplifying public risk perceptions (Ross, 1999). Studies also demonstrate that exotic risks tend to occupy more of our attention

than more mundane risks, even if the latter is just as, or more, threatening (Botterel & Mazur, 2004; Margolis, 1996). For example, though people are more likely to be killed by disease than by accidents, studies have shown that people believe the opposite to be true (Slovic, 2000).

Risk perceptions have been noted to increase if there is a sense that trust has been broken (Ross, 1999). In addition, people have been found to be more tolerant of risky activities that are perceived as voluntary rather than those that are not, and have been found to be more swayed by “expert” opinion in areas about which they know nothing rather than in areas in which they feel they know something of the subject (Botterill & Mazur, 2004).

Differences between “expert” and lay person perceptions of risk may also be attributable to distrust in scientific claims and opinions. Botterill and Mazur quote Hood et al. (2001) who state: “the faith of previous generations in the ability of science to provide answers has turned to doubt, partly because scientists themselves are not in agreement, partly because the answers science now gives are much more complex and contingent, and partly because ‘they’ are always changing their mind” (2004, p. 21).

Perhaps one of the most frequently cited theorists within the psychometric discipline regarding risk perception is Paul Slovic. Slovic coined the term “the affective heuristic” to describe the importance of emotion on human decision making and risk perception (Slovic et al. 2004). Affect is defined as “a subtle form of emotion, defined as positive (like) or negative (dislike) evaluative feelings toward an external stimulus” (Slovic, 2000, p. xxxi). Though analytic modes of thinking have been elevated above

other modes of thought in modern societies (indeed, logic, reason and scientific deliberation typify our modern system of risk assessment), Slovic's studies indicate that feelings and affect are crucial elements of decision making and risk perceptions (Slovic et al. 2004).

Research in Environmental Risk Perception

"Risks" are constantly being socially and culturally constructed and defined. In addition, the experience of risk may be influenced by a number of psychological variables. In asking how stakeholders define, conceptualize, and assess local water issues as relevant risks, I am also asking how it is that they understand themselves and the world. In addition, I am interested in the relationship between risk perceptions and environmental behaviors. If people are more worried about water scarcity and availability, are they more likely to take action? If they have direct experience with and attachment to place, are they more likely to be concerned when these appear to be at risk?

Previous research on the relationship between knowledge of environmental issues and risk perception is limited (O'Connor et al. 1999). Several studies investigating people's risk perceptions of radon in homes (Fisher et al. 1991) and drinking water quality (Abdalla, Roach, & Epp, 1992) have found higher risk perceptions correlated with greater environmental knowledge (cited by O'Connor et al. 1999). In contrast, Johnson presented a sample of New Jersey customers with alternate versions of a drinking water quality report. He found that the customers' personal experiences and belief systems were more influential in determining risk perceptions than was reading the provided

scientific information (Johnson, 2003). In addition, Stehlik et al. (1999) in examining Australian farm families' experiences of drought, found high levels of mistrust and skepticism regarding "expert" advice and government responses to water scarcity (cited by Botterill & Mazur, 2004).

Studies investigating the relationship between risk perception and behavior suggest that people with an increased sense of risk may subsequently be more environmentally responsible or sensitive. For example, Baldassare and Katz (1992) found that residents in Orange County who assessed air and water pollution to be a serious threat were more likely to drive less, recycle, conserve water and purchase environmentally safe products (cited by O'Connor et al. 1999). O'Connor's own study found a correlation between people with increased risk perceptions and knowledge of global climate change and their greater willingness to take steps to address environmental problems (1999).

Water supply, like climate change, is an environmental problem that is often difficult to experience directly. For example, though clean water supplies are diminishing around the globe, most people in developed countries can turn on a tap and receive an abundance of water whenever they please. Does this gap between the environmental problem and the direct experience of it serve to minimize people's sense of urgency or risk perceptions? Scott Sagan (1993), in evaluating US nuclear weapons organizations, suggests that US citizens are overconfident with respect to potential technological failures primarily because of the invisible nature of such complex systems and their lack of transparency. But even issues that may be regarded as invisible do have

implications on physical places and landscapes. My own work attempts to provide insight into the relationships between environmental risk perception, direct experience, and “sense of place” and their implications on subsequent behaviors.

Risk and Place

Risk perception and sense of place are interrelated concepts. Social theory and discourse analysis provide us with an understanding of both place and risk as social constructions, contingent upon dominant ideologies and expressions of power. In addition, research in the fields of political ecology, psychology, and anthropology indicate the importance of direct experience and emotion in shaping these understandings of place and risk.

The psychometric research referred to above demonstrates that people do not respond to threats like human calculators. Studies have found that people do not easily relate to the concept of probability but are instead motivated by emotive and social factors that can not be quantified by a traditional risk assessment (Botterill & Mazur 2004, Slovic 2000, Leiserowitz 2003, Adam, Beck, & Van Loon, 2000). The study of “sense of place” similarly emphasizes the roles of emotional attachments and direct experience in cultivating understandings of place and region (Beatley 2004; Norton & Hannon, 2003).

When asking how stakeholders in the Willamette watershed perceive their water and water-related issues, it is essential to investigate the ways in which they

conceptualize both sense of place and water availability as a risk. This study has the potential to synthesize seemingly disparate themes, and in so doing, demonstrate their interdependence.

Conclusion

Due primarily to pollution and competing demands, fresh water scarcity and allocation issues are a pressing concern around the world. Environmental justice, international and national conflicts, the market system, and implications of global climate change proceed to complicate the ways in which water is allocated and negotiated. Though the Pacific Northwest may be assumed to have an abundance of water, within it are areas that are failing to meet all water demands. This is the case within my case study site, the Willamette watershed, where water issues are a legitimate and increasing concern.

As is discussed above, how these concerns are conceptualized is complicated by the ways in which people perceive place, water, and environmental risks. In that those invested in the water supply are equally invested in the places that harbor those waters, I suggest that the ways in which stakeholders perceive place and environmental risk are interrelated and interdependent variables, informing their subsequent behaviors and perspectives. The remainder of this thesis focuses on my case study, the Willamette watershed in western Oregon, and investigates the ways in which water stakeholders perceive place, water, and water-related risks.

CHAPTER III

CASE STUDY: WATER IN THE WILLAMETTE WATERSHED

The Willamette watershed is located in northwest Oregon. It is formed by the geography of the Willamette River, which is comprised of three separate forks in the mountains south and southeast of Eugene that converge and flow north for approximately 240 miles before reaching the Columbia River in Portland. Nestled between the Coastal Mountain Range and the Cascade Mountain Range, the Willamette watershed contains the largest population centers in Oregon, including Portland, Salem, and Eugene/Springfield (Willamette River Keeper, 2004). See Illustration 1.

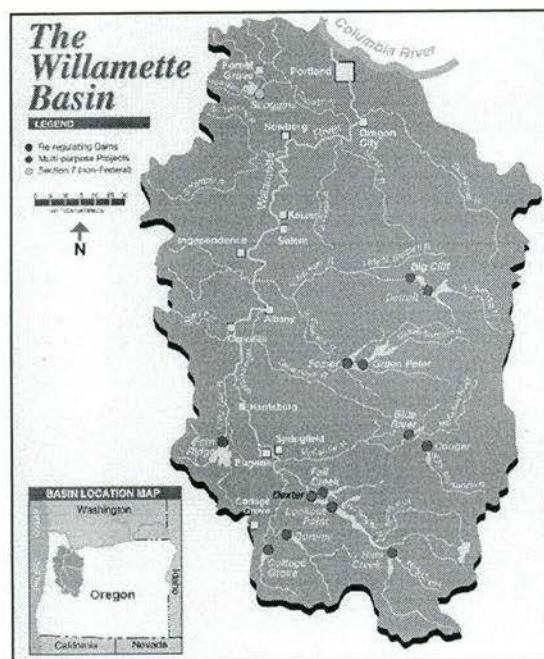


Illustration 1: The Willamette Watershed (ACOE, 2006)

The Willamette watershed is an example of a region that appears to be abundant in water supply. As illustrated by the map above, the basin is crossed by numerous large rivers and tributaries. It is located in one of the wetter climate zones of Oregon, as opposed to the much more arid region east of the Cascades, and receives between 40 and 50 inches of precipitation a year (University of Oregon, 1999). The temperate climate and the productive soils of the valley have made it one of the most important agricultural areas in Oregon (Willamette River Keeper, 2004). However, the watershed has numerous water concerns. As a representative from the Army Corps of Engineers (ACOE) claimed, "The Willamette is a good water issue for anything...you want a water issue, it's here" (personal communication, June 2005).

The Willamette River and its various tributaries have seen an increase in industrial use and sewage disposal over the last hundred years, and this has resulted in major pollution problems along the main stem of the river. There have been large efforts to address municipal and industrial sources of pollution, and more recent endeavors have focused on non-point pollution from agriculture, storm-water runoff, and forestry (U.S. Environmental Protection Agency [EPA], 2005). These problems are complicated by the steady increase in human population. The Willamette watershed is the fastest growing portion of the state of Oregon, with over two million people (EPA, 2005).

Several aquatic species are also at risk in the basin, due primarily to pollution, loss of habitat, competition from non-indigenous fish, over-fishing, and constructions such as dams. The Steelhead (*Oncorhynchus mykiss*) and the Chinook (*Oncorhynchus tshawytscha*) Salmon, native to the Willamette watershed, have both been listed as

threatened species under the Endangered Species Act (ESA) (US Fish and Wildlife Service [USFW], 2005). At least 50 stocks of Chinook have been extirpated and studies have posited that Oregon populations will almost certainly be extinct within 100 years with continued habitat destruction (Nehlsen, Williams & Lichatowich, 1991). The Oregon Chub (*Oregonichthys crameri*), listed as Endangered under the ESA, is a small cyprinid fish that formerly inhabited sloughs and overflow ponds throughout the Willamette River drainage, but now exists in only two-percent of its historic range (USFW, 2005; Fishbase, 2005).

The Willamette watershed is an extensively managed system. The Willamette River historically had a frequent flood regime upon its once braided floodplain which contained extensive wetlands. In 1875 the Army Corps of Engineers (ACOE) began converting the Willamette to a single, stable channel for navigation. Around this time, wetlands were eliminated and reclaimed for farming and urban and suburban development. The total channel length was ultimately reduced by fifty-percent and the river was cut off from most of its floodplain (River Network, 2005).

Beginning in the 1940s, the Army Corps of Engineers built its eleven dams on the Willamette River to ensure water availability for hydropower, irrigation, recreation, fish and wildlife, and flood control (US Army Corps of Engineers [USACOE], 2004). These dams contribute to the loss of flood-dependent wetland ecosystems, as well as pose large obstacles to the regeneration of salmon and other aquatic species (Hulse, Gregory, &

Baker, 2002). The Army Corps of Engineers is also responsible for allocating water for downstream uses, water quality standards, and in-stream flow requirements (USACE, 2004).

Water quantity is an important issue in the Willamette basin. The watershed is a precipitation-driven system, which means that human needs are reliant upon winter rains and spring snowmelt to fill the ACOE reservoirs. During times of limited rainfall or droughts, water conflicts have erupted in areas throughout the valley, as stakeholders vie for various water-related interests (USACE, 2004). The growing population's water demand as well as implications of global climate change make the Willamette watershed increasingly vulnerable to water scarcity (DeVilliers, 2000). The National Drought Mitigation Center (NDMC) predicts that within the next fifty years, the entire Willamette Valley may suffer from limited water supply (NDMC, 2005). Steve West, from Eugene's Water and Electric Board (EWEB), expressed concern that nearby towns within the watershed will not be able to provide water to meet residents' needs within the next decade (personal communication, June 2005). Already, residents and industries around Eugene whose water supplies do not meet their needs are compelled to fill up water tanks at storage stations in Eugene (West, personal communication, June 2005).

In 2005 the Willamette watershed experienced an unusually dry winter, and the public response was one of worry and dismay. Newspapers published numerous articles predicting the negative impacts of the low rainfall on reservoir levels, ski runs, fish runs, irrigation, private wells, and energy costs. The Army Corps of Engineers held several public meetings to respond to the public's many questions and concerns. This example

demonstrates the important implications of and potential conflicts from reduced water supply in the region. As mentioned above, everyone is directly or indirectly affected by limited water supply, while those directly invested in water issues (farmers, environmentalists, recreation managers, aquatic species, etc.) are particularly impacted.

CHAPTER IV

PERCEPTIONS OF WATER, PLACE, AND RISK

In interviewing twenty-five stakeholders in the Willamette watershed's water supply, key themes emerged in the ways in which they regarded local water supplies and issues. Stakeholders perceived water to be scarce and of limited supply, and identified increasing human populations and groundwater extraction as particular concerns. Stakeholders also described water as precious, and they largely regarded it as a privately owned resource rather than as a common good. Because of this, water conflict was seen as inevitable. In addition, stakeholders demonstrated extensive knowledge of both their local watershed and water rights. They indicated deep attachments to water, the watershed, and their water rights, and were eager to defend them. And finally, though they expressed concern for water supply and predicted water conflicts, stakeholders were less concerned with water-related problems that would occur on longer time scales.

Scarcity and Limited Supply

One theme that was emphasized by all stakeholders was the belief that local water resources were scarce and getting scarcer. While the farmers and ranchers that I interviewed noted that their local water sources tended to have lower flows than in the past, those working as engineers, hydrologists, and with government agencies often referred to water supply issues on larger scales. For example, Gil, a cattle rancher, said

that the nearby creek “hasn’t flowed as it did when we first moved here in the summers,” while Larry, an engineer for Oregon’s Department of Water Resources (ODWR), claimed, “Most of the state is water short.” When asked what he thought of the prospect of selling water to California, Steve protested, “It doesn’t seem like we have enough to spare.”

Because a provision of western water rights is “first in time, first in right,” senior water-users (those who received permits earliest) are able to take water at the expense of junior users. The Oregon Department of Water Resources (ODWR) is the government agency in charge of protecting existing water rights and allocating new rights to new users. During a season with limited water supply, the ODWR shuts off the water for junior water-users to satisfy senior water-users’ demand (ODWR, 2005).

Several interviewees complained that the state has dispensed more permits than there is available water, causing new requests for water to be denied and preventing junior users from using their rights. Ken, a local produce farmer, said that “Water, good quality water, is going to be a limiting resource” and referred to this over-allocation of water rights: “[The ODWR] just don’t want to issue water rights anymore...every so often they throw up enough hoops hoping that people won’t follow their protocol so they’ll have an opportunity to get them back because they’ve over-allocated the water.”

When asked to respond to this accusation, Darren, the administrator of the field services division of ODWR, admitted, “A lot of streams are [over-allocated], yeah.

We're not supposed to say 'over-allocated' but they are over-allocated." He attributes this regulatory glitch to shortsightedness; "People probably didn't anticipate the problems we'd have today."

While most stakeholders identified water scarcity as a current problem, almost all (twenty-four of the twenty-five) expressed concern that limited water supply, even if not currently a threat, would become one in the future. Matt, the manager of the Santiam Water Control District claimed, "Water will have more and more emphasis put on it. I think that's a given. It's a finite resource and there are a lot of competing uses on it."

Pat, the Water Quality Control Supervisor for the city of Albany, was confident that, "Water is going to be a huge issue, especially in places you wouldn't expect, like in western Oregon where it rains a lot. But in the summer there just isn't enough." Joel, a retired dairy farmer, described water scarcity as "a sleeping dog." And Chris, the Willamette Basin Coordinator for the Army Corps of Engineers (ACOE), posited that "in the next ten to twenty years [water supply] is going to get a lot more difficult."

Stakeholders were correct in describing surface and groundwater supplies in the Willamette as fully subscribed. Though the quantity of water may be relatively stable (assuming unrealistically that there are no impacts from global climate change), urban growth, expanding agricultural markets, increasing recreational demand, and plummeting fish populations all demand water from an already limited and over-allocated supply.

A question that arises is: Do only stakeholders with direct experience in local water issues perceive water to be scarce and of limited supply, or is this perception shared by the general public in the watershed? Though most of the interviewees were long-time

residents in the watershed, I spoke with two recent arrivals, both of whom were surprised by the water issues they confronted in a region that they had anticipated would be free from water concerns. Steve, a local vineyard operator who had recently relocated from California, described his surprise in discovering that his well water was unreliable:

I moved up to Oregon, and I thought it rains all the time, there's rivers, there's lakes, there's not going to be any water issues. But I moved up here, and I've never seen well water like I've seen come out of this place! You know, there's absolutely water issues in Oregon! Sure, we've got rivers running through town and lakes everywhere and not that many people, so my perception is that we shouldn't have water issues, and yet we do. So it's, I don't know, a conundrum, I don't get it.

Jess works for the Rivers Council, a local environmental non-profit that uses science as a tool to persuade public agencies to be more environmentally responsible with respect to rivers and watersheds. She moved to Eugene from New Orleans, and before starting her job at the Rivers Council had not regarded water issues as a salient concern. She said that most people, even those who live there, do not identify the Northwest with water scarcity, and observed, "I don't think that it's in the public consciousness."

Steve and Jess suggest that the regional identity of the Northwest as a place of abundant, free flowing waters may inform some people's perceptions of the place. But in working directly with water resources, both began to see water as a limited and fragile

resource. This finding is supported by previous studies that demonstrate the connection between direct experience and environmental risk perception (O'Connor et al. 1999; Botterill & Mazur, 2004).

Population

The notion of water supply as a looming problem was attributed to a number of causes. Most often, stakeholders identified population growth as a principal culprit. At the beginning of his interview, Chris asked, "Are you looking into municipal water demand? That's going to be the biggest problem." Sam, the director of conservation at Eugene's Water and Electric Board (WEB), noted that every year the demand for water increases as the population grows. The population of Eugene alone is expected to double in the next fifty years. Sam asked, "In terms of future water resources, where will the water come from?...Because the DWR will tell you that the Willamette is fully subscribed year round."

Ken was concerned that more people would result in "more showers, more washing machines, more lawns, more water using industries, yeah water-use will increase." When asked what he perceived to be the biggest threat to water resources, he said, "It all boils down to population. It takes a certain amount of water to keep a person going." Darren also suggested that water issues would be complicated by the growing population: "They talk about population projections for the valley over the next one-hundred years and it's scary how many people they're talking about. It's already getting crowded. I'll be retired by then -- you have your work cut out for you!"

As Oregon's population increases, the municipal demand for water is sure to grow. Of all the surface water withdrawn in the Willamette, almost a third is for public supply (Bastach, 1998). But irrigation and commercial use comprise the bulk of water withdrawals, leaving it unclear whether or not municipal consumption poses the biggest threat to the local water supply. Dennis, a water resources expert, offered a countering opinion:

If you're going to be worried about water in Oregon, I'd think that residential use wouldn't be a big one. I think it would be climate change, the Endangered Species Act, the groundwater table falling, or increasing costs of power generation.

Gordon, the ACOE's fish biologist for Willamette Valley Projects, agreed that limited water availability would become a more urgent problem, but like Dennis, did not attribute this to population increases. Instead, he thought the future enforcement of stringent Endangered Species Act mandates for saving salmon populations would limit the available water supply. Anticipating that the ACOE would be forced to release more water from their dams for fish, he predicted that "Demands will increase downstream...how that will play out, I don't know...it's going to be a lot of pressure to fill the reservoirs every year."

Groundwater

In addition to population, another source of concern was that of diminishing groundwater supplies. In discussing local water issues, several stakeholders emphasized and identified depleting groundwater supplies as particularly significant.

On years with insufficient water supply, there is often no surface water available for those with junior water rights. When these users are prevented from using their surface water rights they often turn to groundwater supplies, which are less stringently regulated. Several interviewees predicted that the lack of monitoring and responsible regulation, as well as the paucity of knowledge pertaining to the connection between ground and surface water, would result in rapid depletion of the local groundwater supply.

Peter, a director of Lane County's Soil and Water Conservation District, posited that out of all water-related concerns, "The real challenge is in the ground water." He attributed groundwater depletion to the rapid growth of residential development in rural areas. Many of the new residents, Peter claimed, "have no concept of ground water and use water as they did in the city that they came from." Larry, the engineer for ODWR, noted that there has been limited research on groundwater supplies, but that "The more we're finding out about groundwater, [we realize] the less there is for appropriation."

Dennis worked for ODWR for twelve years, wrote a book about Oregon water rights for Oregon State University (OSU), helped design the Willamette chapter of the Oregon Plan for Salmon and Watersheds, was a member of the Willamette Livability Forum, and is currently coordinating OSU's Pacific Northwest Hydrologic Observatory

collecting information about surface and subsurface water in and around the Willamette watershed. A specialist in water resources, he also identified groundwater supply as a particular concern and hypothesized that in the near future it would be sure to “peter out.” He suggested that “If current homeowners knew how the aquifer was behaving beneath them they’d act differently.”

Because of the lack of hydrologic data pertaining to groundwater resources, they are much more difficult to monitor and regulate. In the Willamette watershed, groundwater and surface water supplies are regulated separately by the ODWR, which conceals the fact that they are directly related to one another. Groundwater replenishes surface water sources, so when extensive groundwater is pumped from the earth, surface water supplies also diminish. Because of this relationship and the increasing reliance on groundwater sources, Darren, the administrator at ODWR, stated:

I think groundwater is going to be the death of us, to be perfectly honest, from a regulatory standpoint...We’re going to run into so many problems trying to deal with these groundwater issues that we won’t be able to do it.

Though stakeholders differed in when and why they saw problems of water scarcity occurring, they all shared a perception of water availability as a legitimate concern within the Willamette watershed. This demonstrates a correlation between direct, personal experience and enhanced risk perceptions, a finding supported by previous studies (Slovic, 2004; Botterill & Mazur 2004).

Water is Precious

A second key theme that surfaced was that stakeholders described water as holding significant value. Joel, the dairy farmer, drove me down to the Calapooia River, the irrigation source for his farm. As we stopped at the bank on the edge of his property, he said, "Our water is very precious to us." Lawrence spoke for his organization, the Federal Lakes Recreation Committee: "We are firm believers that every year water is getting more and more precious...more so than gas." Sheila, who designs and teaches workshops on rainwater harvesting systems, compared water to gold. And Ken, a produce farmer, described water as "one heck of a resource and one heck of a playground."

All of the interviewees had a direct reliance on local water systems and thus the perception of water as valuable and precious may naturally arise from this dependence. Scholars referred to in Chapter Two substantiate this claim (Snyder, 1990; Nabhan, 2004; Berry, 1981; Norton and Hannon, 2003). Their findings, however, apply specifically to place, whereas these interviews demonstrate that water is equally valued as a feature of place. In that stakeholders also perceived water to be a limited resource, a number of subsequent themes emerged that describe the ways in which they behave toward and perceive the current water supply.

Private Ownership

Stakeholders often emphasized the legal definition of water as something that is privately owned. Though perhaps none interviewed would deny that water should be a

right enjoyed by all (and several expressed this sentiment directly), only three respondents alluded to water as a common good. These three respondents were Pat, Sheila, and Gwen, all of whom worked in administrative or educational positions. It was the belief that water should be shared by all that had precipitated Sheila's career in sustainable water systems. She perceives her work as something that can help provide everyone with their basic rights: "If we can have clean water, clean air and clean food we can really do well."

The more common perception shared by water stakeholders was that water can and should be privately owned. This was expressed most vehemently by those who worked on the land and had direct relationships with specific water sources. Others who did not have resource-based livelihoods expressed the idea of private ownership in referring to water as a commodity.

As Joel drove me along a stretch of the Calapooia River bordering his farm, he referred to his family, "We think of it as our river...[it's] such a pretty stream!" On the other hand, Chris, the Willamette Basin Coordinator for the ACOE, perceived water stored by the ACOE dams as belonging to "anyone that can pay." He also observed that "There's a widespread belief by the agricultural community that stored water is their water." Neil, the successful dairy farmer, corroborated this claim in referring to Fern Lake, one of his water sources: "It's our water and we allow the boaters to use it." Joel, in reference to some of his neighbors, said, "There are some very conservative people out there – 'Don't touch my water, I've got a gun!'"

Most stakeholders described the ownership of water as legitimated by the acquisition of water rights. A few stakeholders, however, suggested that traditional use of water rather than state allocated rights justified their claims upon it. Gil is an elderly rancher whose water had been turned off for the past four years by the local water master because his claims were junior to other users. He had been ranching on his property since 1956, and was furious that he was prevented from using water that he had depended upon for years, but that the laws were not adhered to when applied to his neighbor:

Another thing that drives me is that I get shut off, the guy who owns that place didn't use his water for ten years, and when you don't use the water you lose your right. Well, the water master here goes down and asks him why he isn't irrigating, then turns him on and shuts me off!

Joel pumps water from the Calapooia River. A nearby flour mill operating on the same river owned a number of senior water rights that it did not need to utilize in order to successfully function. Back in the 1950s Joel and the surrounding irrigators made an informal arrangement with the flour mill. In exchange for a monetary compensation, which was accrued as a voluntary neighborhood water tax, the mill allowed its extra water to flow down to the junior downstream users. This system worked beautifully until the mill was sold to the state parks department, at which point the informal arrangement was met with bureaucratic obstacles. Though he does not hold legal rights to it, Joel claimed that he and his neighbors should be entitled to use the water as they had for previous generations.

Below, I demonstrate that stakeholders' attachments to water are mirrored by their attachments to places within the watershed. Privileging private ownership of water (or usufructory rights to water), as specified in western water law, allows stakeholders to maintain their traditional relationships to both water and place. In this respect, it makes sense that stakeholders would emphasize the idea of water as private property. This also indicates, as I explore in greater detail below, that strong attachments to and care for water and place may not result in benevolent or "environmental" behaviors. Conversely, these attachments may even impede these behaviors, as well as efforts to define water as a common good.

Water and Conflict

Stakeholders not only emphasized the tenuous nature of water availability, but the potential conflicts that brew beneath the surface of water distribution. Dave, an engineer for ODWR, put it succinctly, "When it comes out of the tap, water is not hydrogen and oxygen, it's made out of political, physical and fiscal."

Several farmers repeated and agreed with the adage, "Whiskey is for drinking, water is for fighting over" before elaborating on their specific relationships with water. Neil declared, "Our country is just that (snaps) far away from anarchy...[the only way we can hang onto our water is because] we have lots of farmers with guns..." Ken, a produce farmer, agreed that "Nothing can raise hackles quicker than fighting over water." At a later point in the interview he declared, "There's going to be hell to pay for before I run out of water."

Dennis, the water resources specialist, was adamant that future conflict would be inevitable:

The seeds of conflict have already been sown and they will germinate, due to changing climate and the doubling of our population. If you take a snapshot of where we're at now, in terms of water needs, even out-of-stream water-consumers aren't being fully satisfied. Someone gets cut off each year.

There's already not enough water to go around, for farmers, for cities. We're handling it now, but I guess we also have a big IOU for pollution, for endangered species and that's going to grow. The conflict between the environmental need for water and agricultural need for water is going to grow; the conflict or competition between water for cities and agriculture is going to grow.

There are plenty of examples within the Willamette watershed of brewing water conflicts. Ken described the ongoing tension between his water needs and the operations of a local gravel mining company. When I interviewed Susan, a watershed council coordinator, she was in the midst of battling a new real estate development that would subdivide land already deficient in groundwater supplies for the current population. The receptionist for Steve's winery recounted the story of a neighboring vineyard, whose lavish water-use (and senior water rights legitimizing this use) had on dry years drained the groundwater supply, preventing the local public schools from receiving adequate water. Below I provide two detailed examples of potential water conflicts in the Willamette Basin.

Santiam River

Several stakeholders described the Santiam River, a tributary within the Willamette watershed, as a hotbed for water conflict. An ACOE dam at Detroit manages the flow of the river on its way to Salem. The recreation industry on Detroit Lake lobbies to keep lake levels as high as possible, while Chinook salmon and recreational fishermen depend on greater but different instream flows for spawning and for guiding. The municipal needs of Salem are also increasing dramatically. In referring to the network of competing demands in this area, Gordon said, "If you want to see contention over water, it's there."

The ACOE is responsible for managing the amount of water released from Detroit, thus they are constantly confronted with complaints and demands from local constituents. Chris referred to the demands of recreation for high lake levels and asked, "How can we tell the city of Salem, 'No' because the folks upstream have to float their boats?" Lawrence, the president of the Federal Lakes Recreational Committee for Detroit Lake, reflected on these priorities: "Is it really important to float my boat? I think yeah, it is. A lot of peoples' livelihoods really depend on that."

Gwen works for NOAA fisheries and was in the process of implementing a biological opinion for the National Marine Fisheries Service for the Willamette watershed. She agreed that "One interesting case study just about water availability in the basin is the North Santiam" and said, "I have been battling with this for the last couple of years." She said that her flow recommendations are constantly disputed by

both the recreational boating community and by fishermen who lead guided trips downstream:

Every September we have [Lawrence] and his folks saying, 'Whoa! We have the reservoirs getting low and Labor Day is almost two weeks away' and salmon are starting to spawn but they're telling us not to release any more water. And then you have the guides downstream who are saying if you release this water then we won't be able to do our fishing.

With a variety of stakeholders all vying for the same water supply, the Santiam River provides an example of the ways in which increasing demand on a limited supply may aggravate already present conflicting uses.

Fish versus Farmers

The demise of healthy salmon runs creates another area of contention within the Willamette watershed. Salmon often symbolize the identity of the Pacific Northwest. Yet at the same time, as noted in Chapter One, hundreds of stocks of Steelhead and Chinook salmon are threatened or endangered within the region. When species are listed as threatened or endangered, any actions that impact their habitat may be regulated and monitored by state agencies. Though most acts to protect aquatic species in the Willamette watershed are currently voluntary, a few stakeholders perceived efforts to safeguard fish as posing constraints upon their water-uses.

Matt, from Santiam Water Control District, regarded fish protection as a financial impediment to his water facility operations. In order to be re-licensed by the Federal

Energy Regulatory Commission (FERC), his district was instructed to build a fish screen that cost two million dollars. Matt said, "Of course it's hindered us in the sense that it's taken resources to comply with the needs of fish. That takes resources away from other areas." Neil and Gil, both farmers, implied that their water usage was impeded by fish protection. Neil defended his livelihood, saying, "We're not out here to kill fish...we make our living off this ground out here..." Gil believed that he had been prevented from using his water rights because the state had "taken over" in order to protect fish.

Though these stakeholders did allude to a contention between fish and water resource use, the conflict between fish and farmers may adhere more to mythology than reality. Oregon was one of the first states to modify its system of prior appropriation in recognition of the instream values of water, for fish and wildlife, aesthetic value and ecological needs. The Instream Water Rights Act of 1987 allows state agencies to apply for instream rights that then have the same legal rights as consumptive water rights. The act also allows voluntary transfers from one water-use to another. Because of this, senior water rights previously used for consumption can be dedicated to instream uses (Tuxell, 2003).

Instream water rights function in the same way as any other water right, and are thus junior to all senior users. Enforcement of the Endangered Species Act could prevent farmers from irrigating if the removed water significantly affected salmon habitat, but so far efforts to enforce the Endangered Species Act have been unsuccessful. Stakeholders have only been prevented from using water if their rights are junior to another user.

Gordon, ACOE's fishery biologist, corroborated this,

I have no recollection of a farmer being shut off for fish in this basin...if someone could show that to me I'd love to see it...I've heard the complaint a lot but I've never heard of it...it's ingrained in their minds.

Several stakeholders agreed with Gordon that endangered fish had not obstructed their access to water. Joel said, "I think when it comes down to it, fish are one thing and houses are another – I think that's the biggest threat to the Willamette." Michael, a watershed coordinator, reported that within his watershed, "I haven't spoken with anybody who has said they haven't gotten water because of the fish." He did however reflect, "It's a fear that's in the back of a lot of peoples' heads."

In other areas of Oregon, safeguarding wildlife has indeed posed as an obstacle for farmers and other resource users. The Spotted Owl controversy in western Oregon was sparked by enforced litigation of the Endangered Species Act. Much of the conflict that erupted within the Klamath Basin in 2001 was precipitated by measures taken to protect an endangered aquatic species. Both examples served to solidify a growing sentiment that environmental and resource interests are irreconcilable. The media (which plays a large role in amplifying risk perceptions (Ross, 1999)) has assisted in perpetuating the story that fish interests are at odds with farmers, particularly in the case of the Klamath Basin (Hurley, 2004). It may be that these previous stories of conflict, as well as the media's role in amplifying and dichotomizing them, contribute to the fear that similar situations could arise in the Willamette Valley.

As someone who works to safeguard aquatic species within the watershed, Gwen suggested that not only does fish protection pose little threat to other interests, it is not even a public priority. When species are listed as endangered or threatened species, all federal agencies are obligated to consult National Marine Fisheries or ODFW to make sure that their actions don't interfere with those species. The biological opinion is the first step in this consultation process; it determines what actions are beneficial and what are harmful. Federal money is only allocated for endangered species after the biological opinion has been crafted. Gwen has been working on the biological opinion for the Willamette for the past four years, and it's been taking so long because several agencies don't want to proceed until a court settlement has been made on a previous case for the Columbia River. Because the biological opinion has been stalled, all current efforts to safeguard aquatic species are unenforceable.

When I asked Gwen about the well-being of threatened salmon stocks she responded, "I'm kind of doom and gloom about the fish in the Willamette...there's no regulatory mechanism and federal funding is so tight right now." It is the voluntary actions, she claimed, that are necessary to get fish to recover, and currently there is no money or momentum for that.

The Santiam River and the perceived conflict between fish and farmers are examples of ripening conflicts within the watershed. As Darren predicts, as water demand increases, "We're going to see more and more of those types of conflicts."

Local Knowledge

Those intimate with water resources within the Willamette watershed were not only aware of the potential of water scarcity and conflict, but also indicated thorough understandings of their surrounding watershed and of water law and policy. This was expressed in their articulation of physical geographic knowledge, which included noticing the watershed's change over time and the recognition of it as an engineered phenomenon, as well as their understanding of water rights.

Physical Geography

Those who engaged in daily work on the land in particular (farmers, ranchers, fishermen and field researchers), were able to elaborate in great depth upon their local waterbodies and the ways in which they changed seasonally and are arranged in the landscape. For example, Gil, an elderly rancher residing in the Triangle Lake district for sixty-six years, offered a detailed explanation of his local system of creeks and drainages:

Yeah, Lake Creek comes down through Triangle Lake, right down here, and then Greasy Creek comes in just below here, and then you go on down and Deadwood creek comes into it, Indian Creek comes in, and Lake Creek flows into the Siuslaw River...

Joel was eager to drive me around his property and point out the familiar creeks and drainages. Ken, a vegetable farmer, talked at great length about the soil profile of his fields and the ways in which the geomorphology of the Willamette River impacted the water table and his wells.

Stakeholders also had an understanding, even if not firsthand, of how the watershed had changed over time. Rob, a hobby cattle rancher, remarked that his nearby swimming hole has been gradually filling up with silt. Gil told me that around his property, "Things have changed. The way things used to be there used to be lots of crawdads in the creek...you'd see people up and down the creek hunting, though now you just don't see them."

Ken, a local farmer, also referred to some of the changes that interested him:

Water has changed a lot around here. In talking to old timers you hear that it used to flood a lot before the dams. One person told me that he never irrigated, he didn't have electricity or anything either, but he didn't really need to. He said in the summertime you could dig down and get water...he said all these meanders, these slews and these meanders, there used to be water in them all the time. All summer they ran. In fact I know that they used to swim down here in this one, and there's no water in it anymore...They started doing flood control and power generation on the rivers and then there was a change.

Given that the Willamette, as mentioned previously, is a highly managed system of dammed waterways, several people attributed its changes to its engineered nature. Darren said, "I think that below the dams everything has changed as far as how the rivers work...the mainstem Willamette used to be a braided channel, and it's lost a lot of its function over time."

Ken agreed:

There used to be about five braided streams that went back and forth and the amount of habitat and edge, you know, a lot more edge there, a lot more insect life and fish and whatnot. It also meandered around a lot. There's been a real effort to make the river a sewer pipe with riprap.

And Michael, a local watershed coordinator, noted that the dams had completely changed the variability of the hydrologic cycle, "You couldn't go swimming in the 30s or 40s and now the ACOE dams up here regulate the flow of water so there's always water."

It was evident from stakeholders' responses that they regarded the Willamette watershed as a managed, rather than a "natural," system. For example, Sam, the Director of Conservation for Eugene's Energy and Water Board, noted that "They're running [the Willamette] quite high this summer." Darren spoke of the work that his agency does: "We created these baseline flows, you know, maximum and minimum flows to come out of the projects at certain times of the year to protect fish."

Others commented on the "artificially created" water needs in the valley. Larry spoke to this:

The flows in the Willamette system are so artificially high from releases in the dams...I don't know how the fishery existed before these flows...We even have a dinner boat that people take to eat on the river [which could never have happened in regular flows]...there's a lot of needs in the valley for water that we've sort of created.

Lawrence, the director of Detroit Lake's Recreation Committee, referred to these artificial needs as well in describing the management of the ACOE reservoirs: "The first of February they start to fill again...what has happened is that with ESA [the ACOE] now start pulling more water out for steelhead and salmon...they artificially keep the streams at higher levels." Lawrence's argument for keeping the lake levels high proceeded from this observation: "What we're saying is...if you didn't have these dams here, on dry years...[the river's flow] is above what Mother Nature would supply!"

Water Rights and Policy

Everyone I interviewed was not only well-versed in the local geography, but had a sophisticated understanding of water rights and policy. This was emphasized within the context of water scarcity; as water supplies were perceived to be diminishing, stakeholders often referred to their water rights in justifying their claims to the resource. This necessitates a thorough understanding of the complexities of the state's water laws. Water rights are invariably confusing, in that they are allocated for specific purposes and often have terms, limitations and conditions placed on their use.

In order to educate himself about water policy, Rob said that he went over a map of local water rights with the region's water master, the person responsible for turning off junior water-users during times of competing uses. Rob offered me a detailed account of who had water rights from the nearby river, and even knew the dates that they had been received. Matt also demonstrated extensive knowledge of water rights. When asked

what kind of water rights Santiam's Water Control District had, he laughed at the question:

We have all kinds of water rights. Our agricultural rights are from the 1900s, a hydro right from 1866 I believe, another that's from 1885, stored rights from 1987, and 1994, plus we have other water rights for other land owners that we deliver for them.

Attachment and Defense

Almost all of the stakeholders expressed an attachment for their water source, the surrounding watershed, and their water rights. In addition to this sense of connection for and identification with water and place, every interviewee also indicated a desire to protect and safeguard water, place and water rights.

Water and Place

Every stakeholder articulated a deep connection with water and its place in the landscape. Those who worked directly on the land referred to specific locales, while those holding policy or administrative jobs tended to express their appreciation in more general terms.

For example, Rob, a hobby cattle farmer, said that he bought a place along the Mohawk River because he had fallen in love with the area years before. At one point in the interview, he paused and told me intently, "I'm going to die here. I love this place. Women come and go, but I'm never going to leave this place." He followed this up by

referring directly to the river: "The river is a big part of the attraction that I have here. I love that river." Rob's deep attachment also resulted in a sense of loyalty, expressed in his outrage over the pollution of the river by upstream crystal methamphetamine operations, "When I see big pulses of white water going down from some meth-head who cooked up some shit upstream it pisses me off!"

Ken also described a fondness and affection for his property and the Willamette River upon which it rests. He reminisced:

I have a lot of fond memories. I spent most of my younger days fishing on [the Willamette] -- a kind of Tom Sawyer existence back in those days. We'd take off on our bikes with our score card and our fishing poles, sit out in the river in a pair of cut off shorts, day after day. Yeah, I hate to see the river change. The stretch out behind my place is one of the only natural, semi-natural places in the whole river channel and there's been a real effort to destroy that. I hope it doesn't happen.

To defend against the onslaught of riparian destruction, every year Ken plants trees on his property along the banks of the river. Gil, the elderly cattle rancher, visibly warmed up as he described crossing the creek every evening as a young man to round up his father's goats:

I can remember leaving the house and jogging, never stopped trotting, you might say, all the way across the creek and up the hill and got the goats and brought them back...I have to say I've come to the end of my years, now I've enjoyed my life over the years.

Joel also spoke of a fondness for his land and nearby river. He said that he enjoys bringing his grandchildren down to play in the Calapooia River, which borders his farm. His own children, now grown, love to visit because "they love the land and the river." He lamented that because they don't wish to follow in the farming tradition, he and his wife will "have to give [the place] up eventually."

Those involved primarily in policy jobs also indicated appreciation for water sources and watersheds, but these reflections tended to be more generalizable or covered more geographic distance. At the very beginning of his interview, Darren, the acting administrator of the field services division of ODWR, demanded, "Do you have a passion for water? So do I. I've always had a passion for water resources. I've been working here since '77 and I absolutely love it." Later in our conversation, he said that he spent a lot of time fishing on the upper Willamette. His current hobby is white-water rafting, and he listed a number of Oregon rivers for which he has a particular affinity.

Gwen, also in a policy job, described her fondness for the local watershed. She grew up in Portland in a house that abuts the Willamette and remembers spending long afternoons by the river with her dog. She said, "[The river] has been near and dear to me my whole life." Though her work is inspired by a desire to protect the river she loves, Gwen regrets that her current position prevents her from connecting more intimately with the land.

As discussed in Chapter Two, connections to place often result in increased care and stewardship (Norton & Hannon 2003; Beatley 2004; Eisenhower, Krannich, & Blahna, 2000). My interviews suggest that water may be a component of place that

fosters similar relationships of care. Even those who do not engage with the physical substance on a daily basis appeared to have an enhanced appreciation for and connection to it as it exists in the landscape. But what does “care” constitute in terms of engaged behavior? Given that water is a limited substance that is important for a variety of uses, an important question is: Do peoples’ attachments to place generate proactive behaviors that would benefit multiple uses and intergenerational equity, or do they simply incite a care for their particular locales and livelihoods? I address this question in Chapter Five.

Water Rights

Stakeholders demonstrated similar sentiments of attachment and defensiveness toward their water rights. Even if they were not actively engaged in water conflicts, many respondents emphasized the necessity of defending water rights in the context of diminishing supplies. Matt said that one of Santiam Water Control District’s goals was to safeguard its water supply; “I feel it’s an ongoing process to protect the rights that you do have.” When Steve, the Californian vineyard operator, relocated to Oregon, his new rural neighbors advised him to start tracking his water because “they’re putting in a new development and there’s a bunch of big new houses and they’ll be tapping into the water table...[My neighbors told me] ‘you’ll have to go after them.’” Pat, Albany’s Water Quality Control supervisor, described reliable water as contingent upon reliable water rights; “If we can live within our oldest water right then we don’t have to worry about court cases.” Ken said that in order to hold onto his water rights, “I keep the paperwork up. I’m kind of a stickler for paperwork.”

Water is unique in that it may be regarded as a public good and yet it is governed by a long-standing system of permanent, consumptive rights. However, growing concerns about the social values, equitable use and environmental values of water helped enact the Wild and Scenic Rivers Act (1968), the National Environmental Policy Act (1969), the Clean Water Act (1972), and the Endangered Species Act (1973), all of which pose limitations on private uses of water. In addition, the federal government has been forced in recent years to recognize senior water rights belonging to Indian tribes (articulated in a Supreme Court decision *Winters vs. United States*) (Tuxell, 2003). Perhaps these litigious threats on senior water-uses contribute to stakeholders' adamant defense of their rights.

Long-term Visions

As noted above, interviewees expressed significant concern for water availability and conflicts that emerged or were anticipated to emerge within their lifetimes. They were often critical of others for irresponsible use of the resource and provided suggestions of their own for the best ways to manage and safeguard it. However, few respondents talked about water issues that extended beyond their lifetimes or livelihoods. This is not an unusual finding. Leiserowitz (2003), in studying public perceptions of global warming, demonstrated that people tend to be less concerned with issues ranging broadly over geographic space and time.

Global warming is expected to have a myriad of consequences, one of the most significant being its impact on future water supplies (Shelton & Fridirici, 2001). Only

three of the twenty-five people interviewed appeared interested in or motivated to act upon potential impacts of climate change. Jess reported that her organization, the Rivers Council, was beginning to incorporate projected impacts of climate change into their projects. Sheila thought that rainwater harvesting techniques would be increasingly attractive within the context of global warming, and Susan regarded climate change predictions as possible leverage for rescuing salmon (but admitted that few people were taking the issue seriously).

Others were open to the possibility of global warming but were reluctant to incorporate it into their work or projects. Gordon, for example, said that "The [ACOE] is certainly mindful of global warming" but that "[we're] not doing anything specific...the problem is we've got a bunch of people saying it's BS and that it's not happening." Chris, also with the Army Corps, said, "We get a lot of people telling us to incorporate climate change into our calculations" but that "There's less energy spent looking at long-term visions and planning – it's just trying to make it work each year at a time."

Darren also acknowledged that global warming would indeed pose a problem, but that short-term issues were problematic enough. "Climate change?" he said, "Who knows how that's going to impact us." He assured me instead that "We're okay for a finite period of time... Who knows what's going to happen 200 years from now?"

Several of the farmers and ranchers interviewed not only did not perceive anthropogenic global warming as a pertinent problem, but also doubted its very existence. Neil, the dairy farmer, dismissed global warming as "a natural cycle" that environmentalists had blown out of proportion.

When asked his thoughts about climate change Gil responded, "To me that's a computer model and so on and so forth, if you know what I mean."

Tony, another farmer, said,

If we do have global warming, and I'm not sure that we do, it will reduce water supply but it will also reduce other things so it will be hard to know if life is worth living. That discussion is far out for me.

In general, long-term water scenarios appeared to be too "far out" for most respondents. Rob, the hobby rancher, articulated the sentiment well: "I don't think people like to plan ahead...I mean, when the sun is shining and the fish are biting, I mean what the hell, let's have a barbeque instead." Sheila also described people as reluctant to address long-term problems: "We're not a society that's thought a lot about preventative things or long-term things." Gwen, in referring to this tendency, said:

I see people with this really short-sighted vision of the world, not able to see beyond their lifespan and I don't understand that... I see the Santiam River and think I do not want to be there in a hundred years...yeah, maybe they'll have their farm they've had for a hundred years but they won't be able to drink the water out of their well!

Though direct experience may foster an attachment and subsequent care for water and place, it may also discourage people from making changes in livelihoods that have been sustained for generations. Gwen spoke to this: "Just because you've been taking your water for the past fifty years, there's not always going to be enough when everyone takes their water and discharges their sewage." In addition, those who directly depend on

water resources often are just trying to make it through variable weather and impacted supplies one year at a time. These may be impediments to addressing problems from a larger perspective.

Conclusion

This chapter describes the perceptions of water and place articulated by twenty-five stakeholders within the watershed. These individuals regarded water as precious and of limited supply, and anticipated future water conflicts. They demonstrated sophisticated understandings of the watershed and of water rights, and worked actively to defend these. It was evident that the ways in which stakeholders perceived water and the watershed were shaped by their connections to place, and their concerns were often precipitated by these attachments. This illustrates how "sense of place," emotional investment, and risk perception are interrelated.

Though it appears that stakeholders' attachment to places within the watershed assisted in fueling their desires to protect these places and the waters within them, in general they did not demonstrate a similar care towards water issues larger in time and scale. In addition, though they perceived water to be at risk, and thus their relationships to place and to livelihood, they were more apt to offer suggestions for how others could modify their behavior in ways that would benefit the watershed rather than actively participate themselves (this is discussed in Chapter Six). The following chapter describes the ways in which other members of the community are perceived and villainized by stakeholders with respect to water-use.

CHAPTER V

PERCEPTIONS OF OTHERS

Chapter Four describes stakeholders as sharing a perception of water as precious and of limited supply. Other themes related to this belief were the detailed understandings of, affinity for, and defense of the watershed, water resources, and water rights. Stakeholders suggested that their perceptions of water differed from those adopted by others within the watershed. In discussing these differences, stakeholders often defended themselves against accusations of blame and in turn attributed water-related problems to others. This chapter discusses the common ways in which stakeholders framed and blamed others. This exploration is important in that water-related conflicts may be exacerbated by the collision of differing narratives (W. Robbins, 2001). Developing an understanding of how stakeholders in general perceive others as thinking and behaving may provide insight into possible areas of negotiation and collaboration. "Sense of place" is essential to this discussion as well, in that stakeholders feared that the misuse of water by others would jeopardize not only their water supply, but their relationships to their local watershed.

Several common themes were voiced by stakeholders concerning the attribution of water problems. Interviewees prioritized their own knowledge of the watershed based on their personal experience with and reliance upon water resources. They blamed others

for lacking water-related knowledge and for devaluing water, and often attributed these tendencies to peoples' disconnection from local water sources. In addition, stakeholders perceived others as resistant to making changes or sacrifices for the benefit of remedying water problems, and noted a general trend of environmental apathy with respect to water issues.

Personal Experience

Stakeholders claimed that their perceptions of water supply and the watershed differed from those held by community members who do not work directly with water resources. They invariably attributed these differences to their experiences working and living directly with water. Because of this, several stakeholders claimed that personal experience and reliance upon water supplies had given them an ethic of stewardship, as well as a more sophisticated understanding than that cultivated by the general public.

Gil claimed that policies enacted to protect fish habitat were developed by "guys [who] go to college and read books – they've got no practical experience." He insisted that "the good Lord put the earth here for us to use and take care of it" and that as someone who had been ranching on the land for generations, he knew better than college-educated bureaucrats what entailed good stewardship.

Tony, the local fishing guide, expressed disgust with NOAA's recommended flow advisories to maintain healthy fish habitat in the watershed. He offered a similar

sentiment to Gil's: "They have young, well-educated people working for NOAA, for example, and they've got good science background but no direct experience with the resource and they're making bad decisions and doing stupid things."

Gordon also emphasized the importance of directly experiencing the water system in coming up with realistic flow recommendations for the various ACOE operated dams. He said that he spends a number of his work days on the river because "the way [this work] is done best is when you actually get out there and look at it."

In legitimizing their direct experiences and in perceiving the severity of potential water crises, several stakeholders expressed that their actions and agendas were misunderstood by the general public. Some indicated that top-down water management lacks an ethic of trust. Gil described the bureaucratic tangles of water policy as redundant and a nuisance for those who have spent years relying on the water. He protested, "When your livelihood depends on water and they can't trust a man to shut it off..." As mentioned above, Gil protested that water policy doesn't trust people to use water responsibly. He continued by objecting, "Any farmer isn't going to use more water than he has to." Joel agreed that policy makers "should trust people to look after things and take care of the land." And Matt, from Santiam Water Control District, claimed that many of the policy restrictions were unnecessary, "We only take the water we have a need for...we try to be good stewards."

It was the farmers in particular who appeared to see themselves as undeserving recipients of blame for water-related problems. Gil said, "We're getting blamed [for the fish problem] and we have nothing to do with it." Neil shared Gil's resentment in noting

that farmers were once appreciated for having “taken the desert and made it beautiful,” but are now seen as responsible for environmental problems. He objected, “Everyone always blames the farmer...the housewife can buy all the chemicals she wants and not have a license, but we’re the bad guys.” He added that on a farm one can’t operate wastefully: “you depend on the same land year after year.” Given that his livelihood requires a reliable supply of water, he suggested that sustainable, responsible water-use was a natural response to this reliance.

Various studies demonstrate that experiencing a direct connection to and reliance upon water may indeed result in a care for its sustainable use (Beatley, 2004; Norton, 2003, Nabhan, 2004). However, another result of direct reliance on water is that subsequent notions of care and stewardship may be influenced by narrowly imagined interests. Personal dependency on water can be highly influential in defining what “good stewardship” and responsible water-use are. In this case, references to personal, direct experience may also been seen as justifications for defending ones’ livelihood. Dennis spoke to this tendency in describing farmers in particular as “people who are experiencing the harshness of nature...[their] concentration is riveted on the moment.” He continued by remarking,

If I was a farmer I would be saying, please God give me one thing I don’t have to worry about! We understand what’s going on now and everything’s doing okay, I don’t count how much water I use but I think I’m not taking too much...I can’t afford to care about this crustacean, I’m just trying to make a living here.

Gwen acknowledged that Tony and a number of other fishermen were unhappy with her flow recommendations for the Santiam River, and attributed this to their own personal agendas. She stated, "What [Tony's] done this year is attack our recommendations... [Fishermen] could really care less for the ESA listed fish because they can't fish for them...[Tony] will say that I'm full of shit...and really what his interest is is creating the best boating conditions." In a subsequent interview, Tony did identify his mission to restore (game) fish numbers on the Santiam as intimately connected with his personal success: "It's a big deal for me, I'm talking life saver."

Lawrence, another stakeholder along the Santiam River, also admitted that his agenda was to enhance his own personal livelihood (and others who share it). As the President of the Recreational Lakes Committee for Detroit Lake, he said, "We want to float our boats, and floating our boats floats the economy." When we spoke, he was in the process of participating in an Oregon State University study of the income generated from Detroit Lake-related recreation. By demonstrating that many peoples' standard of living hinges upon maintaining high lake levels, Lawrence said, "it puts us in a better position to bargain."

Rob was in a unique position to comment on the relationship between a care for safeguarding water and the pressures of reliance on water supply. As someone dependent upon water for a hobby but not as a requisite needed to sustain his livelihood, he recognized that "If I made a more serious living from the water [having my water turned

off] would be a bigger issue.” As it stood, when he did have his junior water rights revoked during a dry spell, he didn’t object because, he admitted, “I don’t depend on sheep for survival.”

In comparing his own situation with his neighbors, Rob noted that the Mohawk Valley as a whole is very pro-resource extraction. Rather than a stewardship ethic, he described income generated from resource extraction as “the biggest motivator behind most people’s actions.” Incidentally, out of all of the stakeholders I interviewed who worked as farmers or ranchers, Rob expressed the most characteristic environmental ethic. When asked what he thought of in-stream flow rights, he said,

I’m in favor of them! When Mattick [the water master] came down here to shut me off I wasn’t mad, I didn’t cuss him out or anything. I can see the validity of those water rights... Whenever I get particularly ornery I think about how humans have modified the environment to make it virtually impossible for animals to live, virtually impossible. I mean taking the water out of the river to have it evaporate on the ground is one way, building roads is another. Animals can’t move wherever they want to go, roads just flatten animals right and left, but that’s off the subject...

When I remarked on his apparent sensitivity for the natural world, he explained, “I think you get interest in the environment from people who don’t depend on resource extraction for their livelihood because it’s too easy to let the motivation shift.” To illustrate this claim, he told me that one year timber prices were unusually high, so he

decided to clearcut an area of his property. He explained:

Until I started that [clearcut], my attitude toward big trees was that, you know, they're something that have lived forever and should be given their right to live and all this stuff. Well, after I started cutting trees down and sold them...and started getting these whopping checks it changed my attitude about these big trees, you know. And now I look at a tree and I'm sizing it...you know and what would that be worth...it's just a change in attitude...it grabbed me just like it grabs everybody else, the greed is just right in your face, if I needed to cut the timber for survival I would certainly have a different attitude about those big trees.

The interviews above illustrate the complex relationship between direct experience and environmental behavior. All stakeholders demonstrated understandings of water, place, and water law that are inferred to be more sophisticated than those of the general public, as well as perceptions of water as precious and of limited supply. They also indicated a care for and attachment to place and the water within places. However, as studies in political ecology often demonstrate, direct attachment to and experience of place and resources do not necessarily encourage the most responsible use of the environment (P. Robbins, 2004; Peet & Watts, 1996). I am not suggesting that environmental stewardship and resource reliance are incompatible. However, in some cases, attachments to place and to livelihoods based upon place may encourage stakeholders to continue using water in insensitive or wasteful ways, even while they defend these actions in citing their tradition and direct experience.

Blaming Others

The section above illustrates how stakeholders defended their own actions within the watershed. In addition to defending their own behaviors, stakeholders also (and more frequently) blamed others for water-related problems. Similar themes emerged in these accusations. Interviewees regarded members of the general public as contributing significantly to water contamination as well as irresponsibly using the shared water supply. Stakeholders primarily attributed this misuse to people's ignorance, their resistance to change, and apathy with respect to environmental issues.

The General Public

All of the farmers and ranchers I spoke with regarded the majority of water pollution to be caused not by their fertilizers and pesticides but by urban and suburban homeowners. As mentioned above, Gil was irate in noting that farmers are blamed for using chemicals that pollute the water when "the housewife can buy all the chemicals she wants and not have a license." He described the arduous and lengthy licensing processes that farmers are obligated to undergo in order to purchase and apply chemicals to the land. Because of this training and the experience of working on the land, he insisted that farmers don't overuse chemicals in the ways that homeowners negligently get away with. "Where does the soap go when you wash your Mercedes?" he challenged.

Ken also resisted taking responsibility for water pollution problems and placed the blame on homeowners:

I think you'll find that the average farmer, what with the price of chemicals and whatnot, won't be spraying all over the place for nothing. The average homeowner in Eugene is probably a bigger impact on the environment than the average farmer, particularly if you think of the amount of space that they take up.

Peter, from the local Soil, Water and Conservation District, saw homeowners as irresponsible in applying chemicals to their land and was upset that this behavior is rarely penalized.

Ignorant

In blaming others for irresponsible water-use, the most frequent reason offered was that these people were ignorant, or lacking an understanding of basic water issues. This incrimination emerged in nearly all of the interviews and was articulated by those with disparate careers. Within this accusation were sub-themes. Stakeholders perceived the general public's ignorance to be related to a devaluation of water and a disconnection from it.

Chris, the Willamette Basin Coordinator for the Army Corps of Engineers, described what he saw as the public's lack of awareness concerning water issues: "I don't hear enough people talking about water with respect to future growth...water is going to

be so critical.” When I asked Julie what she perceived to be some of the biggest threats to the watershed, she responded that most of the trouble was exacerbated by “a big sector of the population that don’t know anything.”

In discussing the implications of gravel mining on the Willamette River, Ken noted the “Blatant disregard, or not understanding, of what the river needs...” Later in the interview he acknowledged that “Most people don’t realize there are different kinds of soil...” and that problems are caused by “people who just don’t know any better.”

Susan reported that she had been shocked when at a recent public meeting held to discuss the future development of a subdivided property, “One person said, ‘Water might be an issue’ and people started screaming about water but [the developer] said, ‘Oh water, you’ve got plenty of water! You’ll never run out of water.’” She observed that when it comes to water supply issues and development “not many people understand [the relationship]” and that “the city thinks they’re invincible.”

Sam, the director of conservation at EWEB, noted that “being in the business we’re acutely aware of most if not all externalities and the effects that we have and how the system operates. But are our users tuned into that? Not really.” Pat, from Albany’s public water district, said, “I think people don’t realize how much water they use in a day.” Peter also implicated people’s general ignorance in the increasingly urgent problem of depleting groundwater supplies: “Many [rural residents] have no concept of groundwater and use water as they did in the city that they came from.”

In perceiving others as ignorant, most stakeholders contended that a result of this was the devaluing of the resource by the general public. While those I spoke with

emphasized a deep regard for and reliance upon water (as noted above), they criticized others for taking water for granted in ways that exploit the resource.

Stakeholders reiterated that “people don’t realize” the true value of water. Pat, the water quality control supervisor, said, “We as a society have evolved with this devaluing of water so that as it gets more expensive people get left out. The problem is that we haven’t valued it from the beginning.” Gwen asked, “How do you value water? We don’t very much, we take it for granted because it’s always been there.” Neil’s son, who also works on his father’s dairy farm, participated in the interview. When asked what he believed to be the most pressing problem facing local water supply, he responded, “I think a lot of people take it for granted.”

Several stakeholders involved in policy objected to the massive subsidization of water that has led, they claimed, to its devaluation. Dennis noted that “We’re facing a turning point where we’re going to have to value water...it’s priceless and that’s part of the problem somehow.” Pat argued that “Water in this country has been so cheap, and heavily subsidized” that people aren’t encouraged to recognize its true value. Darren agreed: “Right now people take water for granted...people aren’t willing to pay for it at this point, but it will become valuable here.”

These observations cannot be separated from the previous discussion of direct experience. It can be argued that stakeholders’ livelihoods and personal connections to water and the watershed are what engender a privileged understanding of the resource that others do not share. Stakeholders themselves acknowledged this connection. Several noted that when people don’t have visual access to water or can directly see the

effects of their actions, they have less of a concern and appreciation for it. Margolis (1996) and O'Connor (1999) both demonstrate in their studies of environmental risk perception that invisible threats, such as global warming and water contamination, incite less concern than risks that are more highly visible.

Susan explained, "When [people] don't see low flows anymore they think it's fine. Everyone now thinks it's not an issue anymore because they don't see it." Sam suggested that one reason EWEB has been spared a lot of public condemnation for their large water usage is because people don't see the company's impact on the river: "We're a little more out of view as far as our impact on the river goes." Peter, whose largest concern is the rapidly depleting groundwater supply, contended that it has become such a serious issue because people can't directly see the groundwater supply: "People don't see it and they don't understand it."

For those not engaged directly in water resources, the whereabouts of water can often be a mystery. We can turn on the tap and obtain as much water as we please whenever we choose. We pour water down our drains and rarely wonder where it goes. Pat posited that as we get more urbanized: "We become more and more disconnected with where water comes from...it's not an infinite resource." Neil suggested that urban residents, unlike farmers, don't realize the relationship between water systems and environmental behavior: "[To them, the toilet is] like Houdini – the water just disappears and people don't have to think about it..."

Resistant to Change

In addition to perceiving others as ignorant, a second accusation made by stakeholders was that water problems stemmed from and were exacerbated by people not amenable to changing old ways of doing things. This allegation came from interviewees who were in policy or science careers and never from those who depended upon resource use or extraction.

Sam suggested that sacrifices are going to be inevitable but unwelcome:

I think we're in a phase of development as a society where we're bumping up against the image of ourselves as well, we're pioneers...we don't want to pay for that infrastructure anymore...don't want to pay for it as it rots away, certainly not for the infrastructure that other people need who are coming from somewhere else, even though I was one of them once.

Gwen criticized water stakeholders in particular for being unwilling to make sacrifices: "Just because you've been taking your water for the past fifty years, there's not always going to be enough when everyone takes their water and discharges their sewage." Sheila described people in general as being resistant to change. She said, "If we look back over millennia, we as humans have always been this way, greedy and self-interested." Eric said that one of the most difficult aspects of his job as a watershed coordinator was encouraging people to try new ways of doing things: "The thing is you have to convince people. We all know that change is hard. It's difficult."

Predictions of regional water conflicts imply that sacrifices will be inevitable. In that some stakeholders appear resistant to changing their traditional ways of working with

the land and water, it may be useful to explore these areas of resistance. What does encourage people to try new things and to take risks? It will almost certainly be easier to make changes earlier rather than later when there is less room for negotiation or creativity. Several suggestions for successful collaborative planning emphasize the importance of compromise and applying the precautionary principle in environmental decision making (Gregory, 2000; Tuxell, 2003; Sinclair, 2004).

Environmental Apathy

A third way in which stakeholders implicated the general public as responsible for water problems was in perceiving others as lacking in environmental and political initiative. Several stakeholders responsive to local politics argued that even well-educated citizens demonstrate a general environmental apathy with respect to water issues.

An example of this is the purported lack of involvement from the local environmental movement in safeguarding local aquatic species. Gordon, the fish biologist for the Army Core of Engineers, expressed confusion as to why his agency rarely hears from people with environmental agendas. Being a public agency, the ACOE receives feedback on their operations from the public and government officials. The recreation industry lobbies aggressively to have their interests met, and involves their Congressional representatives in advocating for limited releases of basin water during months when migratory fish are spawning and require larger instream flows. But despite Oregonians' apparent affinity for and identification with wild salmon, Gordon expressed

frustration that he has “never had one person say, ‘We support your efforts to protect ESA listed fish.’ Never, ever! We don’t hear from that community...This is a public agency. We need to hear from people. We hear from recreation interests all the time but environmental groups are suspiciously absent.”

When I asked Gwen if she ever hears from environmental interests when writing her biological opinions, she replied, “Not in the Willamette. In the Willamette the environmental community has been very quiet and I’m not sure why.” If it was a more actively involved interest group, she said, “It would help immensely.” Tony, the fishing guide, also criticized the lack of environmental involvement on behalf of aquatic species. He said, “People who are environmentally responsive need to be making their opinions known or the only people they hear from are those who benefit from power generation.”

Both Jess, who works for the Rivers Council, and Gordon, ACOE’s fish biologist, seemed to agree that local environmental interests appear to be more focused on forests than on waterways. Gordon told me, “The environmental groups around here just don’t get it...they’re not in tune with water issues. They’re more involved in old growth issues...if this was the Columbia River we’d be sued by both recreation and environmental interests.” And Jess observed, “What I’ve noticed is that a lot of the organizations don’t talk about water issues. It’s more about logging and the spotted owl.”

This purported lack of environmental participation in water supply issues may be an effect of the discrepancy between a normative view of water abundance and the perception of water as a precious and limited resource, both of which are influenced by

the ways in which people perceive place. However, these criticisms of environmental movements and activists may also be posited by stakeholders as a way to avoid taking personal responsibility for water-related problems.

Conclusion

Stakeholders defended their traditional uses of water within the watershed and justified these by alluding to their reliance upon and attachment to water and place.

Though it may be that deep connections to place at times do inspire an ethic of care or stewardship toward places and the waters within them, attachments to place and to traditional place-based livelihoods may also prevent people from making changes that would be more ecologically sensitive or benign.

In describing others as responsible for water-related concerns, stakeholders often portrayed people as one dimensional characters rather than as complex figures with individual needs and desires. Gregory (2000), in discussing the successes and shortcomings of environmental management projects, posits that democratizing public participation in these processes is essential. However, "decision makers' access to tools for deeply understanding the concerns of community residents, technical experts, or interest groups and for incorporating objectives and tradeoffs effectively as part of policies or legislation has not kept pace with the rhetoric of public involvement" (p. 35). Because of this, stakeholders' tendencies to dehumanize other watershed members may inhibit necessary collaboration efforts.

In Chapter Four I explored the ways in which stakeholders perceive water, place and related problems. Chapter Five extends this analysis, in investigating how these discourses are justified and prioritized over others. In claiming that their perspectives of water and place are more accurate than those of the general public, stakeholders emphasized their direct experiences of working with water resources, and described others as poorly informed, devaluing, and disconnected from water, unwilling to make changes, and demonstrating environmental apathy. The following chapter describes the suggestions offered by stakeholders, as well as their involvement in making positive changes.

CHAPTER VI

SUGGESTIONS

Just as stakeholders expressed concern for current and future water issues and criticized others for irresponsible or negligent water management and consumption, they proceeded to offer suggestions for remedying these problems. This chapter presents these suggestions, with the understanding that mitigations offered by stakeholders may be realistic and acceptable guides for collaborating over water issues.

No stakeholders implicated the system of western water rights as responsible for water-related problems. I asked each stakeholder if he or she was satisfied with the current system of water rights. Several voiced minor complaints, but no one indicated a preference for a complete overhaul. As noted above, Gil was primarily concerned by a lack of fairness in the application of water law, but did not find this to be a fault of the system itself. He argued, "If they're going to have their water policy, have it be fair to everyone and if a person hasn't irrigated for five years then they lose their right. Treat everyone the same." Gil also expressed distaste for recent provisions in Oregon's water laws that safeguard aquatic species. Sheila and Gwen were the only respondents to question the system of prior appropriation, and even this was done mildly. Gwen, for example, noted, "The whole 'use it and lose it' is kind of a weird concept anyway; you don't want people to use it just so they don't lose it."

Others expressed allegiance for the current system. Darren told me, "I love our doctrine of prior appropriation." Larry said that some people are suggesting that the laws should be overhauled but that "I have a personal belief that it works great...I don't know how to reverse a hundred-year-old system."

Perhaps the task of changing such an old tradition seems virtually impossible, which may explain why more respondents did not criticize the current system of water rights. Darren alluded to this in noting, "I think we're kind of trapped by the ways the laws are written and how everything has developed." Barry agreed. "What would it take to change?" he asked, "Probably a civil war! It's like saying now the state of Oregon owns everyone's house and that you have to get out of it." The system of water rights may be regarded in this case as having hegemonic power, in that its system of dominance has become so naturalized that undermining it would counteract "common sense."

Rather than object to the structure of western water rights, stakeholders offered mitigations that could be initiated within the current system. These included increasing public education, relying upon scientific evidence, cultivating an ethic of responsibility, collaboration, technological advancements, political advocacy, and offering economic incentives

Education

Education was the most frequently cited suggestion offered by interviewees to address water-related problems. Just as they emphasized the general public's lack of awareness or ignorance concerning water issues, stakeholders suggested that this could be

remedied by appropriate education. The common assumption behind this suggestion was that increased knowledge will lead to a change in behavior.

For example, Gwen regarded education as an effective tool for change:

There are a lot of cases where I think that people in the watershed need to really understand what's going on out there and figure out if they really want things to change and if so, that its going to come down to them making individual lifestyle changes.

Gordon agreed that education would be crucial for resolving water-related problems: "Every egg spawned below Dexter dam this year will die...It's going to continue until folks understand, care, and want to do something about it ...there's got to be a better job of educating people."

Tony contended, "If people are taking water out of the river that is hurting other users, people need to know about it." He claimed that otherwise, nothing would be done to change the situation. In addition to educating the public about basic water conflicts, Tony also identified a need for education and research at the university level: "We should have universities studying these problems and learning how to treat and store Willamette River water."

Sam described older citizens as less flexible or willing to make sacrifices than younger generations. Because of this, he believed that educating young people about issues of water scarcity and future compromise would be crucial in resolving future water problems. He expressed this hope: "I work with students every year and am thrilled to be around younger people who are starting their careers. It helps my sense of optimism."

While these stakeholders regarded education as a possible solution to water-related problems, several had proceeded to take this task upon themselves. Sheila, for example, described her work leading workshops on rainwater harvesting as precipitated by a desire to educate the public about water issues: "I decided to try and figure out ways I could encourage awareness about water issues so that we as a society are more aware of the realities of water issues...you can go so many places with that."

Susan regards her watershed council as a vehicle for providing education to the local public: "If we can educate communities with respect to their role with respect to water-use...if we can show people the potential outcomes for the decisions they make...they can begin to think about it." Pat also said that a large part of her work for the city of Albany's public water system was to provide this: "People don't realize, so we do education and outreach."

In that stakeholders were unanimous in attributing water-related problems to the general public's ignorance, it follows that they would suggest education as a way to remedy this problem. But what does it mean to educate? Providing information with the intention to motivate or change behavior may appear to be a benevolent act but has an implicit agenda. As helpful as education may be (and I discuss this in greater detail in Chapter Seven), in order to honor students' autonomy, it is important that it be as inclusive, democratic, and un-biased as possible.

Science

Another suggestion offered by several stakeholders, closely related to that of education, was an increased reliance upon scientific evidence in making water-related decisions. These stakeholders suggested that the type of information needed to educate the general public was scientific data, which in these cases was regarded as an objective, uncontested view of ecological reality. Any changes or projects initiated within the watershed were only considered to be useful if authorized by scientific studies. Susan illustrated this vision in discussing her work: "We need to decide what the ecosystem needs depending on what the science tells us."

Gwen relied upon scientific evidence as well in defending her flow recommendations for the Santiam River. She reported that Tony had challenged her figures and she responded to this accusation: "He's trying to contest the science behind our recommendations and that's not acceptable, like if you want to bitch about the issue that's really close to your heart, go for it, but don't use that." Chris agreed with Gwen's complaint, and in so doing referred to science as a value-free discipline, noting that Tony "confuses biology with what's good for fishing." Julie also suggested that science should have the final word when it comes to water-related conflicts and issues: "Yeah, sometimes there are misconceptions, between data and what people say anecdotally, because it can be one person's word against data."

Jess said that the River Council's work is powerful in that "We don't make our arguments around a passionate perspective. We make our arguments with science and law. That's our tool, so it's hard to get angry at that." She regarded using science as an

effective way of achieving environmental goals: "This gives the guys on the ground the tools they need to hold up to their superiors to say, 'Hey this is what the science says, we can't log here because it's a slope over ten-percent grade.'"

These stakeholders indicated that science gives environmental endeavors their credibility. Pat told me that she had recently been criticized by local farmworkers after publicly announcing that fertilizers impacted the water supply, without backing up this claim with scientific evidence: "If you suggest that to any of the growers, it's really bad. We get our heads cut off. They say we don't have the data, which is true, we don't have the data to back it up."

Other interviewees noted that the lack of scientific evidence hampered them in proceeding with their projects. Julie observed that though "We have good, scientific, hard data that says we have a lot of problems in the Willamette basin," one of the largest obstacles in her work is the absence of scientific information regarding cumulative impacts on the water supply. Because of this lack of "hard data," the DEQ has a difficult time enforcing certain restrictions. The tardiness of the biological opinion for aquatic species in the watershed, referred to in Chapter Five, is another example of how the absence of a scientific perspective can delay or halt necessary changes.

The above stakeholders referred to science as neutral and not influenced by emotive factors. The weakness with this argument, however, is that science can be used as a justification to proceed with any action, regardless of its environmental, emotional, or social consequences. While appearing to be value-free, it may be used to achieve particular agendas. In addition, the stakeholders most enamored with science's ability to

reduce water-related conflicts were in policy or administrative positions. Other stakeholders predominantly referred to their direct experience (rather than scientific legitimacy) within the watershed to justify certain behaviors. Because of this, using scientific evidence to encourage policy or management changes may not always garner popular approval.

Ethics

Several stakeholders described a commitment to community and place as necessary to adequately address water problems. This commitment was articulated in a number of different ways (as a cultivation of an environmental ethic, as a sense of stewardship, as “the right thing,” etc.), but one fundamental feature of this reworked relationship to place was that it entails some form of personal sacrifice. For example, Gwen referred to the multiple and conflicting uses of the Santiam River:

I just want to shake the people in the city of Salem. They’re the same people who want to go up to Detroit and drive their ski boat all around and then go home and turn on the tap and have water for their children. You know, you can’t have water everywhere guys! And they want to go out in the summer and fish for summer steelhead well into September, it’s like, you can’t have it all, it doesn’t work like that!

Gwen believed that the only way to encourage sustainable use of water, in this

case and more generally, was for people to “realize that their value system is driving what’s happening.” According to Gwen, the willingness to make personal sacrifices would naturally accompany this realization.

Stakeholders who perceived sustainable water-use as resting on the development of an environmental ethic often expressed a faith in people’s capacity to contribute to a cause greater than their own. In describing a clear-cut that he commissioned, Rob said that when he asked the loggers to save certain trees they were surprisingly amenable. He said, “I think the ethical consideration always clouds, clouds the judgment of loggers even.” Sheila also indicated that people are generally interested in working for a greater cause. When I asked her why her clients were interested in purchasing rainwater harvesting systems, she responded that the principal reason was, “Most people are wanting to do something for the greater good.”

Several used the term “stewardship” to describe an ethical alternative to current environmental irresponsibility, while others were more general in advocating for the “right thing.” In describing the role of watershed councils, Susan said that she has lost hope in them ever recovering salmon, but said that they “inoculate the community with a sense of ownership with the land they live on. They inspire people to be really good stewards.” Later in the interview, she referred to a power-laden ethical imperative that watershed councils help provide: “[People] can do the right thing. They just need someone telling them what the right thing is.” Ken described his own restoration efforts

as “just the right thing to do,” and later observed, “It’s amazing what a few dedicated people can do, to change what seems like the inevitable outcome of this plunder mentality.”

Like Susan’s belief that watershed councils can help foster a greater care for the larger environment, other stakeholders advocated for certain initiatives that would encourage others to cultivate an environmental ethic, or sense of responsibility. Jess contended that “it takes starting at a very young age to instill a conservation ethic,” and suggested that exposing children to conservation principles would serve to inspire them. Pat observed that the general public still has a long way to go in embodying a more ethical position with respect to water: “Even here there are water issues in the summer and the letters to editor saying that brown lawns are embarrassing – I’m proud of that! It shows a conservation ethic.” In order to incite this type of behavior, both she and Gwen advocated for water policies that offer conservation incentives. Gwen said, “I wish that water resources would require cities in their master plans to have conservation policies. Why should they assume that people can water their lawns all the time?”

As noted above, despite population increases, municipal use comprises only a fraction of water-use. Because of this, one question to ask is: can conservation at the local level actually be beneficial or does it primarily serve to make people feel good about themselves? Stakeholders emphasized that people do want to work for the greater good. Deep ecologists and other environmental philosophers would agree that acting on behalf of the greater earth does in fact bring meaning to life (Leopold, 1987; Naess, 1990).

But perhaps even more compelling is the role of power dynamics in defining what is “right” or “ethical” behavior. Stakeholders indicated that they knew best what a water ethic would look like. As self-proclaimed authorities on the subject, they suggested that if others were better informed or educated, they too would adopt a similar ethic. It is in this tendency to normalize a dominant ethical view that hegemonic ideas and concepts are solidified.

Collaboration

Another suggestion that several stakeholders offered to help remedy water allocation conflicts was that of increased cooperation and collaboration among members of the watershed. Some noted that whether they are aware of it or not, most people with stakes in the watershed all have a similar goal: they want clean, abundant water. Because of this, Sam suggested that “There’s a tremendous capability, to look at the synergies and get hooked up. There might be a win-win for fish, for agriculture, who knows?”

Gwen perceived no conflicts between people’s ultimate goals, but rather with the ways in which those goals are articulated and prioritized. This was especially relevant to her endeavors to maintain and restore fish stocks. Though her work has been fraught with objections from differing stakeholders (as noted above in the previous chapters), she observed, “You ask people what they want and they’re like, well of course we want fish!”

Julie, who works with a number of different interest groups for her DEQ projects, agreed:

I think there's a lot of perception of conflict between different community groups, but when I've sat down to talk to people they're on the same page. No one wants negative water quality impacts, people want to do the right thing. I just think there are perceptions that whatever language or actions people use may not be in the same lines as protecting water quality because they don't know what that really means. When it comes down to it, they all want the same thing.

Jess reported that recently her organization's press releases began including quotations from people who make their livelihoods in the organization's project areas, in order to illustrate that "we're all in this together." "It was amazing," she said, "that people didn't make that connection on their own."

A single community sharing both common goals and a common sense of place was seen by many as a potentially powerful agent of change. Watershed Councils, supported by the Governor's Watershed Enhancement Board, are perhaps one of the most innovative and successful non-governmental organizations that are involved in Oregon's water issues (Faucera, 2005). The watershed councils are comprised of volunteer citizens and members of different local governmental and non-governmental agencies, and they engage in education, restoration, consultation, and coordination projects to enhance the water quality and conditions of their respective watersheds (University of Oregon, 1999).

Susan described the role of the watershed council as helping to illuminate the potential for this kind of place-based collaboration. She said that watershed councils encourage public participation in land management, and that they are particularly effective in garnering support when they focus their energies on a specific task. In describing a recent endeavor, Susan said, "Everyone's trying to cooperate, work together, work with a number of government agencies, Audubon, Nature Conservancy; it's all coming together because of this project."

Michael, another watershed council coordinator, agreed that the watershed council "can be a huge help because it's not a regulatory agency...people can work together and good things can happen." He attributed all of the progress they've made in the South Santiam watershed to cooperative community efforts. Joel also spoke positively about his involvement in his local watershed council. He initially joined because he claimed he was "afraid of what they'd do," but has been pleasantly surprised by the opportunity to work collectively and have his voice heard.

Watershed councils were regarded as positive agents of change primarily because of their ability to work cooperatively at the grassroots level. Michael and Susan were both inspired by the cooperation and collaboration that they witnessed among diverse members of their respective watersheds. Though noting that "Nobody wants to be the first in a collective action project," Michael had found that once a few community members began to make changes, often others would eagerly come on board, and would indicate pride and ownership in conservation or restoration-minded projects.

Others not affiliated with watershed councils also referred to the powerful role of cooperation in working with water issues. Darren said that one of his favorite aspects of his job at ODWR is working cooperatively with different stakeholders. Back in the mid '80s, he developed a request to the ACOE with suggestions for operating one of their dams: "In that process I got to work with a lot of water issues in the Willamette, the ag, the recreation, the munis, the fish folks." He described it as "a great exercise... It's been great as far as cooperation from all the different players... I think we do a very good job of coordination and trying to take care of different water-user groups in the system."

Darren also suggested that hope in resolving future water conflicts lies in the ability of community members to work together, and referred to what had recently unfolded along the Long Tom River. Due to a paucity of rainfall the previous winter of 2005, people feared that by summer, water-related conflicts would proliferate within the Willamette watershed. Long Tom River, which flows from Fern Ridge dam, harbors a number of different interests. Agricultural and residential lands line the banks of the river, and their owners often compete with the reservoir's recreational demands. In addition, the Long Tom River, though home to many aquatic species, does not hold in-stream water rights. Because of this, on water scarce years the river can literally be sucked dry by homeowners and irrigators. Citizens feared that the unusually dry winter of 2005 would result in disagreements between competing irrigators, as well as massive fish kills.

Faced with these concerns, members of the Long Tom watershed worked together to avoid these potential conflicts. Darren reported that farmers worked out informal

watering arrangements, taking turns watering their fields. Others, including the local water master, enlisted Oregon Water Trust to temporarily lease some water rights from Long Tom users, which they then held in-stream. Darren said that despite the unavoidable situation of increasingly scarce water supplies, he found this story to be encouraging: "That's one reason I'm optimistic. Because everyone is willing to try to make things work."

Water, as something that each being requires, may be a source of conflict and contention. But in that it is something members must share, it can also provide a sense of belonging to place and community. Julie said that one of the reasons she loved her job at the DEQ was because "One of the things is that you feel part of the community of Oregon. It's apparent to me that I'm a public servant and making sure that water quality is protected in Oregon, and water is especially important in Oregon." Stakeholders' stories about community collaboration are a reminder that the cultivation of a "sense of place" is not reliant on just the natural world. Harvey (1996), Mitchell (2000), Berry (1981), and others include social communities, pressures, and interactions as an important facet of place. Affinity for as well as aversion toward other members of the watershed may influence peoples' attachments to place, as well as their willingness to collaborate.

Technological Advancements

Several stakeholders suggested that water problems could be best addressed by applying technological advancements. For a few respondents, this meant building more infrastructure. Faced with increasing scarcity and demand, Dennis, Matt, and Tony all

identified a need for more storage and transportation facilities. Dennis said, "Eventually I think we're going to need more storage somewhere...people hate dams, but I think we'll have to put another one in there." He noted that additional infrastructure, such as canals and pipelines, would also be an important necessity: "You'll see more and more people coming to the Willamette, because that's where all the water goes...other tributaries are going to dry out, and that will require big infrastructure...which you haven't seen yet in Oregon."

Tony suggested that "They need to learn to treat Willamette River water and store it," and Matt said, "I'd like us to take a look at more storage facilities...There's always an opportunity for new storage sites, something that would provide for new water, stored water, and would address other needs."

For others, relying more heavily on technology implied increasing the efficiency of current storage sites and infrastructure. Larry contended that dams are expensive and that there is no government money to help subsidize them. He expected the most dramatic changes to be modification of existing storage facilities. Sheila was adamant about the benefits of efficient water-use in helping to solve water-related problems: "Seventy percent of the world's water is used for irrigation, and it's one of the least efficient uses of water. Just a bit of greater efficiency would make a dramatic difference!"

Sam also identified technological means of increasing water-use efficiency as crucial in addressing the city of Eugene's increasing municipal water demand. Because Eugene's Water and Electric Board (EWB) has so many senior water rights, their

question is not if there will be enough water, but if they have the physical capability to treat and distribute it for more consumers. Sam framed the dilemma, "Do I build a second restaurant because a few days a year there's too many people? I don't think so." Instead, the water board hopes to encourage citizens to conserve more water in months of high demand. Sam predicted, "I think you're going to see, well certainly it's my interest and bias, but I think people trying to using technology in alternative approaches to round out."

In the age of dam building, thousands of large and small dams were built with little regard for the natural ecosystems they invariably affect. As the ecological consequences of dams become more fully understood, restoration efforts have proliferated and dam removal has seen increasing support (Doyle & Stanley, 2003). Combined with the lack of both federal money for and public interest in creating new infrastructure, this may imply that acceptable technological means must instead address issues of efficiency and innovation.

Political Advocacy

Political advocacy was another suggestion offered by stakeholders to remedy water-related problems. These stakeholders, all of whom hold or held positions in public policy, urged the public to use political leverage to influence positive changes. Gwen said, "There are a lot of cases where I think that people in the watershed need to really understand what's going on out there and figure out if they really want things to change." If so, she continued, "People need to realize that their value system is driving what's

happening and a way that they relate those values to their political appointees makes a huge difference.”

Tony, the fishing guide, encouraged people to be more politically involved in order to manifest positive changes: “People who are environmentally responsive need to be making their opinions known or the only people they hear from are those who are those who benefit from power generation.” He described his own activism: “Six to eight of the Army Corps engineers are on my weekly email list” and until recently he had been included in their weekly conference call.

As noted above, Gordon observed that the ACOE does not receive feedback from all interest groups and said, “This is a public agency...we need to hear from people.” He urged other stakeholders to get involved in water politics: “People need to be galvanized and act...other groups do it...we get letters from politicians who have been targeted by recreation interests all the time.”

The recreation industry was cited as the primary interest group that state politicians hear from concerning local water issues. Gordon contended that because of its heavy political clout, other interests have been underrepresented. “[Recreation interests] have a strong card to play. What do the fish have?” he asked. Darren at the DWR claimed, “Whether they have water or not, recreation is huge.”

This political leverage has won the recreation industry some large successes. Darren said,

The sailboaters at Fern Ridge, they’ve got DeFazio’s ear pretty much and so when the Corps messes with Fern Ridge, they hear about it. And Detroit

Reservoir, I mean Detroit's a big-time recreation lake and so yeah when we start using too much water from Detroit people just scream bloody murder.

Darren noted that because of their persistent letter writing campaigns and relationships with politicians, Detroit recreation interests managed to pass a law obligating the WRD to rank recreation as the number one priority in that area. Yet Darren acknowledged, "None of the water is really allocated to recreation. They just get what's there at the time and they pull a lot of clout." Later in the interview he said frankly, "This is politics. Detroit is the second largest reservoir in the system and to keep it full we sacrifice other reservoirs."

Darren pointed out that all government agencies are responsive to public pressures, and that other interests could benefit from having a louder voice: "We've got ODFW, NOAA, [and other environmental agencies], but they're feeling the political pressure also... None of us are immune to political pressure."

Lawrence, whose committee represents Detroit Lake's recreation interests, described political lobbying and networking as a major part of their campaign: "During the month of August I'd be writing letters to the Corps of Engineers to ask for less water releases." This has been met with success: "The Corps has worked great with us and in the past have put in an extra foot and a half of water into what they store." He noted that his interest groups also "do work with our legislatures to address these issues...they attend our meetings...we try to have a good political connection to try to keep people advised as to what is going on."

It appears that other interest groups could benefit from using some of these strategies. Jess wondered if one reason the environmental movement has been losing ground is because they are not politically savvy enough: "We're just not speaking the language of the American public...maybe because your colleagues always talk about the ESA under attack, but if you listen to most people's conversations you don't hear that."

Though political advocacy and engagement may be a useful area of mobilization, it must be noted that political representation is also a function of finances. The income generated by environmental groups is far less than that generated by the recreation industry. As campaign finance in the United States demonstrates, money can often be a larger asset in achieving goals than loud voices. In addition, there may be other reasons that recreational interests have more leverage with political decisions concerning water allocation. Recreation not only generates income, but the industry helps perpetuate the image of the Pacific Northwest as a place rich in water and wildlife. Ironically, sustaining this image may be more influential than ensuring that the actual habitat and waters within the watershed are protected.

Economic Incentives

A final suggestion that several stakeholders posited for dealing with water-related problems was to look for economic incentives. While some stakeholders perceived the market as a potentially useful tool, many others indicated that whether positive or negative, the role of the market would inevitably become increasingly visible as water supplies diminish.

Several stakeholders described ascribing greater monetary valuation to water as a key to encouraging conservation and responsible use. Jess, Gwen, and Pat all identified the massive subsidization of water as contributing to a public perception of it as worthless. For example, Jess said, "If we realized what it really cost to get clean water then of course the price would go up." She continued, "I do think that more accurate pricing would help it...I take long hot showers, I have a drip in my faucet that I haven't fixed, it's cheap out here, water and energy."

Pat agreed: "You can't say, 'I value water' and then 'give me a quarter.' If water's cheap they'll think it's valueless." She described her experience living in an Alaskan village where she had to haul water to drink, cook, and bathe: "That was in a village in Alaska, but I think I've been thinking more about it since working here because I've had to convince people that it's okay that water is expensive."

Lawrence also noted that ascribing monetary value to water could result in greater concern and responsibility for its use. He contended that by illuminating the economic impact of low lake levels to the Detroit area his committee would gain political leverage: "We want to float our boats, and floating our boats floats the economy."

Though these interviewees did attribute irresponsible behavior to the unrealistically low price of water, Jess and Pat expressed concern that if the cost of water increased with increased demand, issues of equity would have to be addressed. Jess insisted that if water were to be priced more accurately, there would have to be programs in place that subsidize it for those who can't afford to pay.

Pat said that after Albany raised its water rates she received a slew of phone calls from people complaining about the high cost. She claimed that water should be priced more accurately, but acknowledged that “we as a society have evolved with this devaluing of water so that as it gets more expensive people get left out.” Because of this, she developed a low-income water assistance program that takes a surcharge from everyone’s water bill to then subsidize the resource for low-income residents:

When rates were raised we had a lot of people call who were low-income, disabled, [etc.]... who had budgeted and didn’t have that extra money, so it became more of a survival issue... We suggested a social program and this was poo-pooed by the engineers but there was so much demand for it, we developed a low-income water assistance program.

The subsidized cost of water does contribute to a devaluing of its true worth. But placing a high monetary value on water makes it available to only those who can afford it. Perhaps pricing water more accurately would lead to more responsible consumption, but at the municipal level I would anticipate that the gains would not outweigh the subsequent inequities. Stakeholders did not discriminate between industrial, irrigation, and municipal uses of water in suggesting that it be priced more accurately. This appears to be a significant omission in that irrigation and industrial uses tend to be both the most inefficient and the most subsidized water withdrawals. In addition, the commodification of water implies that it is not a common good, which can lead to water being enjoyed by only those who can afford it. This is an area that can be explored more deeply, given that several stakeholders predicted that the increasing commodification of water would be

inevitable as supplies dwindle. Though not offered as a solution to water-related problems, several stakeholders anticipated an increase of water marketing in the region. Below I offer their descriptions of this phenomenon.

Water Marketing in the Future

As stakeholders predicted an increasing demand for water amid decreasing supply, they often speculated upon the changing role of the market in settling water disputes. A possible implication of the dominance of a capitalist-expansion mythology in the context of water scarcity is the increasing commodification of water at the expense of other users and the environment. Dennis alluded to this: "We're facing a turning point where we're going to have to value water. We're in Oregon! How do we maintain identity and maintain community and pay for something we haven't had to pay for before?"

As noted in the introduction above, western water laws were founded in order to prioritize economic growth and development, and thus encourage private ownership and commodification rather than notions of sharing and conservation. This legacy was recognized by several of the interviewees, who predicted that increasing commodification of water would be an unavoidable result of increasing scarcity.

For example, Darren observed,

If for some reason people in cities couldn't water their lawns, couldn't flush their toilets, the legislature would be under a lot of pressure to find a

solution...What's more likely to happen is the good old American tradition of money, people who want water rights buying out other people.

Ken also suggested that water marketing would increase as supplies diminish:

One of the changes, I think they're doing it some now, the WRD is putting meters on wells to monitor the usage and flow and they haven't asked me yet, but that concerns me, because then the next step is they'll start sending you monthly bills just like an electric meter and going out and seeing what you're taking from your well...The way I see it the water is attached to the land and I could see the state changing that so that we buy water from the state basically. I could see them moving that way because there's too much money involved. There's too many people at the state level who would like to get their hands on that money.

One of the possible implications of increased water marketing in Oregon is the capacity of municipalities and industries to buy out farmers for the water rights attached to their land. Larry, an engineer for the Army Corps, discussed the recent evolution of these market-based water transfers and observed that "There's a lot of resistance to that in agriculture because they believe in family farms and tradition...but it's eventually going to get all over the state because it has to." He said that the implication of this is that "People with the money are going to control the water...I find it frightening too, but you have to have water for people."

Though many stakeholders appeared uncomfortable with the increasing commodification of water, similar to their acceptance of water law and policy, there was

little resistance to the dominant role of capitalism in water allocation and supply issues. For example, Darren at OWRD initially balked at the prospect of water as a commodity: "Then you have water going to who has the most money," but then admitted, "But you know, we're the United States, that's the way it's supposed to be!" Larry also alluded to an unquestioned faith in the market, undermining the notion of water as a common good. In discussing the possibility that cities may increasingly buy out small farms to acquire their water rights, he said, "Maybe it erodes away the marginal agricultural operations. Maybe if you were a purist you'd say they don't have any business being there anyway."

And though the commodification of water may become increasingly apparent as competition for the resource increases, for many, water is already considered as something to be bought and sold. Chris, at the Army Corps of Engineers, when asked how water should be distributed, said, "We'll give water to anyone that can pay."

Conclusion

In that stakeholders perceived water and the watershed to be at risk, they were eager to offer suggestions for mitigating anticipated and occurring water-related problems. Though they indicated little resistance to the hegemonic systems of western water rights and capitalism (in its ability to privatize water resources), they suggested a variety of ways to approach water problems. The most frequent were those that I presented above: educational programs, reliance on science, an enhanced sense of ethics, community collaboration, technical and economic incentives, and political leverage.

Perhaps most noticeable was that many stakeholders, though encouraging others to change their water related behaviors, were not eager to change their own. While some of the interviewees (primarily those who worked in policy or non-profit jobs) chose water related careers in order to proactively address issues of scarcity and allocation, others (primarily those whose livelihoods were based on resource extraction) did not make personal sacrifices or spearhead their own suggestions. Their direct experiences within the watershed and their extensive knowledge of it give their suggestions credibility and value. However, it appears that these stakeholders, as concerned as they are for the future of water within the Willamette watershed, are also benefiting from the system of water rights as it now exists. For them, their relationships to place hinge upon their traditional uses of the water, and thus their suggestions to remedy problems and conflicts were directed at other people rather than serving as reflections upon their own behaviors. This being so, what elements of the proffered suggestions can we learn from and apply, and what are some ways in which stakeholders themselves may agree to make sacrifices and to collaborate with others? The concluding chapter that follows addresses these questions.

CHAPTER VII

CONCLUSION

This chapter first provides a summary of the findings and discusses the limitations of this thesis. Subsequently, I reflect on the relationship between sense of place and risk perception as it applies to this case study. Given that place and risk are both social constructions, subject to power dynamics, I explore who benefits from the articulated conceptions of these concepts and why. I then discuss the two most frequently cited suggestions offered by stakeholders to remedy water-related problems: education and collaboration. I conclude by introducing two pertinent issues not offered by stakeholders: global climate change and the commodification of water resources.

Summary of Findings

Around the world, water's existence as a limited resource has incited conflicts and competition. Implications of global climate change and increasing human populations threaten already delicate situations wherein ecological and human needs compete for finite resources. Despite its rainy reputation, even the Pacific Northwest faces water allocation and scarcity problems. Given that water scarcity is a legitimate environmental

concern in this region and that collaboration will be increasingly important, my study examined the perceptions of local residents with respect to water issues and perspectives of place.

My interviews with twenty-five identified “stakeholders” in the Willamette watershed’s water supply indicated that there are a number of ways in which residents understand and perceive water, and that these relate to the ways in which they understand both environmental risk and place. These people regarded water as precious, and predicted that its limited supply would inevitably incite future conflicts or necessitate collaboration.

Stakeholders emphasized heightened understandings of local water issues and related this to their direct experiences working with specific water bodies and regions. They displayed an impressive depth of knowledge pertaining to the geographic ways in which water moves in the ecosystem, its changes over time, and the complex relations of western water policy, which can almost certainly be attributed to the large role that water plays in maintaining their livelihoods.

Stakeholders fiercely defended both their physical water sources as well as their water rights, and indicated a sense of private ownership that became increasingly vehement in the face of dwindling resources. They defended their own uses of water and expressed resistance to change (this was particularly the case with the ranchers, farmers and recreators). They described those not directly involved with water resources as ignorant and irresponsible users of shared water sources, disconnected from and

devaluing water. Local environmental movements and organizations were specifically accused of not addressing or confronting water issues within their work.

In addition to their concern for current and future water issues, stakeholders proceeded to offer alternatives for remedying these problems. No stakeholders directly objected to the system of western water rights, but instead offered mitigations that could be initiated within the current system. These included increasing public education, relying upon scientific evidence, cultivating an ethic of responsibility, community cooperation, technological advancements, political advocacy, and offering economic incentives.

Limitations

This study has several limitations. I spoke with twenty-five stakeholders, all of whom have a direct relationship to waters within the Willamette watershed. In that I did not interview members of the general population who do not work directly with water, I can not assume that the perceptions voiced by my participants are different than those held by non-stakeholders. In addition, when selecting stakeholders, I did not explicitly control for other variables that may influence "sense of place" or perceptions of risk, such as age, number of years living in the watershed, race, or gender. I did, however, note these relationships in the process of analyzing my data, and they did not significantly influence my results.

Another weakness in this study is that I identified dominant ideologies, such as the legacy of the Western frontier, primarily by investigating literature, popular media,

and academic sources. In that I did not interview a large sector of the population, I can only assume that stakeholders' references to these ideologies reflect a dominant paradigm that exists apart from these sources. I also recognize that in the process of describing these perceptions as dominant ideologies, I contribute to their reification, as well as reinforce a dualistic visioning of place and region.

Sense of Place and Risk Perception

This thesis claims that risk perception and sense of place are interrelated concepts, in that they are both influenced by direct experience, emotional attachment, and enhanced knowledge. Every stakeholder described a connection with and affinity for place, as well as perceived water scarcity to be a legitimate environmental concern.

As noted in the introduction, the ways in which people relate to and understand places are often correlated with the depth of understanding, as well as the level of commitment, they have toward these places (Norton & Hannon, 2003; Beatley, 2004; Eisenhower et al. 2000). For many, a developed "sense of place" involves an intimacy with the physical and emotional human and non-human community. Almost all of the stakeholders indicated an appreciation for and attachment to their immediate surroundings and the waters within. Joel described his fondness for the Calapooia River, Gwen, Ken, and Darren all spoke about their attachment to the Willamette, Neil appreciated Fern Ridge Reservoir, Lawrence valued Detroit Reservoir, and Gil relied upon the Triangle Lake drainages. The words love, fondness, near and dear, reliance, and respect were used to describe these various lakes and tributaries.

It is clear also that people create their individual identities based on place. Greiter and Garkovitch speak to this: "Every river is more than just one river. Every rock is more than just one rock...The open field is the same physical thing, but it carries multiple symbolic meanings that emanate from the values by which people define themselves" (1994, p. 1). The farmers and ranchers all described themselves with respect to their history working the land, and those involved in policy jobs also understood themselves in relation to their human and physical communities. Each interviewee identified him or herself with his or her immediate surroundings.

In this respect, these stakeholders are not unique. Each one of us creates place-based identities, and we often value the places we call home. But these specific stakeholders were interviewed because *water* plays a significant role in their lives. In conversing with them, it was clear that their perceptions of both place and self were influenced by their relationships to water and the watershed.

Attachment to place has been suggested to help perpetuate a sense of care or commitment, and perhaps this can be extended to include attachment to water within place. It was the case that stakeholders demonstrated a desire to defend and protect certain waterbodies, and criticized others for what they regarded as harmful behavior. At times, these sentiments extended beyond particular water sources to include an appreciation for water in general. Several interviewees (Darren, Sam, and Chris) proclaimed that they had a passion, affinity, or love for water. In this respect, perhaps the care that accompanies a heightened "sense of place" may be cultivated in a way that transcends a particular locale.

Stakeholders were selected because their livelihoods are in some way reliant upon water. Because of this, it may also be that the care and commitment they demonstrated towards water was inspired less by a connection to place than by a reliance on water for survival and financial success. Perhaps this can help explain why, though exhibiting attachments to both water and place, stakeholders were often reluctant to change their own behavior in ways that would also change their relationships to the watershed. They were aware of water scarcity as a pressing problem, but in general attributed the task of remedying this problem to other people, thus allowing themselves to continue using water in the ways that they had done traditionally. In this respect, a reliance on place may actually prevent people from making sacrifices necessary for long-term ecological health.

Environmental risk perception is also a player in determining stakeholders' behaviors with respect to water issues. Every stakeholder described water availability as a pressing concern. At jeopardy in this case is not only water's availability, but stakeholders' subsequent senses of place, personal identities, and livelihoods, which are predicated upon its reliable supply.

In identifying water supply as a risk, stakeholders demonstrated a desire for *something* to be done to mitigate their concerns. As noted above, some actually engaged in advocacy, research, politics, or outreach to address water-related problems. Others did not actively confront problems, either in their own work or by making personal sacrifices, but instead suggested that others (who were described as being primarily responsible for water concerns) confront these issues.

Both risk perceptions and “sense of place” were influenced by stakeholders’ direct experiences. Diminishing water supply is an environmental problem that is often difficult to experience directly, unless one’s life depends upon it. Interviewees described those not directly involved with water as not sharing their sense of urgency, and attributed their own heightened risk perceptions to their personal experiences working within the watershed. And though the Pacific Northwest, and the Willamette watershed within it, may be assumed to be abundant in water, stakeholders did not voice this perception. Even newcomers, such as Steve and Jess, said that their initial perceptions of the Willamette watershed were contradicted by their experiences working there.

There were other ways in which stakeholders’ perceptions of place and of risk were shaped by their direct experiences. For example, many perceived the Willamette River to be an engineered phenomenon rather than wild and free-flowing. Several refuted the commonly held assumption that water conflicts exist between fish and farmers, instead perceiving municipalities and increasing human populations as posing greater threats to the water supply. These findings demonstrate that direct experiences are fundamental in shaping perceptions of place and of environmental risk, both of which in turn influence subsequent behaviors.

In addition to direct experience, emotion has been identified by both psychometric researchers and social theorists as playing a large role in influencing both environmental risk perceptions (Slovic, 2004; Leiserowitz, 2005), as well as contributing to a “sense of place” (Beatley, 2004; Eisenhower et al. 2000). Stakeholders demonstrated high levels of emotional commitment to place and water. In discussing their own experiences and

perceptions, they far more frequently referred to an affinity for and attachment to place than they did to scientific reliability, though both were present. The love and attachment to place and water evidenced by the interviewees, often generated by the direct experience of working with both, may be regarded as largely influencing their concern for water issues as well as generating a rich sense of belonging.

While stakeholders perceived water scarcity to be a legitimate environmental risk and displayed deep attachments to the watershed, they were not necessarily proactive in remedying these problems. It appears that a strong emotional commitment to place may both inspire action (as it did for Gwen, Darren, Jess, and a few others), and defend complacency. Many of the stakeholders preferred not to change their own behavior but, in fearing for the disruption of their relationship with water and place, hoped that others would change theirs. Thus it appears that the relationships between sense of place, environmental risk perception, and environmental activism need to be explored more deeply. How may a developed sense of place and increased risk perception hinder or help necessary environmental mitigation efforts? Gary Nabhan, in evaluating environmental conservation efforts, claims that "science, in and of itself, is seldom enough to reshape public opinion. People have to feel some visceral connection to an issue to act upon it" (2004, p. 69). This being so, when is it that people are compelled to abandon finger-pointing and make personal sacrifices? And when does care and concern for place and water extend beyond local regions and limited timescales?

Place and Risk as Expressions of Power

Another way in which “sense of place” and risk perception are related is that they are both social constructions. The concepts “place” and “risk” are constantly being created by collective societal assumptions of how “place” and “risk” *should* be defined. Because of their inherently subjective nature, these ideas reflect dominant ideologies and may thus be regarded as expressions of power. In examining stakeholders’ perceptions of risk and of place, I was interested in how their personal constructions of these concepts may have reflected or contradicted dominant ideologies.

Identifying dominant ideologies, however, is a tricky endeavor. In the introduction I discuss the notion of regional identity and apply this concept to the Pacific Northwest. One influential ideology that has contributed to creating the regional identity of the Northwest is that of the Western frontier as a land of abundance and profit. Western water law, shaped by this philosophy, reflects its expansionist and utilitarian values. In addition, capitalism can also be regarded as a dominant ideology within western culture, and contributes to the ways in which people think about place and water, by conceptualizing both as commodities.

Interviewed stakeholders both contradicted and reflected these ideologies. Rather than perceiving the Willamette watershed as housing limitless resources, they emphasized the tenuous nature of the local water supply. But though they implicitly criticized underlying structures (such as western water law or the market) for perpetuating unsustainable water-use, interviewees were generally complacent with

respect to the prevailing order of dominant systems. Many indicated a resistance to change, coupled with an acceptance of water law and the commodification of water.

For some, this complacency with current systems of power can be explained by the notion of hegemony and manufactured consent. Gramsci's concept of cultural hegemony posits that systems of values, attitudes, and beliefs are permeated throughout society in order to support the status quo in power relations. These dominant ideologies are internalized by the population, and become what is commonly regarded as "common sense." Upholding these discourses, what Gramsci described as "manufactured consent," conveys a sense of inclusion, attained by conformity and non-resistance (Mitchell, 2000).

While some stakeholders may not resist the prevailing structures of water law and market forces because these structures connote a comforting sense of inclusion, others may not resist because they are the main beneficiaries of these hegemonies. Fishermen and boat operators rely upon tourism, which uses water rich images to advertise Oregon as a vacation destination (Sinclair, 2005). Farmers, ranchers, and irrigators, who historically have been the largest consumers of water, may be less pressured to conserve if perceptions of the region as water rich discourage environmental interest or attention. In addition, those who own senior water rights benefit from the systems of water law and of the marketplace; they have principle access to water that is steadily acquiring greater monetary value. These people described water as scarce, but at the same time the idea of water as a plentiful resource enables them to continue working in the ways they have traditionally worked, even as it becomes less available to other users.

The notion of water scarcity in the Willamette watershed is a paradox, in that those with water rights actually benefit both from water shortages as well as the normative idea of water abundance. Stakeholders articulated deep attachments to place and enhanced perceptions of risk, but also indicated collusion with dominant ideologies that may in fact contradict their direct experiences. The repercussions of this remain to be seen. Neither the capitalist-expansion mystique nor western water law is equipped to deal effectively with water-related conflicts in ways that encourage collaboration, conservation, and environmental stewardship. And if dominant ideologies are at odds with local understandings of place and risk, potential conflicts can be exacerbated by these discordant water narratives.

This study demonstrates that direct experiences of place are crucial in countering hegemonic ideas that shape the ways in which people think about water. The dominant ideologies of water law and capitalism define water as a "natural resource," in that they reflect highly instrumental views of nature as "consisting of capital assets available for human exploitation" (Harvey, 1996, p. 145). Though stakeholders did often reflect these ideals (and benefit from them), the descriptions that stakeholders shared of their relationships to place/water, and their subsequent attachment to them, countered notions of water as simply a "resource." Their perceptions of water were contextualized in place, instigated by their direct experiences working and living within the watershed.

Future Hopes

Stakeholders often referred to their personal experiences and relationships with place in both defending their livelihoods and in suggesting ways to address water-related issues and conflicts. Given stakeholders' sophisticated understandings of both the ecological and political dimensions of water within the watershed, I posit that their suggestions may be realistic and socially acceptable methods of addressing local water concerns. Because of this, I examine in greater detail two of the most frequently cited suggestions, in the hopes that they may provide guidance for future collaborative efforts.

Education

Stakeholders often accused the general public of having inaccurate perceptions of water and the watershed, and that these misunderstandings contribute to water-related problems. To remedy this, twenty-four of the twenty-five interviewed stakeholders suggested that educating people would result in more conservative and sustainable water-use.

I agree that education may be a useful strategy, but it can also be regarded in this case as a band-aid approach to a complex problem. In offering education as a principal solution, stakeholders were able to avoid taking personal responsibility themselves to address or remedy water-related problems. Stakeholders rarely humanized others, or reflected upon why they may behave in the ways that they do. Educational programs developed without an understanding of the program's participants limits their

effectiveness and success. Because of this, before implementing any experiential and/or educational programs, investigating people's perceptions, desires and beliefs should serve as a preliminary step.

In addition, it is also important to elaborate on what "education" looks like. Studies have demonstrated that providing people with information does not necessarily result in more responsible behavior, and that emotional involvement is often far more effective than reading scientific information in precipitating environmental activism (Lupton, 1999; O'Connor et al. 1998; Leiserowitz, 2003). This study identified the important role of direct experience in influencing both a "sense of place" and a sense of risk with respect to local water issues. This being the case, educational initiatives will be more successful if they work to engage people experientially within the watershed.

Experiential education projects around the country indicate that experiences that strengthen a sense of place and awareness of the natural world do often inspire proactive behaviors (Beatley, 2004; Eisenhower et al. 2000; River of Words, 2006). One example of this is the organization, "River of Words," founded by Robert Hass, a former poet laureate. Now enacted in cities all over the country, the program helps teachers, park naturalists, grassroots groups, state resource agencies, librarians, and others incorporate observation-based nature exploration and the arts into their work with young people. The curriculum includes art and poetry exercises for children who are exploring their local watersheds, and the results have been astounding. Participants have organized river clean-ups, school gardens, oral history projects, and community partnerships (River of Words, 2006).

School garden plots are another example of the potential of experiential education projects. Many have achieved landmark successes in encouraging elementary school children to gain an understanding of and appreciation for their local foodsheds. Students have gone on to create their own gardens, organize Community Supported Agriculture projects, and achieve access for low-income communities to local, organic produce (Edible Schoolyard, 2006).

These examples demonstrate that education combined with direct experience may promote responsible actions that can help address water concerns in the Willamette watershed. However, education can not be regarded as a panacea. Many of the participants in my study were both well-versed in water issues and held direct relationships with water in the watershed, yet did not choose to change their behaviors in ways that would provide more water for other uses. Instead, they placed the responsibility for change on others, and suggested that education would do the trick. I do not negate the importance of lived experience or experiential education in inspiring self-sacrifice or environmental activism, but there are other variables (such as resource reliance or attachment to traditional livelihoods) that complicate this relationship and provide an opportunity for further study.

Collaboration

Collaboration, or collective action, was the second-most frequently cited suggestion for addressing water-related problems. Though several stakeholders did indicate resistance to change, it appeared that they were willing to participate in

community conversations and initiatives once a certain level of trust had been achieved. The story of the mobilization over the dry Long Tom River and achievements reported by watershed council organizers illustrate peoples' willingness and capacity to work together to protect and care for water and the watershed.

An example of the efficacy of local, democratic collaboration in precipitating change is Sacramento's Water Forum Agreement. In California, water stakeholders have attempted a variety of approaches to agree upon the contentious issue of dividing up limited water. The Water Forum Agreement is a voluntary settlement created by and agreed to by a diversity of water stakeholders, and is commendable in that over a six year process, each interest group made sacrifices that resulted in concrete changes (McClurg, 2002).

One of the elements that McClurg (2002) attributes to the Forum's success is the "community of place" (or "sense of place") that stakeholders shared in the watershed. But perhaps equally influential for the success of collaborative efforts is that the Forum provided an opportunity to cultivate social connections within a community. Though attachment and commitment to place without doubt help bring participants together, in the case of Sacramento's Forum, what kept them there and encouraged them to make personal sacrifices may have been the opportunity to see former "rivals" as partners and friends. Deputy Director for the California department of Water Resources, Minton is quoted by McClurg: "Our forty representatives learned to care about each other as individuals. There were births, birthdays, and several deaths, and people shared in the joy and sorrow of both" (quoted by McClurg, 2002, p. 19).

A significant component of “sense of place” is relationships with surrounding human communities. Norton and Hannon (2003) suggest that people’s social networks, personal relationships, emotional attachments, and memories all serve to strengthen a sense of local responsibility, which can manifest in democratic approaches to environmental policy and planning. The stakeholders in my study often appeared to regard others as one dimensional, reduced to “ignorant” water-users whose negligence impacts the watershed and water dependent livelihoods. Opportunities to increase understanding, awareness, and collaboration between watershed members may allow for the personal sacrifices necessary for any significant change.

Oregon’s watershed councils may be ideal organizations for encouraging this kind of inclusive, democratic, and place based decision making, while also offering opportunities for diverse stakeholders to get to know one another more intimately. In that they do not have the ability (or the desire) to regulate or enforce, they are often regarded as neutral and more democratic.

Water-related problems have their greatest impacts at the local level. Because of this, local actions are crucial for generating real results. Collaboration, through local watershed councils or other venues, may hold great promise for addressing future conflicts in the Willamette watershed.

What Stakeholders Left Out

Stakeholders offered a number of suggestions for addressing current and future water issues, but they seldom addressed either long-term or larger-scale concerns. I contend that the increasing commodification of water and implications of global warming pose significant threats to water allocation and supply, both in the Willamette watershed and around the globe. These subjects desperately require attention and activism.

Commodification of Water

At the World Water Forum in 2000, water was intentionally defined as a “need” rather than a “right.” This definition allows the private sector to provide the resource rather than mandating that governments ensure its equitable distribution (Barlow & Clarke, 2002). Stakeholders that I interviewed anticipated that as water supplies become more contested, water would become increasingly defined by private interests and the marketplace, resulting in social and environmental injustices.

The increasing commodification of water poses a threat on a number of fronts. In conceptualizing water as a resource, abstracted from the surrounding ecosystem, the interdependency between water and the watershed is ignored. In addition, I suggest above that collaboration and supportive communities may be important in generating proactive behavior and affirming a sense of place. But however resilient a community or moral economy may be, studies suggest that as market controls over transactions increase

these relationships may become unstable (P. Robbins, 2004). In the face of the commodification of water, opportunities for networking and building social capital may diminish.

As distressing as the implications of commodification of water may be, participants in my study were not active in challenging the capitalist market's increasing involvement in the watershed. In discussing environmentalism in the Pacific Northwest, Ellis and Thompson (2001) posit that virtually everyone wants things like cleaner air and habitat protection and are concerned with environmental degradation, but that the general public and environmentalists differ in that the latter may distrust market-based solutions, whereas the former "overwhelmingly believes in markets, business, and capitalism." They continue, "Most Americans do not see a lot wrong with a system that enables one to acquire more goods rather than being content with only a few" (p. 189).

Stakeholders did evidence both complacency with and often trust in the market's role in the watershed. However, around the world there is increasing public resistance to the commodification of water. This year's World Water Forum, held in Mexico City in the spring of 2006, focused much of its attention on governments' participation in the privatization of drinking water. Almost everyone who spoke at the summit objected to handing local water authorities over to private administrators. In Bolivia and Guatemala, where local water services were purchased by local firms, violent protests forced the companies to withdraw from their contracts (Stevenson, 2006b). And recently (March of 2006) over 2,000 protesters marched through Nicaragua's capital to demand that the

government improve, rather than privatize, its water service (Stevenson, 2006b). It remains to be seen if these efforts of resistance will be successful in challenging the dominant paradigm of water as a commodity.

Global Climate Change

Climate change was another area of concern that most stakeholders I interviewed declined to discuss seriously. Predicted impacts of global warming in the Willamette watershed include drier summers, increased water shortages, reduced streamflows, and decreased winter snowpack (NSF, 2000). A National Science Foundation (NSF) study anticipates that by 2050 Portland's water demand will increase by fifty-percent due to population increase and that global warming would add another five to eight-percent increase to that number (NSF, 2000).

The stakeholders in this study were not alone in failing to address implications of global warming on local water supplies. A survey of water managers in the Pacific Northwest found that most are completely unaware of these predictions (NSF, 2000). The Willamette Valley Alternative Futures Analysis, a component of the Willamette River Valley Planning Atlas, describes three alternate development scenarios for 2050; in two of these the natural supply of water is insufficient to meet out of stream demands. For all three, surface water scarcity is predicted to increase (Hulse et al. 2002). These alternate future scenarios consider the effects of population increase and development pressures, but do not include possible implications of global warming.

It is unrealistic to ask those whose livelihoods directly depend on water supply to mitigate for the effects of climate change. But proactive measures will almost certainly help lessen some of the more disastrous consequences of global climate change. This is a task for academics, engineers, politicians, and others who have the time and capacity to engage in long-term planning. It remains to be seen if these endeavors can counter the forces of apathy, political gridlock, private profiteering, and environmental injustice that have prevented any real action to be taken towards addressing the anthropogenic causes of global warming.

Overview

Geographer Yi-Fu Tuan describes the cultivation of “sense of place” as follows: “What begins as undifferentiated space becomes place as we get to know it better and endow it with value” (Tuan, 1977, p. 6). It was evident that stakeholders were emotionally invested in the Willamette watershed. Rather than being regarded as “undifferentiated space” or as “resource,” both places and the water within them have been endowed with value, and were articulated as precious and meaningful. As water becomes increasingly contested, I believe that stakeholders’ depth of knowledge, direct experience, and concern for water’s management offer a tremendous capacity for working creatively with future water conflicts.

There are obstacles toward utilizing this potential. This thesis demonstrates that the intimate connection between a well established sense of place and attachment to and care for that place and the waters within it does not necessarily result in proactive

behaviors. As can be said for most people, stakeholders were resistant to making changes that would affect their livelihoods or their relationships to place, and they rarely reflected upon long-term or wide-ranging environmental impacts. This phenomenon contradicts the notion that an established "sense of place" naturally precipitates proactive environmental engagement (as posited by Norton and Hannon (2003), Beatley (2004), Eisenhower et al. (2000) and others).

This thesis offers a number of areas for further study. As noted above, studying the perceptions and beliefs of those not directly dependent on water within the watershed would serve to contextualize my own findings in a larger field. In addition, my findings demonstrate an ambiguous relationship between "sense of place" and environmental efforts. Are attachments to place or occupational interests more responsible for encouraging sentiments of private ownership and complacency? Further research would help differentiate between attachment to water as an element of place and a reliance on water as a resource needed for one's livelihood.

For those interested in spearheading educational or collaborative efforts, further inquiry into the perceptions and behaviors of participants is an important element for ensuring inclusivity and a sense of co-creation. An example that illustrates the importance of this area of study is in the recent development of water recycling. Though increasingly affordable and efficient, recycled water programs are so unappealing to municipal residents that even in drought-prone areas they have resisted their implementation. Achieving a greater understanding of why this may be can perhaps inform the development of conservation, educational, and participatory water programs.

I have espoused the potential of local watershed councils in encouraging social capital and necessary change. But institutions and organizations are never devoid of power dynamics. Because of this, watershed councils and other collaborative efforts provide another area for further study. It may be helpful to investigate their reputations, who join and why, and who is included and excluded. Along these same lines, I did not describe or explore collective action in great depth. For example, are stakeholders more likely to act collectively with others who have similar livelihoods rather than with various members of the watershed? Additional research can investigate what it means to act collectively, and explore these limitations and potentials within the Willamette watershed.

Escobar suggests that a helpful role for academics is to "look for alternative practices in the resistance grassroots groups present to dominant interventions" (1995, p. 222). In investigating the ways in which stakeholders perceive water and place, and in identifying their resistance to engaging in proactive behaviors to safeguard these over time and geographic scale, this thesis serves to illuminate areas wherein encouragement and mobilization may be viable and acceptable. Within stakeholders' visions of place are seeds for addressing local water issues in ways that are realistic, ecologically sensitive, and democratic. Perhaps it is up to a minority of activists to continue incorporating larger-scales and scope, as well as challenge hegemonic structural systems.

To close, I let Bill, a vegetable farmer, have the last words. As he walked me through his fields toward the Willamette River, he pointed out several trees he had

planted to decrease erosion of the floodplain. "It's amazing," he said, "what a few dedicated people can do, to change what seems like the inevitable outcome of this plunder mentality."

APPENDIX A

Consent Form

You are invited to participate in a research study conducted by Kirsten Rudestam, from the University of Oregon's Environmental Studies department. I hope to learn more about people's perceptions of drought and water scarcity, and these findings will contribute to my thesis. You were selected as a possible participant in this study because you are a member of the Upper Willamette watershed community.

If you decide to participate, we will have a conversation together about your perceptions of water and water use, and your experiences living and/or working within the watershed. The entire interview may take anywhere from a half an hour to an hour, depending upon your enthusiasm and interest, and it will be audio taped. I may ask if I can contact you for a second interview, and you are free to accept or decline this request, both at this time and if contacted at a later date. Answering the questions will not involve any psychological risk; however you do not have to answer any questions that make you feel uncomfortable. There are no costs for participating in this study. These findings may be particularly useful for policy makers and those concerned with limited water supply. Though you will be providing a helpful service, I cannot guarantee that you personally will receive any benefits from this research.

Any information obtained in connection with this study that can be identified with you will remain confidential and will be disclosed only with your permission or as required by law. Your identity will be kept confidential by immediately assigning you a pseudonym. If requested, the name of the organization with which you are associated will remain confidential as well. The tapes and transcripts for this interview will be kept in a locked cabinet. They will be available only to myself. You will be given the choice whether or not you wish to maintain anonymous at the end of each interview.

Your participation and the conditions of your participation are voluntary. Your decision whether or not to participate or to remain anonymous will not affect your relationship with the Upper Willamette watershed community, your co-workers, or the University of Oregon. If you decide to participate, you are free to withdraw your consent and discontinue participation at any time without penalty.

If you have any questions, please feel free to contact Kirsten Rudestam at (541) 346-5003 or at the Environmental Studies Program, 5223 University of Oregon, Eugene, OR 97403-5223. You may also contact the chair of the advisory committee, Shaul Cohen at

(541) 346-4500. If you have questions regarding your rights as a research subject, contact the Office of Human Subjects Compliance, University of Oregon, Eugene, OR 97403, (541) 346-2510. You will be given a copy of this form to keep.

Your signature indicates that you have read and understand the information provided above, that you willingly agree to participate, that you may withdraw your consent at any time and discontinue participation without penalty, that you will receive a copy of this form, and that you are not waiving any legal claims, rights or remedies.

Signature _____ Date _____

I am willing to be audio-taped: Yes _____ No _____

At the end of each interview, I will consider giving permission for the use of my real name: Yes _____ No _____

Address _____

Email _____

Phone _____

APPENDIX B

Interview Guide

General Information

Pseudonym

Sex

Age in 2005

Occupation

Place of birth

Length of residence within the watershed

Family history within watershed

Married/single

Children (including number)

Overall interview goals:

Perceptions of risk with respect to water scarcity at the global and local levels

Current understandings and opinions with respect to water politics – short and long term policies

Respondents' environmental behaviors and attitudes

Perspectives on "sense of place" – what are respondents' relationships to special places within the watershed and how have they perceived the region to have changed over time

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