The Elwha River Restoration: Challenges and Opportunities for Community Engagement

by

Ryan Laurel Hilperts
B.A., Western Washington University, 2001

A Thesis Submitted in Partial Fulfillment of the Requirements for the Degree of

MASTER OF ARTS

in the School of Environmental Studies

© Ryan Laurel Hilperts, 2010
University of Victoria

All rights reserved. This thesis may not be reproduced in whole or in part, by photocopy or other means, without permission of the author.
The Elwha River Restoration: Challenges and Opportunities for Community Engagement

by

Ryan Laurel Hilpers
B.A., Western Washington University, 2001

Supervisory Committee

Dr. Eric Higgs, Supervisor
(School of Environmental Studies)

Dr. Jenny Feick, Departmental Member
(School of Environmental Studies)

Dr. Peter Stephenson, Outside Member
Department of Anthropology)
Supervisory Committee

Dr. Eric Higgs, Supervisor  
(School of Environmental Studies)

Dr. Jenny Feick, Departmental Member  
(School of Environmental Studies)

Dr. Peter Stephenson, Outside Member  
(Department of Anthropology)

Abstract

As ecological restoration expands as a practice, so does the complexity, cost, and scale of many projects. Higgs (2003) terms these projects *technological* and argues they limit meaningful community focal restoration practices, one component of good ecological restoration. The planned removals of two large dams on the Elwha River in Washington State provide a case study to investigate this theory. I conducted 18 in-depth interviews with community leaders and restoration practitioners in order to explore the question, “How do technological restoration projects enable or constrain community engagement, and in the case of the Elwha River, how might such engagement be enlarged?” This interpretive study suggests that technological restoration projects, particularly when managed by federal agencies, expand engagement through a broadened 1) public audience and 2) suite of engagement activities. I argue for a “focusing” of engagement activities, and propose a matrix for assessing opportunities for local community engagement.
# TABLE OF CONTENTS

Supervisory Committee.................................................................................................................. ii  
Abstract........................................................................................................................................ iii  
Table of Contents............................................................................................................................ iv  
List of Tables...................................................................................................................................... v  
List of Figures..................................................................................................................................... vi  
Acknowledgements........................................................................................................................... vii  
Introduction....................................................................................................................................... 1  
  Thesis Organization......................................................................................................................... 3  
  Terms and Abbreviations................................................................................................................. 5  
Chapter One: Restoration, Devices and Dams.................................................................................. 6  
  Ecological Restoration.................................................................................................................... 6  
  Focal Restoration............................................................................................................................ 17  
  Large Dams and their Removals..................................................................................................... 27  
Chapter Two: The Elwha River......................................................................................................... 34  
  Biogeography.................................................................................................................................. 35  
  Human History............................................................................................................................... 39  
    The Elwha Dam............................................................................................................................ 40  
    Glines Canyon Dam..................................................................................................................... 42  
    Creation of Olympic National Park............................................................................................. 44  
  Ecological Impacts of the Elwha Dams......................................................................................... 45  
  Decision to Remove the Dams....................................................................................................... 48  
  Theory and the Specific Case: The Elwha River Restoration Project......................................... 48  
Chapter Three: Methodology........................................................................................................... 57  
  Data Collection............................................................................................................................... 58  
  Analysis and Reduction of Data..................................................................................................... 61  
  Limitations...................................................................................................................................... 63  
Chapter Four: Findings..................................................................................................................... 65  
  4.1 Controversy and Collaboration............................................................................................... 66  
  4.2 Olympic National Park........................................................................................................... 78  
  4.3 The Case of the Port Angeles Water Treatment Plants......................................................... 88  
  4.4 Engagement in the Spaces Between.................................................................................... 97  
Summary........................................................................................................................................... 110  
Chapter Five: Synthesis.................................................................................................................. 112  
  5.1 What is Engagement?............................................................................................................. 112  
  5.2 Who Engages?........................................................................................................................ 118  
  5.3 Types of Engagement: How does the public participate?..................................................... 121  
Summary........................................................................................................................................... 136  
Chapter Six: Ways Forward............................................................................................................ 137  
Conclusions....................................................................................................................................... 147  
Works Cited....................................................................................................................................... 152  
Appendix A: List of Abbreviations................................................................................................. 159  
Appendix B: List of Informants....................................................................................................... 160  
Appendix C: Participant Recruitment Materials............................................................................ 162  
Appendix D: Participant Consent Form........................................................................................... 163  
Appendix E: Interview Questions.................................................................................................... 167
LIST OF TABLES

Table 1.1  Defining Qualities of a Technological Restoration Project ..............26
Table 2.1  Mammals and Birds of the Elwha River Basin ..............................38
Table 2.2  Technological Features of the Elwha River Restoration Project .......49
Table 5.1  Activities Identified as “Community Engagement with the Elwha
          Restoration Project” .............................................114
LIST OF FIGURES

Figure 2.1  Location of the Elwha River.............................................................35
Figure 2.2  The Elwha Watershed, Elwha and Glines Canyon Dams...............36
Figure 2.3  The Elwha Dam, 2006.................................................................41
Figure 2.4  Glines Canyon Dam, 2006.............................................................43
Figure 5.1 Continuum from Focal to Technological Engagement.....................116
Figure 5.2 Participation in Restoration Activities..........................................123
Figure 5.3 Planning and Decision-Making Activities......................................126
Figure 5.4 Economic Arrangements...............................................................130
Figure 5.5 Research Activities......................................................................132
Figure 5.6 Education and Information Activities..........................................134
Figure 6.1  Focusing Engagement in Technological Restoration Projects.........138
Figure 6.2  A Matrix for Assessing Engagement Opportunities.......................141
ACKNOWLEDGEMENTS

Fittingly, this thesis is the product of countless focal practices on both sides of the Strait of Juan de Fuca: meaningful conversations over meals, long walks in wild places, writing retreats and coffee dates, classroom debates and shared lesson plans. Most crucially, it is the product of a web of people who have generously given of their thought and passions.

My advisor Eric Higgs impelled me to carve a meaningful path into this rich field of study. His generosity, encouragement, and guidance brought me new perspective, new confidence, and helped me discover a new home in a world where practice and ideas meet.

Jenny Feick provided detailed and probing comments on drafts of the thesis, and shared a rich library that provided crucial signposts along the way. Peter Stephenson provided poetic perspective.

The community in the School of Environmental Studies provided a warm intellectual and social home with room for creativity, rigor, and valuable cross-pollination of ideas. Elaine Hopkins and Anne Bowen cheerfully helped me navigate through the administrative thicket of the university.

I am immensely grateful to Trudi Smith. This thesis would not be half of what it is without her critical thought, her ever-ready wit, and her willingness to engage with my ideas at a moment’s notice. I felt like a novice jogger taken under the wing of a marathon runner; she taught me tricks of the trade, the most important being keeping a sense of balance--and a ukelele--always at hand. The figures throughout are largely a product of our conversations.

Jenny Kingsley provided motivation, writing retreats, and survival kits at all the right times. Lisa Levesque helped keep things in perspective. Jeannie Achuff kept me honest.

Glenys Verhulst, Ernest Morrow, James Rowe, and all the rotating denizens of the Balmoral House created a supportive and encouraging space.

Deep thanks to all the people in Port Angeles who gave time and energy to interviews. They all did so with a selfless sense of hope for the Elwha River and the people who live near it. Thanks in particular to Darek Staab, Lindsey Shromen-Wawrin, and Sam Fox. Each, in their own way, has taught me volumes about how to think critically about our home communities, while maintaining an animating spirit of hope. The staff and students at Olympic Park Institute inspired.

Finally, Mike deWit made everything better.
for Papou
&
Nikki and Jerry
who have always insisted I follow my heart
Introduction

The Elwha River winds north for nearly 70 kilometers from its headwaters in the rainy heart of the Olympic Mountains of Washington State to its mouth on the southern edge of the Strait of Juan de Fuca. Sixteen kilometers east lies Port Angeles, a city of just under 20,000—the largest on the North Olympic Peninsula.

Between 1912 and 1923 two dams constructed on the Elwha River decimated eleven runs of anadromous salmon and trout that inhabited the river, including a run of Chinook known to often reach 45 kilograms. Both dams—the Lower Elwha and Glines Canyon—were built without fish ladders, and the construction of the lower dam effectively shrunk their spawning habitat from 112 kilometers of streambed to six. Sediment trapped behind the dams starved the river mouth of fine sediments, causing the erosion and ultimate destruction of important habitat for shellfish and estuarine species. The creation site of the Lower Elwha Klallam Tribe, who relied heavily on both fish and shellfish, was flooded by one of the reservoirs (Crane, 1997; Egan, 2007).

In 1968, when the Elwha Dam was scheduled for relicensing, the Lower Elwha Klallam Tribe, fisheries advocates, and environmental groups based on the North Olympic Peninsula and in Seattle collaborated in a campaign to remove the dams and restore the watershed, in the hopes of restoring the decimated fishery of the river. Over twenty years later, their collaboration resulted in the 1992 Elwha Restoration Act, the first federal watershed restoration legislation in the United States. When completed, the removal of the Glines Canyon and Lower Elwha Dams will be the largest dam removals in American history and the largest river restoration project on federal land.

While artifacts of the heated environmental debates of the 1990s are still nailed on trees and stuck to the backs of the occasional vehicle in Port Angeles, (“Save a logger, eat a spotted owl!”), one would have to search hard for public information about the gigantic restoration project underway. Little evidence exists that speaks to the importance of this project, the fact that it is the first federally mandated river restoration in the United States, or that the community is undertaking a project the scale and complexity of which only compares to the
restoration of the Florida Everglades. As a Port Angeles community member with a background in studying environmental issues, I wondered why the project, with so much potential to be a source of pride for a community that seemed to need one, is not engaging the public more.

In my time living in the small town, I began to notice that despite the official, if not well publicized, story from Olympic National Park, that the restoration would be the greatest river restoration in history, opinions were far from united about the dam removals. Bus drivers on long rides said, "Ask me about the Elwha? We’d need more than a couple hours for me to give you an earful!" Local volunteer restorationists complained to me that the project was taking too much attention and resources from smaller projects. In the supermarket I heard an elderly man telling the checker that the dam removals were, "the most backward idea I’ve ever heard…we’ll run out of water!"

At the same time, some local students I worked with in my role as an environmental science educator had never heard of the Elwha River. The majority of educational programs that sprung up surrounding the restoration dealt with science, and I wondered if there wasn’t more potential for the cultural elements of the restoration to be explored by those running the project. Mainly, though, as a person fascinated with people and their stories, I wanted to learn more about the ways people perceived their community in relation to this symbolically potent restoration project, and how the potential of the restoration to revitalize the community could be better realized.

I found that my questions resonated with a theory born of the rich field of ecological restoration: Higgs’ model of focal restoration (2003), rooted in Albert Borgmann’s 1984 model of the device paradigm. Borgmann critiques patterns of culture that replace “things that matter”—focal things—with devices that distract us from community, place, and meaning. Higgs argues that restoration is in danger of falling under this constraining pattern, and in so doing will lose its inherent potential to be a focal thing for communities. A central strand of Higg’s conception of “good” restoration is focal practices—practices that center a community on the restoration of an ecosystem.
In Higgs’ theory, I heard echoes of my own concern about the lost potential for the Port Angeles community. Large “technological” restorations like the Elwha embody complex contradictions: the simple, ambitious impulse to restore comes up against constraining patterns of commodification, the potentially alienating aspects of professionalization, and the daunting technicalities of restoration at large geographic and temporal scales. How can communities navigate these contradictions and find a path towards engagement in and with their landscape through restoration? This question animated my research, and occupies the heart of this thesis.

**Thesis Organization**

In this thesis, I attempt to carve a straight path through what proved a thick forest of conflicting opinions, ecological complexity, intriguing stories and tempting philosophical detours. For my compass I chose Higgs’ theory; for my machete, case study methodology. I hoped to both understand the ways engagement could be enlarged in the Elwha project, and to help to further develop Higgs’ theory through an application of his model to a specific case.

In Chapter One, I set the disciplinary and theoretic context for my work. I survey the field of ecological restoration and its increasing debates about the ways to achieve both ecological and cultural revitalization. I discuss the lack of social science research in the field, then focus more specifically on Borgmann’s device paradigm, and Higg’s description of the tension between focal and technological restorations, building the theoretical framework for this thesis. Through a brief discussion of dams, I argue that dam removals provide timely examples of technological restoration projects.

In Chapter Two I tell the historical and ecological stories of the Elwha River. I sketch its natural history, the human history that resulted in the construction of the dams and the political history that resulted in the legislation that eventuated in plans to remove them. In the final section, I highlight some of the ecological, technical, and social complexities that define the restoration project.
My case study methodology is the topic of Chapter Three. I clarify my central research question, discuss my methodological framework, data collection methods, analysis of interviews, and limitations of this project.

Chapter Four encompasses findings from my research, told in the words of participants. I organize interview data into four sections, derived from my analysis and bound by my research questions. First I present participants’ descriptions of the collaborative and controversial roots of the project, then their perspectives on the role of the National Park. Next I include the story of Port Angeles’ water treatment plants, which participants used dominantly to explain public apathy and inter-governmental dynamics. Finally, in a section entitled “engagement in the spaces between” I share participants’ descriptions of successful engagement strategies, and their perspectives on what has made this engagement successful.

In Chapter Five, I weave Chapter Four’s findings with the theory of focal restoration, pausing at the most intriguing intersections. I argue that technological restoration projects have unique capacity to engage the public, but that political contexts challenge this potential in two ways: by a lack of agency focus on local community engagement, and by a drift towards more technological forms of engagement with projects. Technological engagement is not the same as focal practices, and this drift arises from a murkiness in the term “engagement.” By way of clarifying what “engagement” means, I propose five categories of engagement with restoration and discuss each in the context of technological projects, showing how technological projects favour some categories over others. In Chapter Six, I offer suggestions about how to enlarge engagement with the Elwha River Restoration Project, as well as other technological projects.

The Conclusions chapter highlights some underlying philosophical questions sparked by this project. I anticipate conditions that may both complicate and enable engagement with technological ecological restorations, and suggest topics for future research.
Terms and Abbreviations

The following terms appear often throughout this thesis, and bear clarifying:

*Technological* is borrowed from Higgs’ theory, meaning having the qualities of being constrained by patterns of the device paradigm (explained in Chapter One). In terms of restoration projects, I apply this term to projects that 1) Occur over long time scales, 2) Occur over large geographic scales, 3) Are mandated by external forces, 4) Exceed the financial capacity of the communities in which they occur, and 5) Are planned, managed, and performed by professionals.

*Engagement* encompasses a broad range of activities that in one way or another involve people with the restoration project. I will argue that engagement exists on a continuum, from passive information provision and consumption to physical involvement in the work of restoration. I explore how “meaningful” various forms of engagement are throughout, and categorize different types of engagement in relation to Higgs’ theory in Chapter Five: Synthesis.

*Local Community* refers to people living in the Port Angeles and closely surrounding community. It does not refer to Lower Elwha S’Klallam tribal members, unless otherwise indicated.

Olympic National Park, as both an organization and a physical location, plays a central role in this thesis. North Olympic Peninsula residents commonly refer to Olympic National Park simply as “the park”. For stylistic reasons, I use “Olympic National Park”, “ONP” and “the park” interchangeably when referring to Olympic National Park.

Throughout this document, I cite interviews conducted during the course of my research. Some participants agreed to be identified by name, and others requested anonymity. In all cases, I use coded initials when citing interviews. A list of informants, interview information, and their corresponding codes (where permitted) can be found in Appendix B.
Chapter One: Restoration, Devices and Dams

Ecological restoration is inevitably a broader church than its scientific core, because of the economic, cultural, landscape, aesthetic and political dimensions to the ownership and use of land or water; ecologists pursuing the science…have often found it convenient to disregard influences of the dominant, human species. This is something that we cannot sensibly continue to do.

Tony Davy and Martin Perrow, Ecological Restoration Handbook

Do we locate value in restoration projects in the process of restoration or in the final product of restoration?

Eric Higgs, Nature By Design

Introduction

In this chapter I survey the philosophically complex field of ecological restoration and identify the theory that gives this research its shape: Higgs’ model of focal restoration. Many authors (e.g. Marshall & Rossman, 1995; Gillham, 2000; Janesick, 2004) suggest establishing a dynamic framework for qualitative research through working with a theory, most specifically with the inductive development of a theory rather than the deductive testing of one (Creswell, 1994). Towards that end, I describe Higgs’ theory and highlight the central tension within it that I work to inductively develop through this research.

Next, I argue that dam removals are particularly timely and appropriate subjects through which to explore this theory for three reasons: first, the ways that they uniquely focus communities on a shared symbol and resource; second, their increasing prominence as large restoration projects in North America; and third, the scientific and technological expertise required to successfully complete them. Finally, I situate within the dual contexts of ecological restoration theory and dam removals, the case study that makes up the remainder of this thesis: the Elwha River Restoration Project.

Ecological Restoration

Removing invasive species, planting native plants, installing logjams in streams, and dismantling dams all might fall under the category of “ecological restoration”. Volunteer groups out on a Saturday event planting stream creek-banks and ecologists gathering water quality data all are participating in restoration
activities. Ecology and culture are inextricably linked, and they meet in action through ecological restoration. What is ecological restoration exactly? In this section, I define and sketch the history of ecological restoration as a discipline and practice, describe the scientific field that informs it, discuss public participation in restoration, and then explore some of the philosophical questions that inspire the theory of focal restoration.

*History*

As an academically and professionally defined practice, ecological restoration is relatively young. Begun in the 1920s by Edith Roberts at Vassar College, and by Aldo Leopold at the University of Wisconsin-Madison Arboretum in the 1930s, and gaining momentum as the environmental movement of the 1970s took hold, interest in the profession and the practice has exploded in the last twenty years (Jordan, 2000). The journal *Restoration and Management Notes* came into publication in 1982, and the foundation of the Society for Ecological Restoration (SER) in 1987 marked the first international association of practitioners and academics in the field. With members in thirty-seven nations, SER International (SERI) is the field’s most prominent organization, guided by the mission, “to promote ecological restoration as a means of sustaining the diversity of life on Earth and reestablishing an ecologically healthy relationship between nature and culture” (www.ser.org). The SER’s most recent official definition of ecological restoration, negotiated through great debate by its interdisciplinary members (Higgs 2003), is: “the process of assisting the recovery of an ecosystem that has been degraded, damaged or destroyed.” (www.ser.org)

Those involved in ecological restoration range from academics to practitioners, community volunteers to land management professionals. The relative newness of the field and its interdisciplinary nature has characterized ecological restoration as a dynamic and synergistic endeavor between science, philosophy and practice (Light and Higgs, 1996; Apostol, 2006). In recent years the practice is increasingly converging with movements of social equity, indigenous rights, and environmental justice (Tomblin 2009), and grappling with the ecological and social implications of climate change (Higgs et al. 2010).

Ecological restoration bridges two (traditionally constructed as separate)
worlds: the human and the natural. This location throws ecological restoration into a philosophical quandary and an interdisciplinary arena-- What role should humans play in ecosystems? Whose authority counts in making both ecologically and culturally sound decisions? To what reference conditions are we restoring? How does restoration relate to adaptation to climate change? How should restoration science be communicated to the public? More essentially, what is restoration for?

**Approaches to Restoration**

Ecological restoration arose as an answer to increasing environmental destruction and global loss of biodiversity (Throop, 2000; Cairns Jr. 2002; Apostol, 2006), and by the 1990s, "the restoration movement had become a significant alternative to the traditional [disempowering] environmental narrative" which was founded on principles of preservation and conservation (Tomblin, 2009: 187, also Light and Higgs, 1996). Concerned conservationists and philosophers have critiqued ecological restoration, arguing that an ability to restore ecosystems might justify further destruction, that restoration claims to pass technologically created nature as reality (Katz, 1992), and that it undermines the value of intact ecosystems (Elliot, 1982). Others have argued that restoration becomes problematic in the context of climate change because attempting to restore ecosystems to a historical trajectory may be difficult or ill-advised if new climactic conditions render historical assemblages unviable (Hobbs et al., 2006; Harris et al. 2006).

Responding to these critiques, restorationists carefully qualify their work with the acknowledgement that, “clearly, at any site, conservation of the existing organisms in their undamaged environment is unequivocally preferable to subsequent restoration *in situ,*” (Perrow and Davy, 2002; also e.g. Throop 2000; Higgs 2003; Apostol, 2006). Higgs (2003) and Apostol (2006), among others, have also argued the importance of untangling ecological restoration from related endeavors, such as reclamation (converting damaged land to “productive use”), compensatory mitigation (compensating for ecological destruction elsewhere by creating new habitat), and conservation. Other related terms are rehabilitation, revegetation, remediation, and recovery. Higgs (2003) argues that attachment to a “historically motivated goal” distinguishes ecological restoration from these other
classes of ecosystem management.

Ecological restorationists identify ecosystems that have been severely damaged or degraded, and attempt to return them to their historical trajectories. The term trajectory is important; ecological restoration does not attempt to create a static historical ecosystem, it attempts to set an ecosystem in motion in the hopes that it will be self-sustaining. While it may be impossible to know exactly how an ecosystem functioned pre-disturbance, restoration draws on historical data, knowledge of species assemblage and structure, reference ecosystems, and predictive models (SER, 2004). Restorationists are increasingly incorporating climate change forecasts in these ecological models (Harris, 2006; Hobbs, 2006).

Towards this end, there is significant emphasis on basing restoration endeavors on clear goals, measurable objectives, and sound ecological principles (e.g. Nuzzo and Howell, 1990; SER 2004), which are principally being established through research in the related discipline of restoration ecology.

*Ecological Restoration and Restoration Ecology*

Although conflated in some academic literature, a distinction exists between the overarching field of ecological restoration, which encompasses the full range of activities involved with recovering damaged, degraded and destroyed ecosystems, and restoration ecology—the science of restoration—which is a subset of the former (e.g. Jordan, 1987; Perrow and Davy 2002; Higgs 2003; Apostol 2006).

Restoration ecology has been characterized as a branch of applied ecology and the conceptual core of ecological restoration. Restoration ecologists hope to both enable the careful recovery of ecosystems and deepen knowledge of ecological principles, which have application beyond the field of restoration, in related fields like conservation biology. Framing restoration ecology as an important heuristic tool, Bradshaw (1987) called it an “acid test” for ecological principles, stating that the best way to test an understanding of something is to take it apart, put it back together again, and see if it works. Ecosystems in need of restoration, in this early model, have been “taken apart” and restorationists work to put them back together.

Restoration ecology is a young and experimental science; a significant amount of attention is paid to the benefits of effective research, both as a means for
local success and knowledge to inform other projects. (e.g. Clewell and Rieger, 1997; Gross and Hoffmann-Riem, 2005) Dam removals in particular have been touted as particularly rich opportunities for ecological research. (Hart, et al., 2002)

Restoration ecologists recognize the impossibility of achieving a “historical state” in ecosystems, which are by their nature dynamic and subject to changing climates, both physical and political. Restoration ecologists once focused on stable climax scores in ecosystems, making the practice closely related to horticulture, but now dynamic equilibrium is understood as being the key to “stability” (Apostol, 2006). Rather than focus on a stable state, then, restoration ecologists focus on, “recovering a natural range of ecosystem composition, structure, and dynamics” (Palmer, et al., 2006:1). This process-based approach to restoration is reflected in the SER International Primer on ecological restoration (2004), which identifies qualities of a restored ecosystem, stating that an ecosystem is recovered when, 1) it has abiotic and biotic resources that enable it to develop without further intervention; 2) its structure and function are sustained; 3) it demonstrates resilience to normal stresses and disturbances; and 4) it interacts with contiguous ecosystems biologically and culturally (SER 2004: 3).

Project plans

These criteria require more than just ecological knowledge; they require detailed plans for implementation. With increased organization and legitimacy as a practice, SER International recommends the following formal steps for restoration projects:

1. Identification of problem and rationale for restoration
2. Ecological description of site
3. Statement of the goals and measurable objectives
4. Designation and description of a reference ecosystem
5. Explanation of how the proposed restoration will integrate with the landscape and its flows of organisms and materials
6. Explicit plans, schedules and budgets for site preparation, installation and post installation activities, and strategies for corrections
7. Well-developed and explicitly stated performance standards, with monitoring protocols by which the project can be evaluated
8. Strategies for long-term protection and maintenance of the restored ecosystem. (SER 2004)
The particularities of each restoration project determine who carries out the aforementioned steps. Restoration projects are often carried out by an assortment of agencies, including professional practitioners and non-professional volunteers, and in recent years some debate has developed around the professionalization of the field (Light, 2000). The public interacts with scientists who interact with land management agencies and political structures. In this respect, ecological restoration is as much a social and political endeavor as a scientific one.

Social Considerations

Writers in the field of ecological restoration have placed significant focus on the ecological sciences and the importance of founding any restoration project in well-researched ecological principles and restoration techniques (e.g. SER 2004; Hobbs 2007; Doyle, 2008).

However, simultaneously, a more philosophical debate has arisen in the field surrounding the potential of ecological restoration to act as an agent of cultural revitalization and the disservice this potential is paid by an increasing focus on scientific and technological aspects of restoration. Authors such as Temperton, Higgs, Jordan and Cairns have critiqued this central role of science. Higgs (2003), in particular, points towards the limiting nature of “zealous attention to scientific and technological considerations as well as our intrigue with larger and larger projects” (p. 159). More than just “application of a scientific technique” (Light and Higgs, 1996), notions of good ecological restoration must be expanded to include other forms of knowledge and public participation.

Why should participation be expanded? Three main streams of reasoning for participation exist in the literature; these arguments can be roughly organized around benefits to the project, the individual, and to community or society. In technical literature, public participation and collaboration are cast as necessary for project success. This category of reasoning for community participation deals with involving the public in order to benefit the project, through avoiding controversy, building a constituency that supports the project, and saving costs through volunteer engagement. Engagement in this realm usually consists of participation in planning
meetings, public consultation arenas, and as volunteer labour.

Recent works on examples of large restoration projects like the Chicago Restoration Controversy (Gobster & Hull, 2000) and the California Bay-Delta Restoration (Nawi and Brandt, 2008) have demonstrated the lengthy delays that result when community consultation is either incomplete or mismanaged. A typical description of this type of public participation involves stakeholders and land management agencies. Stakeholders include landowners, environmental groups, business owners, and local government officials (Doyle, 2008). An endeavor that often involves several interest groups, jurisdictions, and potentially conflicting experts could benefit collaboration in decision-making; “collective decisions are more likely to be honored and implemented than are those that are made unilaterally” (SER 2004:1; also BC Auditor General, 2008).

Engagement concerns are magnified with increased scale and complexity of projects, and as restoration projects get larger with time, practitioners are learning to anticipate the need for early engagement: “[a] formidable barrier to a landscape approach [to restoration] is the inevitable conflicts between environmental protection and property rights” (Cairns Jr. 2002). Restorationists engaging stakeholders often use formal processes through Environmental Impact Assessments, structured decision-making processes, and public hearings (Doyle, 2008).

These practical arguments, while focused on non-scientific aspects of restoration, still tacitly locate science at the center of the public engagement process, and cast engagement as a means towards support for technically determined projects. Cairns (2000) argues that, “if the science and technology underlying ecological restoration are not understood by the general public, implementation will fail for lack of public support.”(171). Kinzig (2001) described a meeting of interdisciplinary scientists in which one of five determined pressing needs for future research in environmental fields was, “Science Communication.” Science can be contested, as well; Helford (2000) describes the conflicting opinions that sprang from meetings held by restoration ecologists conveying the reasoning for restoration in the Chicago area. Far from accepting the “facts” of the science, the public argued its validity when it conflicted with what they valued in the landscape. Restoration ecologists, it
seems, believe that restoration would be less contentious and better served by increased science literacy and understanding.

A second stream of reasoning for restoration participation deals with benefits to individuals. This is a small but gradually increasing literature. One study found that both volunteers and paid staff gain various types of satisfaction, including the satisfactions of: contributing to something meaningful, a sense of accomplishment, belonging to a community, personal growth and physical activity (Miles et al. 1998). Individual involvement also helps build attachment to specific places and increased knowledge of one’s home landscape (Ryan 2000). Other studies of volunteer participation cited a sense of accomplishment, increased sense of group or community solidarity, increased learning and skills, and increased personal welfare as the primary reasons that individuals participate in environmental stewardship activities (Wahl, 2010). These benefits are most often realized through volunteer participation, for an afternoon, a day, or for extended periods of time.

The third stream of discussion about community engagement deals with benefits to communities, and has a more philosophical tone. Restorations of both ecological systems and cultural structures entwine in these discussions. Martinez conceived of ecocultural restoration, which emphasizes the interplay of cultural and ecological fidelity. Cultures and communities benefit from reenlivened language, cultural practices, and ecological health in this model. Jordan, Higgs, and Light (among others) have all discussed the democratic nature of restoration practice. While Jordan (1997) writes that ecological restoration is an inherently democratic process, Higgs and Light describe it as having democratic potential that must be consciously realized through purposeful participation. Restoration, they argue, is a political act because it is a particular set of values enacted on a landscape in a particular way. As such, it is an opportunity for individuals to come together in a communal way, participating in democratic acts in their place. Built into Higgs and Light’s argument is a focus on the importance of local citizen participation. Others support this argument. Local citizens not only benefit from the social relationships that form in restoration, but serve an important collaborative role:

---

1 The extension of this reasoning is discussed in more detail in the section below: Focal Restoration.
Ecosystem protection and restoration will require the collaboration of ordinary citizens who can be especially attentive to the actions and proposed actions of individuals and organizations that might threaten the ecosystem, and skilled professionals who can gather the hard evidence necessary for policy and regulatory decisions (Cairns Jr. 2002: 19).

With these collaborative relationships come an increased investment in and fidelity towards local landscapes. Encompassing the central ideas behind this reasoning, Higgs lists three ways that engagement in restoration is valuable in the context of communities: 1) Creation of meaning; 2) Development of knowledge and skills within a community related to place; and 3) Increased democratization of the landscape (2003).

Of course, benefits to individuals, projects, and communities, are closely intertwined; for example, increased personal attachment to place can foster the kind of long-term stewardship that benefits a restoration project beyond its initial inception, and increased participation with a community in a landscape may garner psychological and physical benefits to individuals (i.e. Ryan, 2000; Wahl, 2010).

When it comes to prioritizing funds for projects, however, the benefits of citizen participation are not universally valued. Some restoration ecologists argue that managers have been “driven by political pressures to initiate community-based projects without interference from monitoring or research” (Toyne and Farley, 2000). Of these projects, Lake (2001) writes that, “in terms of ecology, very little of value has been learnt from such projects, and in terms of restoration, design inadequacy has meant that lessons learned on the sites cannot be reliably evaluated to improve restoration on these sites or elsewhere.” In these restoration narratives, research and community engagement are pitted against one another, usually in the arena of funding. Indeed, both of these aspects of projects often lack sufficient funding. In one 2007 study of river restoration in the Pacific Northwest, two-thirds of restoration project managers noted a need for ongoing monitoring of a project’s success, while only one third had monitoring funds available (Rumps et al., 2007).
Others have argued that volunteer participation in restoration is inappropriate and may even threaten ecological success because of unpredictable work quality, management concerns, or engagement in wilderness settings that should not be open to further human impact (i.e. Fuchs, 2004; Throop and Purdom, 2006).

Do some of the central goals of ecological restoration occur at the expense of others? That is, do practitioners of the scientific, managerial and applied aspects of restoration, in their conception of the benefits of their projects, acknowledge potentials for cultural revitalization? Is there a way that these goals complement one another? Can restoration be conceived in a way that realizes the dual promise of restoration that Higgs, (among others, e.g. Martinez, Jordan, House, Cairns Jr.), advocates: both ecological and cultural revitalization?

For a practice based on the seemingly conciliatory premise that humans should take an active role in assisting damaged ecosystems, ecological restoration fosters a surprising amount of conflict. The first place of conflict—albeit friendly—happens in journals and conferences among practitioners, scientists, and academics in the field of restoration, mostly centered on the direction this adolescent discipline should take as it grows. The second place of conflict—often less friendly—takes place in community meetings, city halls, mines and riverbanks, among landowners, land managers, community groups and scientists. These conflicts are sparked at the potent intersections of land use values, ideas of place and history, economic patterns and politics. It is precisely at these loci of conflict, both in journals and in the field, that the most potential and need for work in the social sciences and humanities lies.

Mirroring the tendency of applied restoration to overemphasize the technological, academic research conducted in the field of restoration itself has been conducted disproportionately in the natural sciences. Authors have recently called for a more balanced and integrative approach to research on and for restoration (e.g. Hobbs, 2007; Temperton, 2007; Cairns, 2000). Temperton, (2007) writes:

*It is not helpful to simply advocate that the scientific aspect of restoration should have preference over all other aspects of restoration. Instead, it is necessary to establish a base building block of a new edifice for restoration as an emerging truly transdisciplinary field* (345).
Hobbs (2007) argues that in fact, the success of future restoration projects may very well depend on an increased integration of social, economic and ecological factors in ecological restoration research. He writes that without both an increased understanding of societal expectations of restoration projects and a more synthetic approach to research concerned with restoration:

*A mix of scientific uncertainty, value-laden decisions and unrealistic expectations could lead to costly and demoralizing failures, loss of confidence that restoration can deliver useful outcomes, and a redirection of funds to other initiatives, while leaving important ecosystem degradation untreated* (356).

This caution echoes the writings of other scholars and practitioners in the last decade (e.g. Cairns, Jordan, Light, Hull). Most specifically concerning dam removal, Smithson (1998) wrote that, “while natural science research is needed to answer many questions about potential outcomes, there is a clear need for social science research to better understand the human dimensions of dam removal” (28).

At a 2007 meeting of the Elwha Nearshore Consortium in Port Angeles that I attended, organizers held a forum in which they asked participants to suggest areas of future research. The group of local residents, researchers, and park administrators, who had spent the majority of the two days debating the science of the project, overwhelmingly agreed on the need for more understanding about the social aspects of the impending dam removals. Despite the prevalence of this sentiment in communities both academic and geographic, and compared to the enormity of the field of restoration, few researchers have approached the social aspects of restoration.

Just as the body of scientific knowledge concerning restoration ecology benefits from the sum total of lessons learned through the sharing of cumulative experiences, often experimental, (e.g. Jordan, 2000; Palmer, et al., 2006; Cabin, 2006), the larger field of ecological restoration would be well served by a body of case-specific examinations of social perceptions. The social, ecological, and political
complexity of each project is unique, but research designed to illuminate these complexities will enrich both scientific and cultural aspects of ecological restoration.

**Focal Restoration**

Eric Higgs offers “focal restoration” in his book *Nature By Design* (2003) as a critique of and a recommended redirection for present trends in the field of ecological restoration. He conceives of the field of ecological restoration as sitting at the divergence of two paths. One leads towards a practice-driven endeavor that acknowledges, values, and relies upon social engagement. Higgs terms this type of restoration *focal*. The other path leads towards an efficiency-focused, commodity-driven industry that ultimately disconnects communities from their place and one another. This version of ecological restoration Higgs terms *technological*. In order to understand this terminology, we must first examine its underlying principle: the concept of the device paradigm.

*Borgmann’s Device Paradigm*

Higgs’ theory is rooted in the work of American philosopher Albert Borgmann, who offers an analysis and critique of the role of technology in modern life in his 1984 book, *Technology and the Character of Contemporary Life*. Borgmann proposes the device paradigm, in which “technology is the constraining pattern to our lives” (Higgs, 2003: 185). This pattern has resulted from the increasing prevalence of certain types of technology in our lives.

While technology has allowed us to transcend “onerous” burdens associated with natural phenomena like disease and hunger, it has also seduced us into avoiding the “ennobling burdens exacted by the demands of community and of human excellence” (Strong and Higgs, 2000: 20-21). Some technologies, by disconnecting us from engagement with the world, actually erode our skills, limit our knowledge, and stunt the development of our moral faculties. The seductive nature of technologies that free us from “ennobling burdens” has resulted in a shift from the prominence of *focal things* to the prominence of *devices*. Focal things are objects and places that center human experience, that exist embedded in a context of human relations, the environment, and a practice. They have “commanding presence,
continuity, and centering power” (Borgmann, in Strong and Higgs, 2000: 21). In contrast, devices are “disposable, discontinuous with their larger context, and glamorous in their appeal” (ibid., 22).

An example will clarify these terms. For nearly twenty years, my mother has run a children’s theater near Seattle, Washington. Consider, as an example of an intuitively focal thing, the theater. As a structure itself, the theater is unremarkable: a plain black stage, seats for 180, and a set of professional theater lights.

However, the structure is much more than its physical make-up; “A focal thing is not an isolated entity; it exists as a material center in a complicated network of human relationships and relationships to its natural and cultural settings” (Strong and Higgs 2000: 23). Over decades, families have gathered on the wooden seats in the theater to watch their children perform. The theater itself was built by a dedicated group of teachers and parents who volunteered on Saturday afternoons. At a play performance, the audience is aware of the cost of production through ticket prices. Objects donated to the theater bear the names of patrons on plaques, signaling commitment of others and inferring the value of the place in the community. The performance of a play and the running of the theater require commitment; the theater demands skill-building in the form of technique on the part of the actors and technicians. There is reciprocity between the thing (the theater) and its users (the community). The focal thing is brought to life by skillful engagement on the part of the users, and the product the focal thing produces (the play) is interwoven with the thing and its context.

Now consider a parallel device: a DVD player and a television. For a negligible amount of money (considerably less than the price of theater tickets), the same family who came to the theater might rent a film version of the same play. The technical accuracy of the performance on the DVD will most likely far exceed that of the children’s play. Missed lines, costume mishaps, and unevenness in sound will have been edited out—the product will be “higher quality”. The performance can be watched from home, without any potentially uncomfortable social interactions required. Most likely, the family will not practice appreciation or empathy in the
same ways they would at a live performance through applause, laughter, or congratulating the actors after the show.

Additionally, the machinery required to create the play will have been concealed: the lighting mechanisms out of range of the camera, the technicians invisible, the actors’ demanding work of rehearsals and auditions far beyond the scope of the audience. Even the true cost of production is hidden in a diffuse economic system. The commodity—the performance of the play—is made available by the device, untangled from its complicated context and any burden that may come from experiencing it in continuity with its reality.

Other examples of focal things and the devices that have replaced them are: hearths and central heating, musical instruments and recordings of music, home cooked meals and fast food. “A thing is focal if it is what we give our time to and what we build our lives around” (Strong and Higgs, 2000:32). The means and the ends of the production are “richly interwoven,” require practice and fidelity, on the part of the performers. Importantly, focal things are attached to practices; chopping wood and tending the hearth, playing the instrument, cooking the meal. In the case of devices, machinery replaces practice, and the commodity is merely consumed. “Commodities are discontinuous with their larger natural, communal, and cultural settings (often blinding us to social injustice and ecological damage)…whereas focal things unify and gather, devices divide and scatter” (Higgs and Strong, 2000: 32). Borgmann would argue watching a DVD has higher value to a community than attending a live performance. But Borgmann does not argue that we consciously choose to replace activities that matter with devices, rather that the device paradigm is unconscious and insidious.

Borgmann offers a series of steps for reforming the paradigm. First, he writes that we must recognize the pattern of technology that decontextualizes the things in our lives, rendering them devices. Second, we must become respectful of focal things, and mindful of their importance. Third, we should engage regularly in focal practices—the types of practices attached to focal things. Borgmann argues that this will alert us to the forces actively opposing them in day-to-day life and encourage us to value focal practices more. Fourth, Borgmann advocates the fostering of, “deictic
discourse, languages of reflection (which often turn out to be from literature) that remind us of the greater importance of these centering things and practices and help to provide the resolve to engage them” (Strong and Higgs, 2000: 33). In practice, Borgmann argues for two main strategies: 1) expand focal things and practices, complimenting them with public things and communal practices, and 2) reorient consumption-based economies to instead stimulate local economies (and thus public life) by establishing a two-tiered economy that favours the local. Larger economic systems, in this model, would support mass production and other services too large for small locales.

Numerous scholars have taken up Borgmann’s work and applied it in various realms, ranging from the philosophical (e.g. Light, 2000) to the practical (e.g. Thompson, 2000: “Farming as a Focal Practice”). The central problem each addresses is well put by the editors of an anthology centered on Borgmann’s work: “we have not yet evolved theories that guide us toward a critical rather than a passive engagement with technology and its effects in our lives.” (Higgs, Light, and Strong, 2000: 2) It is towards this end that Higgs presents his theory of focal restoration.

Higgs (2003) writes that the device paradigm is increasingly evident in our relationship with nature. Corporations have “colonized” our imaginations by producing and selling images of nature and wilderness that affect our interaction with natural spaces. Even the movement whose aim is to increase the value of nature in our society displays the pattern of the device paradigm: “the commodification of the environmental movement generally…has produced endless requests for cash donations instead of local commitment” (Higgs, 2003: 257). While ecological restoration offers an antidote to our destructive environmental practices and alienation from natural spaces, it also has the potential to be subsumed by patterns of commodification.

Higgs argues that ecological restoration can help us resist the device paradigm. Wilderness and ecosystems can be focal things, and ecological restoration the practice that makes them focal. Realizing this potential requires a conscious choice: “ecological restoration is a preeminent focal practice, but only if we steer practice toward valuing ecosystems in their depth and honoring the social relations
that form in the midst of restoration” (Higgs, 2003:194). Higgs’ warning echoes some earlier critics of the field (discussed earlier in this chapter) when he voices a concern that without choosing focal practices, restoration could become little more than a technological intervention, or “restoration as a technoscientific apologia.”

**Technological Restoration**

Following the first step of Borgmann’s reform strategy—identification of the paradigm--Higgs begins by describing the way the device paradigm shapes current trends in ecological restoration. He terms restorations bound by the device paradigm *technological* and identifies two parallel processes of commodification that characterize them: first, the transformation of nature into products for consumption, and second, the evolution of the practice of restoration into a technical one “bound by matters of efficiency” (2003: 254).

Technological projects commodify nature by setting reference points conditioned by the device paradigm. This manifests in three major ways. First, “products” within an ecosystem, like salmon or timber, may define restoration targets. Second, practitioners may aim towards ecosystem services, like water filtration or carbon sequestration. The problem with these first two approaches is that as products or services are isolated from their ecosystems, they are both decontextualized (a hallmark sign of the device paradigm), and subject to the desire to “maximize” production or efficiency, another signal that forces of commodification are at play. The third form of reference point commodification deals with images. Higgs writes that, “the goals set may resemble manufactured images instead of carefully negotiated ones rooted in participation and faithful articulation of locale” (Higgs, 203). Our image of wilderness and nature, increasingly influenced by media and corporate representation, may constitute a “product” that we aim to produce through restoration.

The practice of restoration itself has veered towards professionalization. Increased size, complexity, and time-scale of projects have put the responsibility for project implementation into the arena of restoration ecologists, land managers, and professional ecological Restorationists. The professionalization of the practice both
removes the potential for local volunteer engagement and renders what might otherwise be a focal activity an economic arrangement.

**Focal Restoration**

Continuing to follow Borgmann’s reform strategy by presenting means through which to expand the importance of focal things and practices, Higgs offers *focal restoration* as a model alternative to technological restoration projects. Focal restoration projects, he writes, would not only meet the basic ecological and historical premises of restoration, they would also center on reality and the “precarious resourcefulness of participation and focal practices.”

Higgs writes that good ecological restoration projects—those that resist the device paradigm—contain four main qualities. The first two are widely agreed upon preconditions for ecological restoration: historical fidelity and ecological integrity. *Historical fidelity* means “loyalty to predisturbance conditions”. This loyalty is necessarily influenced by “social, economic, cultural, political, and aesthetic goals and perceptions from the present.” Adherence to historical fidelity does not require that restorationists create a perfect, static replica of an ecosystem from a previous era, but it does require that they make every attempt to return the site to a historical assemblage of species and pre-disturbance functions. Their goals must be bound by a second quality: ecological integrity.

*Ecological integrity* is defined as “native species populations in their historic variety and numbers naturally interacting in naturally structured biotic communities” (Angermeier and Karr, 1994, in Higgs, 2003). More specifically defined measures of ecological success in restoration projects are discussed in the previous section. In broad terms, ecological integrity and historical fidelity, according to Higgs, exist in a tension that keeps one another in check. An ecologically sound ecosystem will not be considered “good” restoration if it is a completely novel assemblage for its location². Conversely, a restoration that is historically accurate but unable to “naturally interact” or maintain ecosystem functions would not be considered good.

---

² Climate change science is shifting this approach. A considerable debate has arisen in the field of Ecological Restoration about how to balance the traditional species assemblage
Restoration projects that only pay attention to these two qualities risk falling under the device paradigm, because without a social context, they drift towards commodification. Two more features help root a focal restoration project: wild design and focal practices.

*Wild design* acknowledges the human agency in restoration activities, and calls for an alignment of this design with natural processes. The design of a restoration project must hold two interests equally: design for humans and design for nature. The irony of design for restoration, Higgs argues, is that the best laid human designs aim to have natural processes take over. Wild design should emphasize the experience of human visitors into the landscape, while fostering the kind of ecological integrity that ultimately makes a system self-sustaining; “we are not designing for ourselves, articulate clients, or identifiable users, but for the largely silent interests of ecosystems. Engagement is a key to such practice” (Higgs, 2003: 284). Engagement in a landscape creates the kind of knowledge that allows for the subtle design that makes space for both human participation and wild processes.

The last feature, *focal practice*, lies at the heart of this research. Higgs sees social engagement as a vital part of ecological restoration. He argues (with Light, 1996 and in 2003) that there is an inherent democratic potential in ecological restoration because at its core it is the process of building value in a landscape. In one regard, value is returned to a landscape by its physical restoration; this connotes a neutral value because the ecosystem is brought to former conditions. In another regard, value is *built* because restoration is a conscious intervention and requires decisive acts, through participation in the landscape. This launches restoration into a political realm.

Thus Higgs ties levels of participation to the overall value of a project. When an opportunity for participation is lost, the value of a project diminishes because: 

---
approach with the realization that changing climatic regimes may make historical assemblages unviable. In some cases, the value of historical information to restoration now lies not in its cataloguing of historical species, but in what it reveals about ecosystem change over time. Focus is thus shifting toward building resilience in ecosystems, considering a wider range of species, creating connectivity, and fostering genetic diversity (Harris, et al. 2006). I offer suggestions for future related research in the Conclusion chapter of this thesis.
“the qualities of restoration practice promote community engagement, experimentation, local autonomy, regional variation, and a level of creativity in working along with natural patterns and processes” (Higgs 2003: 257). All of these features can help resist the device paradigm, and build constituency in local landscapes.

A quintessential focal restoration project might be inspired by the community, and small enough in scale that volunteers perform a good portion of the work. A reliance on iterative local knowledge gained through past and present engagement in a landscape would characterize such projects. Local community members would come together in meaningful ways through engagement with the project. The community would meet in the place the restoration takes place—geographically contextualizing the act—creating value in the community as well as in the landscape.

Focal restoration makes room for experts as well. Volunteers would not be the only participants: “Focal restoration involves restorationists working in communities, blending knowledge about local nature with social needs and cultural awareness. This level of engagement is a necessary condition for the realization of a new kind of relationship with nature, one that enforces humility and respect” (Higgs, 2003:211). In Higgs’ conception of things, a focal restoration project would involve a dedicated local community group, which included a combination of volunteers and experts. In simple terms, focal restoration acknowledges the importance of the process as well as the product of restoration. As discussed above, public participation is not always seen as such a central ingredient in a good project, and Higgs’ theory aims to make it one.

*Identifying Technological Restoration Projects*

The device paradigm points to a constraining pattern in culture. This pattern manifests clearly at times in physical devices, such as the DVD mentioned earlier, but as a pervasive pattern, it encompasses much more than just singular objects (Haworth, 2000). The device paradigm at times appears in objects, systems, and acts, such as the market economy (Power, 2000), long-distance travel (Borgmann, 2000), and cinematic entertainment (Fandozzi, 2000). While sometimes elusive,
concrete qualities that reveal the influence of the device paradigm can help the pattern emerge. This is helpful particularly when we consider diffuse practices, such as ecological restoration.

Considering the central theoretical problem I hope to address—the capacity of technological restorations to act as focal things and incorporate focal practices—I identified five concrete features that I believe contribute to a project’s technological nature. These attributes are both products of the device paradigm, for example, the preeminence of science in restoration, and features that might reinforce its manifestation through a project. I anticipated that the combined effects of these features could transform an ecosystem from a thing to a device, through the commodification of the process of its restoration.

Starting from Higgs’ examples of technological projects and his specific critique of “marquee” projects and “megaprojects,” I created a framework of qualities that distinguish restoration projects—qualities that might form a dividing ridgeline between focal and restoration projects. I posit that these qualities make a project technological and that they would limit the inherent potential for community engagement with the project, and thus the capacity for restoration to be a focal practice. Table 1.1 lists these qualities and the parameters for each feature that classifies a project as technological.

---

3There may be smaller projects that adhere more closely to patterns of technology. For example, a corporate restoration enacted for profit by private agencies on private land. These projects are not as fruitful for the examination of Higgs’ theory for three reasons: 1) their small scale and/or distance from the public view make them less influential socially; 2) I was interested in exploring projects that hold political potential for community engagement by being public; 3) these projects veer more towards mitigation, which Higgs and others classify separately from ecological restoration. For these reasons, I chose qualities characteristic of larger, more public projects as my criteria for technological restoration projects.
Table 1.1 Defining Qualities of a Technological Restoration Project

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Long Time Scale</td>
<td>Longer than one year/season.</td>
</tr>
<tr>
<td>Large Geographic Scale</td>
<td>Landscape or watershed level; involving more than one ecological system.</td>
</tr>
<tr>
<td>External Mandate</td>
<td>Mandated by government, through legislation or by law.</td>
</tr>
<tr>
<td>Executed by Professionals</td>
<td>Land management agencies, restoration ecologists, hired contractors for construction, etc.</td>
</tr>
<tr>
<td>Scientific Focus</td>
<td>Science guiding process; research serving both local application of project and larger field of ecology.</td>
</tr>
<tr>
<td>Expensive</td>
<td>Cost exceeds capacity of local community.</td>
</tr>
</tbody>
</table>

In the following chapter, I explain the way these criteria apply to the Elwha River specifically. In reality, all projects fall somewhere between the two ends of the focal/technological spectrum. Even Higgs acknowledges, “a merger of the two [types of restoration], technological and focal, is necessary...imbuing restoration with scientific rigor and clarity is essential. Conversely, technological restoration needs broad engagement to ensure the success of ambitious projects” (2003: 12).

Higgs’ model has not yet been ground-truthed, and critics have argued its application in wilderness settings is inappropriate (Throop & Purdom, 2006). An inquiry based on the interplay between this model and the actual experience of the people involved with large technological restoration projects could help to refine it. Yin (1989) and Robson (1993) describe “extreme cases” as ideal opportunities for holistic case studies and theory development. Dam removals provide ideal “extreme” case studies because as a class of restoration they are significantly on the rise, and by their nature they bring into relief defining characteristics of technological restoration projects and the device paradigm. In the context of the device paradigm, dams represent commodification in one of its starkest manifestations: the physical transformation of a river into the commodity of electricity.
**Large Dams and their Removals**

In the past 20 years, agencies and communities have begun undertaking more and more ambitious restoration projects. In the United States, these projects, usually watershed restorations, increasingly take on unprecedented scales. The restoration of the Everglades in Southern Florida, operating under the Comprehensive Everglades Restoration Plan (CERP) includes more than 60 sub-projects, has a 30-year timescale, and was recently projected to cost $20 billion. ([www.evergladesplan.org](http://www.evergladesplan.org))

Another prominent watershed restoration project, the Chesapeake Bay Program, aims to restore the largest estuary in the United States. The increasing scale of projects is both politically motivated and scientifically supported; increased research in the field has determined that, “restored ecosystems are more likely to be self-maintaining if restoration is carried out at the landscape level” (NRC, 1992).

Increased ecological knowledge has revealed to ecological restorationists the ineffectiveness of the “traditional, segmented approach…the only way to proceed [is] to use the best available science to comprehend the interconnected problems and to work on all aspects of restoration simultaneously and comprehensively.” This is best accomplished through watershed-based restorations (Doyle, 2008).

Within the scope of watershed restoration, dams present unique case studies of the connections between social revitalization and ecological restoration. Dam removals present a focus for a community, a “charismatic event” that marks the beginning of the restoration of the watershed. Their impact is symbolic as well as ecological:

> *The damming of the world has brought a profound change to watersheds. Nothing alters a river as totally as a dam. A reservoir is the antithesis of a river—the essence of a river is that it flows, the essence of a reservoir that it is still. A wild river is dynamic, forever changing—eroding its bed, depositing silt, seeking a new course, bursting its banks, drying up. A dam is monumentally static; it tries to bring a river under control, to regulate its seasonal pattern of floods and low flows. A dam trap sediments and nutrients, alters the river’s temperature and chemistry, and upsets the geological processes of erosion and deposition through which the river sculpts the surrounding land.* (McCully, 1997:10)
There is evidence of the potential for dam removals to create focal activities for communities: the Kennebec River in Maine, location of a dam removal, recently celebrated the tenth anniversary of the removal of the Edwards dam, heralding it as “the project that signified a turning point for rivers and dam removal in our country” (American Rivers, 2009). North American cultural attitudes towards dams throughout the 20th century have reflected a confluence of increasing scientific research, economic and policy shifts regarding the environment, and an increasing ecological concern in mainstream discourse.

When placed in a global context, the Elwha Dams can seem insignificant. Fifty thousand large dams exist worldwide today, and provide more than 1/5 of the world’s electricity supply (Leslie, 2005; Wohl, 2008). Every watershed in America larger than about 2000 square kilometers, excluding those in Alaska, contains at least one dam (Wohl, 2008). In Canada, “hydro” is nearly synonymous with electricity, and hydroelectric projects continue to be constructed throughout the West. According to ICOLD, the International Commission on Large Dams, a thousand large dams came into operation every year from the 1950s to the mid 1970s, and there were still 260 large dams being completed every year during the early 1990s. Large dams, while for the most part no longer being built in North America, are still being constructed at rapid rates in the developing world.

Hydropower megaprojects loom at the center of heated social and ecological controversies on nearly every continent. Forcible relocation of communities, population extinctions and sediment impoundment are just a few of the impacts associated with these large projects. Construction of the Three Gorges Dam, on the Yangtze River in China, displaced 1.3 million people. When completed, it will be the largest concrete dam in the world, creating a 560km reservoir, with a projected

---

4 Dams are generally classified into two categories: large and small. While there is some discrepancy in the literature about classification parameters, I have chosen to use the criteria laid forth by the International Commission on Large Dams (ICOLD): large dams are greater than 15 m height or have a storage capacity greater than 3 million cubic meters. Because both of the dams on the Elwha River fall into this category, I focus specifically on large dams in this project.
power production of 22,500 megawatts. The construction itself has taken over 20 years, and cost nearly 25 billion dollars.

While the heyday of dam construction in North America has passed, large dams are still being proposed and built, often touted as clean energy alternatives to coal power generation—reasoning increasingly supported in the context of global climate change. On April 19, 2010, B.C. Premier Gordon Campbell announced the approval of the Site C dam proposal on B.C.’s Peace River. The project, first proposed in the 1970s, will be the third on the Peace River, flooding 5,400 hectares of land and creating a reservoir projected to reach 83 km long. Opponents argue that carbon emissions during construction and loss of carbon sequestering plants to the reservoir make hydropower not nearly as carbon neutral as its proponents assert.

The Columbia River is North America’s most dammed river. The mainstem of the Columbia has three dams in Canada and eleven in the United States, all constructed between 1942 and 1973, and its larger watershed (including tributaries) is home to more than 400 large and small dams. Historically, the Columbia was one of the most prolific salmon producing rivers in the world. Many dams on the river contain fish ladders, but Chief Joseph Dam, near Bridgeport, Washington, blocks salmon from the upper portion of the Columbia watershed. During the dam construction in the Canadian Columbia Basin, over 60,000 hectares of valley bottom land was flooded, displacing over 2,300 people and inundating First Nations archaeological and burial sites. Little to no community consultation was taken during these dam projects.

In technical terms, the construction of large dams inspires wonder: the Itaipu Dam on the Brazilian-Paraguayan border, involved completely rerouting the course of the seventh largest river in the world, the Parana. Construction of this dam, in the 1980s, displaced 10,000 families, and its power generation (14,000 megawatts) supplies 90% of Paraguay’s power, and 19% of Brazil’s.

Large dams are among the most expensive infrastructure projects a government can undertake (McCully, 1996). The World Bank has historically been linked with large dam projects: its first loan to a developing country (Chile) helped pay for three dams there. Since then it has loaned $58 billion (in 1993 US dollars) for
more than 600 dams in 93 countries (ibid.). As global perspectives on dams shifts, though, the World Bank has reconsidered its support of large hydroelectric projects (Jackson and Sleigh, 2000). In India, activists struggled for decades against the Sardar Sarovar Dam—a megaproject that would submerge 245 villages and displace over 43,000 families. They eventually “humbled the world bank” into canceling its financing of the project in 1992. Since then, the World Bank has withdrawn funding for other large dams in several countries (Jackson and Sleigh, 2000).

Large dam building in North America began in the shadow of the Great Depression. Arguably the most iconic of power producing dams built in this early era of dams, the Hoover dam, was built in 1935 and instantly became a monument to modern efficiency and a symbol of progress. At its dedication in September of 1935, “Interior Secretary Harold Ickes reflected the common understanding when he declared, ‘pridefully, man acclaims his conquest of nature.’” (Leslie, 2005: 3) With increased development and its attendant thirst for both water and electricity, dam construction increased throughout the American West, reaching its heyday mid-century. Over 25% of all existing American dams were constructed in the 1960s. Construction of new dams has been in decline in the US since the 1970s (US Army Corps of Engineers, 1996) Now, at the turn of the 21st century, many of these are nearing the end of their “natural lives”:

> Although dams provide valuable services that continue to support the social and economic infrastructure of the United States, their presence on the landscape is impermanent. Dam removal will eventually become either an intentional or incidental consequence of the aging of these structures or changing social values and laws (Pohl 2002: 1518).

When faced with the costs of repair, the availability of cheaper power from larger power sources, many communities consider dam removal (e.g. Pohl, 2002; Pyle, 1995). Indeed, “no longer relegated to the fringes of the environmental movement

---

5 “The world bank now appears willing only to fund huge dams in countries with repressive regimes which can ensure that popular resistance is crushed.” (McCully 1996:21)
and works of fiction, the notion of dam removal has entered the political mainstream.” (Pyle, 1995: 99) Since 2000, dam removal has become so prominent that the University of California Berkeley has assembled the “CDRI” database, a “clearinghouse for dam removal information.” American Rivers offers several resources for communities considering dam removal, including documentary videos, and “citizen’s action guides” for dam removal. Between 1999 and 2006 alone, 273 dams were removed in the United States, a majority of which were small dams.

Parsing out the central rationales for dam removals is difficult. Initially, safety and economic reasoning were the main impetus for removals of small dams. Starting in the 1980s, increased environmental awareness, scientific understanding of the deleterious effects of dams on watersheds, and the Clean Water Act and the Endangered Species Act in the United States combined to increase the number of removals of large dams enacted for ecological reasons. One study found that environmental rationales for dam removal accounted for only 10% of dismantled dams in the 1980s and almost half of all dam removals in the 1990s (Pohl, 2002).

While the development of scientific information has laid the groundwork for an increasing awareness of the ecological reasoning for dam removals, legislative frameworks have also contributed to the increase in dam removals in the United States in the last quarter century. Communities, agencies and organizations interested in dam removals have found political leverage with the Endangered Species Act and the Clean Water Act (Pohl, 2002). Additionally, the Federal Energy and Relicensing Commission (FERC), the federal organization responsible for the relicensing of dams, underwent a change in directive with the 1986 Electric Consumers Protection Act, which brought the consideration of non-power interests, including the protection of fish and wildlife, to equal status with power generation (Pyle 1995). In some respects, and with the consideration of the ways this new mixed approach to the rationale for dam removals has developed, this has created opportunities for

---

6 http://www.lib.berkeley.edu/WRCA/CDRI
7 http://www.americanrivers.org
more collaboration to occur. Scientific organizations connect with management organizations, tribal groups and political groups to advocate for dam removals.

The Aspen Institute published, “Dam Removals: a New Option for a New Century” (2002), a document based on two years of discussions among land managers, ecologists, policy analysts and non profit organization leaders. The group came up with a “best practices” document, designed to help interested parties navigate the social, economic and ecological complexities of dam removal.

The removals of the dams on the Elwha River exemplify this new mixed reasoning for dam removal. Wunderlich, Winter and Meyer (1994) point to three factors that contributed to the decision to remove the dams: firstly, “the national policy implications of licensing a project [dam] within a national park; the inability to design fish and wildlife mitigation measures capable of meeting federal, state, and tribal resource goals; and legal challenges by conservation groups to fully mitigate all dam-related impacts to the Elwha’s fish and wildlife resources.”

Additionally, in some cases, it has been shown that the cost of repairing damaged or unsafe dams can exceed the cost of removing dams, and that state and federal grants are more readily available for dam removal than for dam repair (Sarakinos and Johnson, 2000). While this was a major argument on the part of dam removal proponents during the decision-making stage, it remains to be seen whether it will prove true for the Elwha River: estimated costs have skyrocketed in the past decade. Part of the increasing restoration costs on the Elwha River can be traced to the fact that the massive bureaucratic apparatus needed to enable the restoration has taken much longer to get into motion than any of the planners anticipated when they set their first dam removal date at 2000, then moved it to 2008, and now 2012.

Because of its scale, the Elwha River Restoration stands as a significant symbol of changing approaches to watershed restoration in North America. It is the largest dam removal proposed in North America, and the first in the United States to be federally mandated. It represents a complicated and shifting interplay between public and private uses and the perception of “ownership” of a water resource. The

---

8 Funding issues are discussed in Chapter Two.
ecological ramifications of the dams and the attendant uncertainty and complexity facing restorationists charged with their removals exemplify challenges faced in other dam removals.

Andrew Light (2000) describes the inherent potential lost when a community does not engage with local restorations, “where a restoration has been slated for a particular place, and where the local community contiguous to that place does not participate in the restoration of it, then the community loses a chance to create value for itself and for the nature around it.” (p. 168). The Elwha River Restoration is an extreme example of a restoration that holds potential for community revitalization: the community in which it is occurring grapples with a shifting identity in a depressed economic climate; the river holds cultural significance for several subgroups within the community; and salmon—the central species the restoration aims to recover—is iconic in the region. Positioned as such, it also holds great potential to be a testing ground for Higgs’ model of focal restoration. Is the Elwha River restoration technological? If so, how can the community participate, and what might be keeping them from doing so?
Chapter Two: The Elwha River

*Nothing alters a river as totally as a dam… A wild river is dynamic, forever changing—eroding its bed, depositing silt, seeking a new course, bursting its banks, drying up. A dam is monumentally static.*

Patrick McCully, *Silenced Rivers*

*Dams became the new symbols of the Northwest—cheap power for the people—but they nearly killed the old symbol.*

Timothy Egan, *The Good Rain*

Introduction

In this chapter, I set the historical and ecological stage for my case study of the Elwha River. I argue that just as dams provide a pertinent and timely example of technological restorations, the Elwha River Restoration serves as a particularly compelling microcosm of the problems attendant with technological projects. I sketch the history of the construction, working life, and mandated removal of the Elwha Dams, and describe the human communities they impact. Finally, I discuss the ecological and technical complexity inherent in the restoration project. The story of the Elwha, as with any socio-ecological story, has infinite angles, shades, storylines, and subplots. I craft this telling to foreshadow the major themes that emerged from my interviews with community members about engagement with the Elwha River Restoration Project.

First, a description of the biogeography of the river sets the scene. Then, the history of the construction of the dams and their ownership points towards the question: “whose river is it?” Next, an overview of the ecological impacts of the dams and their removals highlights the issue of technical problems in the restoration. A description of the community’s role in the decision to remove the dams helps lay the groundwork for the issue of collaboration—and division—regarding the Elwha, and finally a description of the project timeline and plans illustrates the issue of time-scale and complexity of the project.
**Biogeography**

In the Northwest corner of Washington State, at 48°01'13" North and 123°31'38" West, the Elwha plunges 1372 meters from its headwaters to its mouth at the Strait of Juan de Fuca, the major marine channel that connects the Pacific Ocean to the Salish Sea. The river’s headwaters lie on the flanks of Mt. Barnes, in the Southern Bailey range of the Olympic Mountains, a coastal range in Western Washington State. The majority of the Olympic Mountains sit within the boundaries of Olympic National Park, a World Heritage site and International Biosphere Reserve, and the Elwha watershed, at 833 km², comprises 20% of Olympic National Park.

![Figure 2.1 Location of the Elwha River](image)

Because the Elwha River Basin lies at the boundary of the rain shadow created by Mount Olympus and the Bailey range, it has the steepest precipitation gradient on the Olympic Peninsula; the upper watershed receives annual precipitation of 550cm, where the river mouth receives 100cm annually. (Duda et al., 2008) Eight major tributaries feed the Elwha over its 72 km course. Figure 2.1 locates the Elwha on the Olympic Peninsula and in the larger region, with nearby
communities relevant to this study and figure 2.2 shows the location of the dams and Olympic National Park.

![Figure 2.2 The Elwha Watershed, Elwha and Glines Canyon Dams](image)

Dry, warm summers and cool, wet winters characterize the climate of the Olympic Mountains. On the Elwha, the long-term average monthly temperature ranges from 16 °C in July to 3 °C in January. An average of 143 cm of precipitation falls, mostly between October and March. Monthly average precipitation ranges from 2 cm in July to 25 cm in December. Two major flow pulses occur each year: the first in spring when accumulated snowpack melts, and the second during the fall and winter when precipitation increases.
The Olympic Mountains were formed by uplifted ocean floor when the Juan de Fuca plate collided with the North American Plate. As a result, the geology of the central portion of the mountains—and the upper basin of the Elwha River—is characterized by marine sediment, mostly sandstone and shale (Lasmanis, 1991). The combination of high precipitation and the erosive nature of this formation results in high sediment loads in the river. Near the lower reaches of the Elwha, the river cuts through the Crescent Formation, a horseshoe shaped basalt feature. Alpine glaciers and the Cordilleran ice sheet, which covered the region approximately 17,000 years ago, shaped the Elwha valley (Tabor 1987).

The Elwha River’s topography consists of alternating canyons and floodplains (Pess et al.. 2008). In the wide river valleys, the river meanders broadly, shaped by large woody debris, geomorphological features, sediment and vegetation (Latterell et al. 2006, in Duda et al. 2008). Seven major canyons between 0.8 and 5.5 km long separate these floodplains (Duda et al. 2008).

Franklin and Dyrness (1988) created a classification of vegetation zones on the Olympic Peninsula, and nearly all of them can be found in the Elwha River basin. The basin includes a western hemlock zone in the lower elevations, with Douglas fir, western red cedar, and hemlock; a dry Douglas fir zone in the mid-reaches that includes lodgepole pine, manzanita and Rocky Mountain juniper; Pacific silver fir in mid-elevation; and a subalpine fir zone in the highest elevations. Red alder, black cottonwood, grand fir, and bigleaf maple dominate valley bottoms and river terraces (Duda et al. 2008).

Faunally, the Elwha basin hosts a wide diversity of species, and represents a typical Western Washington assemblage. Figure 2.2 lists mammalian and avian species that inhabit the basin. In addition to typical riverine avian species, the two reservoirs created by the dams on the Elwha host populations of other avian species. The abundance of birds on the reservoirs is low, most likely because of steep banks and poor habitat structure on the shorelines (Duda, et al. 2008).
Table 2.2  Mammals and Birds of the Elwha River Basin

**Mammals**
- Black Bear (*Ursus americanus*)
- Black-tailed Deer (*Odocoileus hemionus*)
- Roosevelt Elk (*Cervus Canadensis roosevelti*)
- Cougar (*Puma concolour*)
- Bobcat (*Lynx rufus*)
- Coyote (*Canis latrans*)
- River Otter (*Lontra canadensis*)
- Spotted Skunk (*Spilogale putorius*)
- Beaver (*Castor canadensis*)

**Riverine Birds**
- Harlequin Duck (*Histrionicus histrionicus*)
- Common Merganser (*Mergus merganser*)
- American Dipper (*Cinclus mexicanus*)
- Belted Kingfisher (*Ceryle alcyon*)
- Spotted Sandpiper (*Actitis macularia*)
- Northern Rough-winged Swallow (*Stelgidopteryx serripennis*)
- Bald Eagle (*Haliaeetus leucocephalus*)
- Ospreys (*Pandion haliaetus*)

**Reservoir Bird Species**
- Barrow’s Goldeneye (*Bucephala islandica*)
- Canada Geese (*Branta canadensis*)
- Cackling Geese (*Branta hutchinsii*)
- Hooded Mergansers (*Lophodytes cucullatus*)
- Barn Swallows (*Hirundo rustica*)
- Cliff Swallows (*Petrochelidon pyrrhonota*)
- Violet-green Swallows (*Tachycineta thalassina*)
- Lesser Scaups (*Aythya affinis*)
- Common Loon (*Gavia immer*)
- Blue-winged Teal (*Anas discors*)
- Bufflehead (*Bucephala albeola*)
- Trumpeter Swans (*Cygnus buccinator*)

*(Duda et al., 2008)*

Most central to the issue of the dams on the Elwha River is the state of its fishery. Historically, ten runs of anadromous salmon and trout filled the river: “there was no month of the year when these fish were not migrating upstream, spawning, rearing, or passing juveniles out to sea” *(DOI et al., 1994, in Duda et al., 2008)*.
Salmonids in the river included Coho (\textit{Oncorynchus kisutch}), Sockeye (\textit{O. nerka}), Pink (\textit{O. gorbuscha}), Chum (\textit{O. keta}), summer and winter runs of Steelhead Trout (\textit{O. mykiss}), and spring and fall runs of Chinook (\textit{O. tschawytscha}). While numbers of salmon returning before dams are estimated to have been in the millions, today the largest returning run is approximately 1,500 fall Chinook. Other species return in numbers lower than 500 individuals (Duda et al., 2008). These runs are largely the product of hatchery operations on the lower river run by the State of Washington and the Lower Elwha Klallam Tribe.

**Human History**

Over the past century, control of the Elwha River has moved from its native inhabitants--the S’Klallam--into local European settlers’ hands, then by way of commercial interests into funders from outside the region, and finally into the hands of the federal government. At each step along the way, “ownership” of the river has inched further and further away from those who live near it. The history of the dams illustrates the shifting power of jurisdiction among private industry and agencies, both state and federal, in the region, and the impacts of this gradual estrangement echo through the community even in the current restoration of the river.\(^9\)

At the turn of the 20\(^{th}\) century, European settlers rapidly colonized the Olympic Peninsula. The Pacific Northwest promised rich timber and fisheries resources, and the Olympic Peninsula was a prime location for resource extraction:

\begin{quote}
\textit{The apparent superabundance of resources, like timber and fish, made it difficult for conservationists to convince people of the need to regulate commercial activities and development. For many years entrepreneurs continued to extract from forest, hill, river and ocean whatever promised suitable profit; regardless of the environmental and social consequences} (Crane, 1998:34).
\end{quote}

Power was the main reason that dams were built in the rainy, resource-rich

\(^9\) In Chapter Five, I frame this tension as, “whose river is it?”
Pacific Northwest. At the turn of the 20\textsuperscript{th} century, settlers saw electricity as the key to development, prosperity and civilization (Crane, 1998; White, 1996).

\textit{The Elwha Dam\textsuperscript{10}}

Thomas Aldwell, a Canadian born entrepreneur who moved to Port Angeles in 1890, founded the Olympic Power and Development Company in 1910 with the express purpose of damming the Elwha River. In his autobiography, \textquotedblleft Conquering the Last Frontier\textquotedblright, Aldwell, (an avid fisherman), describes his changing perspective on the river when he first conceived of the idea for the dams: \textquoteleft Suddenly the Elwha was no longer a wild stream crashing down to the Strait; the Elwha was peace and power and civilization\textquoteright (Aldwell, 1950: 80). Aldwell spent several years acquiring the land that now makes up the reservoir sites, and began construction of the dam in 1910 with the financing of a Chicago engineering firm.

The construction of the dam itself was riddled with problems. Most dramatic of all was the fact that the Chicago engineers placed the foundation of the dam not in bedrock but in a deep gravel deposit. In 1912 after an autumn rainstorm, the Elwha surged and blew out the bottom 24 meters of the dam. This blowout, while written of in terms of financial loss in official documents, had a much more sobering impact. A number of S\’Klallam families living below the dam along the riverbank lost their belongings, an infant was injured and homes were destroyed. The S\’Klallam refer to this day as, \textquoteleft the day that the fish were in the trees\textquoteright\textsuperscript{11} (Lower Elwha Klallam Tribe, 1999).

\textsuperscript{10} See figure 2.3.
\textsuperscript{11} The recording of this event, and the subsequent safety issues with the dam ultimately played an important role in the dam removal decision. The cultural memory of this event among the Lower Elwha Klallam Tribe (LEKT) also served as a focal point around which the community gathered in opposition to the dam.
The dam stands 33 meters tall just eight river kilometers from the Strait of Juan de Fuca. Lake Aldwell, the reservoir it creates, has a surface area of 110 hectares. When completed in 1914, the dam produced power for the first major mills in Port Angeles, as well as light for Port Townsend, Bremerton, light and power for the US Navy Yard in Bremerton and various canning plants (Aldwell, 1950).

The dam effectively decimated the runs of anadromous fish the Lower Elwha Klallam Tribe (LEKT) subsisted on, and for which the river was famous with Euro-American settlers. In the construction, Aldwell ignored an 1893 state law forbidding the building of dams without fish passage, and in answer to the scrutiny he received from state and county wildlife agencies, instead funded the construction of a fish hatchery that remained open for just seven years, closing in 1922 (Wunderlich et al., 1994). While such flagrant disregard for state or federal wildlife laws would today make dam licencing impossible, in 1914, it was a moot point: the Federal Power Commission, the regulating agency for dam construction, was not established until 1920. Prior to this federal act, dam licensing was not required.
Even though there was a lack of federal oversight in the building of the Elwha Dam, external economic forces were beginning to assert themselves in the watershed: “while these [dam constructions] helped to stimulate a steady growth for Port Angeles after 1914, it is important to keep in mind that the extractive economy and the profits of the Olympic Peninsula were largely controlled by financiers living outside the region” (Crane, 1998:33). While Thomas Aldwell and local community leaders couched rhetoric about the dam construction in terms that spoke of regional prosperity and community autonomy, the majority of capital return from the projects went to Eastern investment agencies (Crane, 1998; Egan, 2007).

Aldwell and his partners sold the Elwha Dam in 1916 to the Northwest Power and Manufacturing Company. Over the years, the dam changed hands several times, until eventually the James River Corporation, which owned and ran a pulp mill at Ediz Hook in Port Angeles, took ownership. James River sold the mill to Daishowa in 1988, but maintained ownership of the dam and powerhouse.

*Glines Canyon Dam*12

The financial success that Aldwell achieved with the Elwha Dam enabled him to easily convince investors to finance a second dam project on the river. Aldwell had amassed a swath of land upriver of Glines Canyon, and despite warnings from engineers that the site would silt up quickly and provide a less than ideal power source in the long term, Aldwell decided to build there in 1925 (Egan, 2007).

In the years between the construction of the Elwha Dam and 1925, the federal government had begun to exert its control over watersheds in a new way, with the creation of the Federal Power Commission. Ironically, the fact that the Elwha Dam had been built without fish passage before this licensing agency was established actually oiled the bureaucratic wheels for Aldwell's second dam. During the new dam licensure process, when the question of compliance with Washington State fish passage regulations was raised by the federal agency, the lack of salmon runs in the Elwha—a direct result of the Elwha Dam—convinced the state to waive the fish

---

12 See figure 2.4
ladder regulations. Northwestern Power and Light, Aldwell’s reconfigured company venture, was free to build (Egan, 2007).

Figure 2.4  Glines Canyon Dam, 2006

Technological advances and lessons learned during the construction of the Elwha Dam allowed the construction of the Glines Canyon Dam to go more smoothly. It was completed and generating power by 1927. Situated at river kilometer 21, it is a 64-meter single arch dam, meaning the vertical wall of the dam is an arch with its apex upriver. Arch dams are designed such that the weight of the river pushes the legs of the arch into the walls of the gorge, and are often significantly stronger than other dam styles. The reservoir it creates, Lake Mills, is roughly 5 km long.

While the Elwha Dam endangered the livelihood and property of the Lower Elwha S’Klallam who lived down river, the Glines Canyon Dam had a much more lasting and symbolic impact on the tribe: the dam building and inundation of the valley buried one of their most sacred places: the location at which they believe the Creator pulled the Elwha People from the earth (LEKT, 1999).

The ownership of Glines Canyon Dam brings us to an issue that plays a central role in the federal/local interplay that has defined the story of the Olympic
Peninsula and Elwha River over the last century: the creation of Olympic National Park.

*Creation of Olympic National Park*

As early as 1897, the lands of the Olympic Peninsula were falling under federal jurisdiction. Congress established the Olympic Forest Reserve that year; ten years later it was renamed Olympic National Forest. Increasing interest in preservation of natural resources, though always tempered by a desire for economic growth from resource extraction, was signified by Theodore Roosevelt ordering in 1909 that land be taken from Olympic National Forest to establish Mt. Olympus National Monument. The monument was created to protect the Roosevelt Elk, but as a result of friction between the National Park Service and National Forest administration, it was reduced to half its size in 1915. While initially the Glines Canyon Dam site was included in the National Monument designation, it was a part of the land that was lost in this 1915 boundary adjustment. This opened it for purchase by Aldwell and his associates and cleared the way for the dam to be built (Lien, 2000).

Even before the designation of Olympic National Park, visitors from outside the region visited the Olympic Peninsula to recreate and fish in the Olympic Mountains. Increased accessibility by roads and increased motor vehicle use brought the larger regional population, including urban Seattleites, to the Olympic Peninsula. Public advocacy, in large part from this urban population, resulted in the creation of Olympic National Park (ONP) in 1938. This decision was controversial, not only with timber companies who vied for rights to cut (particularly in the old growth rainforest valleys on the west side of the peninsula), but with the overextended National Park Service itself as well as local residents who feared the encroachment of federal power on their land. However, with the highly publicized visit of President Roosevelt in 1938 and a concerted public campaign lead by a small group of individuals from the broader region, the national public image of the park and its

---

13 The legacy of this local/federal controversy continues to this day in the communities surrounding the National Park, and is discussed at length in Chapters Four and Five.
preservation potential was settled. Roosevelt signed the park into being in late 1938 (Lien, 2000; Egan, 2007). Over its seventy-year history, the park has undergone several boundary changes, but its central character remains unchanged.

Today, ONP occupies the center of the Olympic Peninsula, encompassing 13 watersheds, of which the Elwha is largest. It comprises 373,383 hectares, 95% of which are Congressionally designated wilderness\textsuperscript{14}. The portion of the Elwha River inside ONP falls entirely within this wilderness area. In addition to the central mountains of the peninsula, the park includes 117 kilometers of coast-designated wilderness. The extreme topography of ONP has precluded the building of roads into the center of the park. Access points are thus scattered radially around the peninsula at various visitors centers. Port Angeles, the largest city on the Olympic Peninsula, houses the Park Headquarters and main Visitor Center. Olympic National Park received over 3 million visitors in 2005, and 315,500 of these visitors had direct contact with Park employees at visitor centers or information stations. The two most visited destinations in Olympic National Park are Hurricane Ridge, accessible from Port Angeles, and the Hoh River, the iconic rainforest river of the West side, which has a well-developed interpretive center and campground. The Elwha River is 16 kilometers west of the city, but has no visitor center (Olympic National Park, 2009).

**Ecological Impacts of the Elwha Dams**

While all ecological systems are inherently complex, rivers create uniquely complicated restoration problems because of their physical dynamism and the role they play in linking marine and terrestrial ecosystems. Undammed rivers move sediment, wood, and nutrients from land to sea, depositing them along their course, creating structural complexity that supports corresponding levels of biodiversity. Rivers usher marine nutrients into land-based systems; nutrients brought back from the sea in the bodies of salmon provide a significant basis to the food webs of river

\textsuperscript{14} The *Wilderness Act* of 1964 states, “A wilderness, in contrast with those areas where man and his own works dominate the landscape, is hereby recognized as an area where the earth and community of life are untrammeled by man, where man himself is a visitor who does not remain.” The Wilderness Act of 1964 (Pub. L. 88-577)
valleys. Coastal watersheds in particular (the Elwha among them) benefit from the return of anadromous species into their upper reaches. Dams severely impact all of these vital ecological processes.

**Salmon**

The most politically prominent issue with dams in the Pacific Northwest is their impact on anadromous fisheries, specifically salmon. The Elwha River is estimated to have had its salmon populations reduced by 90% as a result of the dams. Salmon have been central to Pacific Northwest identity long before European settlers came to dominate the landscape: “as an economic product, cultural icon, and driver of nutrient and energy flow, salmon are the hub in a network of social-ecological interactions that characterize diverse North Pacific environments” (Bottom, et al., 2009). The LEKT and all tribes across the region depended hugely on yearly runs of salmon. Even in the richly populated Olympic Peninsula, the Elwha stood out: “prior to hydropower development, the Elwha River was considered the most prolific fish producer on the Olympic Peninsula” (Wunderlich et al., 1994:12). The Elwha was one of the only rivers in the United States that saw all the salmonid species native to the Pacific Northwest (ibid). The dams built by Aldwell did more than simply block their passage upstream; they altered the biophysical nature of the river such that ecological restoration for suitable salmon habitat will be much more complex than simple removal of the structures themselves.

**Sediment Starvation**

Geologically, the Olympic Mountains are young. Created from the collision of the Pacific and North American tectonic plates, the majority of the mountains are ancient riverbeds composed of silts, sands and larger composites (Tabor, 1987). This geologic make-up combined with the prolific rains of the Pacific Northwest create conditions and rivers that deliver enormous amounts of sediment radially from the heart of the mountains to various river mouths. The nearest watershed east of the Elwha, the Dungeness River, feeds Dungeness spit, which at 8.9 km long is the longest natural spit in the United States. Ediz Hook, the large spit that creates Port
Angeles Harbor, originally formed in the same way from the Elwha River’s sediment deposition. Before the Elwha Dams were constructed, the Elwha transported approximately 160,000 m³ of sediment, both coarse and fine, to its mouth, contributing to the physical maintenance of this important feature. Over 18 million m³ of sediment is currently trapped behind the two dams, five million behind Elwha, 13 behind Glines Canyon. The major ecological results of this “sediment starvation” have been a coarsening of the sediment that makes up the habitat in the lower river and a shift in the biological habitat and function of the Elwha nearshore (Shaffer et al., 2008). Lower Elwha S’Klallam Tribal members who live near the mouth of the river have noted a significant decrease in the size of the estuary at the mouth.

As the river continues to flow, it washes away much of the sediment that created suitable spawning habitat for salmon, whose ideal substrate for redds (the nests female salmon create when spawning) is pea-sized gravel. Below the lower dam, in the four miles accessible to salmon, sediment is largely plate-sized cobble. The lack of sediment transport has also decimated a historic shellfish harvest at the mouth of the Elwha as the fine sediments on which shellfish depend have washed away without replenishment for nearly a century (Shaffer et al., 2007).

Water Temperature

Water impounded behind dams warms significantly. Middle and lower reaches of the Elwha in late summer now exceed 18 degrees Celsius. These warmer temperatures increase parasite and disease infestations in the rivers, which often kill salmon before they spawn (Brenkman, 2008). Nearly 70% of the 1992 return of Chinook in the Elwha River died prior to spawning, and attempts to lower water temperatures through reservoir draw-downs have not mitigated the problem (Wunderlich et al., 1994). Warmer water holds less dissolved oxygen, which dramatically impacts survival rates of small fry and the macro invertebrates that they depend upon for food.

15 See figure 2.5
The Decision to Remove the Dams

Much of the detailed understanding of the ecological impacts of the Elwha Dams actually arose from a political process begun in the late 1960s:

By the time the original Glines Canyon Dam license was approaching expiration and the FPC [Federal Power Commission] ordered the dam owners to apply for a license for the Elwha Dam, the stage was set for a thorough evaluation of the damage to the Elwha watershed, its fisheries, and its habitat (Egan, 2007: 78).

The Elwha Dam had no federal license to operate, and the Glines Canyon Dam had been licensed by the Federal Power Commission (FPC) in 1926 for a period of fifty years, ending in 1976. As early as 1968, the Lower Elwha S’Klallam Tribe asked the Federal Energy Regulatory Commission (FERC) to consider the need for fish passage during the dam’s relicensing process.

This relicensing process converged with a growing awareness of the decline of salmon runs throughout the Pacific Northwest and an increasingly vocal environmental movement. An unprecedented coalition between the Elwha Tribe and several environmental organizations—the Sierra Club, Friends of the Earth, Seattle Audubon, and Olympic Park Associates—successfully intervened in the FERC relicensing hearings (Winter, 2008). Throughout the 1980s, debate on the peninsula raged. It was not until 1990 that the National Park Service spoke out officially in favor of dam removal (Crane 1998; Egan 2007).

On 26 October 1992, President H. W. Bush signed the Elwha River Ecosystem and Fisheries Restoration Act (hereafter the Elwha Act) into law. It authorized the Secretary of the Interior to develop a report to identify the alternative that would result in “full restoration” of the Elwha River ecosystem and native anadromous fisheries (Wunderlich, et.al. 1994). Passage of the Act marked the beginning of a lengthy research and planning process, still underway in 2010.

Theory and the Specific Case: The Elwha River Restoration Project

The restoration of the Elwha River is much more than the single charismatic event of dam removal. Rather, as Amy Kober of American Rivers put it, “dam

---

16 The impacts of the decision-making process are discussed in more detail in Chapter Four.
removal is not the point of the process; it’s the beginning of the process of restoring a river to a healthy ecosystem.” In actuality, with the complexity of the process, the dam removals are a middle step somewhere. The dam removals are two projects of 45 that ONP oversees as part of the Elwha River Ecosystem Restoration Project. While the most technically challenging, they are but one piece of a very large puzzle involving flood protection, sensitive species management, sediment management, restoration of anadromous fish stocks, and revegetation are some of the major projects simultaneously underway.

Using the concrete features of technological projects identified earlier in this chapter as benchmarks, I classify the Elwha restoration as a paradigmatic case of a technological restoration. How is the Elwha technological? Aside from the symbolic correlation between dams and the device paradigm (discussed in Chapter One), several material factors make it so: its scale, both temporal and spatial, its necessary reliance on professionals rather than volunteers, its technical complexity, and its cost.

<table>
<thead>
<tr>
<th>Technological Feature</th>
<th>Elwha River Restoration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Long Time Scale</td>
<td>Process began in 1968; Act passed in 1992; Removals projected to begin in 2012</td>
</tr>
<tr>
<td>Geographic Scale</td>
<td>22k from upper dam to river mouth; Lake Mills 168 hectares; Lake Aldwell 110 hectares</td>
</tr>
<tr>
<td>External Mandate</td>
<td>Federally mandated by Elwha Act of 1992</td>
</tr>
<tr>
<td>Executed by Professionals</td>
<td>Management principally by Olympic National Park and LEKT; work contracts for construction and revegetation from outside region.</td>
</tr>
<tr>
<td>Scientific Focus</td>
<td>Extensive research-based activities since inception</td>
</tr>
<tr>
<td>Expensive</td>
<td>October 2009 estimate: $308 million</td>
</tr>
</tbody>
</table>

In the sections below I discuss the project’s management, project plans and their timelines, the role of scientific research, and specific ecological restoration

---

17 American Rivers is a U.S. non-profit agency that advocates for river protection, restoration, and health. In 2010, it stands out as the most prominent non-profit agency involved in public communication about the Elwha River Restoration Project.

18 (BWin, 2009)
concerns, in order to illustrate these features. Social dynamics and public participation issues comprise the main substance of this thesis, and are discussed in detail in Chapter Four: Findings.

The National Park Service, a branch of the United States Department of the Interior, acts as the lead agency of the Elwha River Restoration Project. The Bureau of Reclamation, the US Army Corps of Engineers, and the lower Elwha Klallam Tribe are collaborating agencies. All four of these agencies contributed to the Environmental Impact Statements, which informed the project planning and design. The agencies collaborated to author a six-phase, multi-decade project plan, described below.


Collaborating agencies authored two Environmental Impact Statements (EIS), whose purpose was to determine the best options for compliance with the Elwha Act. The *Elwha River Ecosystem Restoration: Final Environmental Impact Statement* (June 1995) evaluated options for restoring the Elwha River ecosystem and fisheries. The record of decision identified removal of both dams as the only option that would accomplish full restoration. This report was followed by a second report focused on implementation strategies: *Elwha River Ecosystem Restoration Implementation: Final Environmental Impact Statement* (November 1996). This report considered two methods of removing dams and the sediment stored behind them. The record of decision of this report selected “river erosion” as the preferred alternative for sediment removal.

Phase Two: Dam Acquisition (Completed February 2000)

The federal government purchased both dams for $29.5 million in 2000, and the National Park Service took on oversight of the project. The Lower Elwha Klallam Tribe was given lead responsibility for the restoration of the Lake Aldwell reservoir once the Elwha Dam is removed.
Phase Three: Planning and Design (2000-present)

The design phase of the project overlapped with phase two, and took nearly a decade, during which ecological research continued to inform the planning. Several changes between 1996 and 2004 resulted in the need for a revision to the original two EIS reports (and thus a substantial setback in project momentum). These included: changes in water treatment requirements for the City of Port Angeles, (discussed at length in Chapter Four); an increased number of Lower Elwha Klallam Tribe residents whose septic systems would be affected by the rise in the water level of the river; changing economics of recycling concrete (one portion of the decommissioning procedure) and the listing of two species of fish as threatened under the Endangered Species Act (Chinook Salmon and Bull Trout). Revised plans were published in July 2005 in a 366-page report, *Elwha River Ecosystem Restoration Implementation: Final Supplement to the Final Environmental Impact Statement.*

Phase Four: Construction of mitigation facilities (Begun October 2007)

The City of Port Angeles draws its drinking and industrial water from the Elwha River. With the uncertainty of the effects of sedimentation during the dam removal process, the Elwha Act required that the plan for restoration, “must include all actions reasonably necessary to maintain and protect existing water quality for the City of Port Angeles, Dry Creek Water Association, and the industrial users of Elwha River water, against adverse impacts of dam removal” (Elwha Act, 5). This mandate resulted in the mandated construction of two water treatment plants. The first is a permanent plant for municipal drinking use and the second a temporary facility for industrial users of water, namely the Nippon Paper Industries USA pulp and paper mill in Port Angeles and two fish hatcheries on the Elwha. The construction of these water treatment plants emerged as a central issue in my discussion with community members about the restoration project; this subject is discussed in Chapter Four.

Average annual discharge from the Elwha is 1500 cubic feet per second, with annual floods of up to 5,000 cubic feet per second. Both the Elwha Dam and Glines Canyon Dam are “run of the river” dams, meaning the amount of water that arrives
in them is discharged by the dams, they have little effect on flows, and are not used for flood protection. However, restorationists predict that as the sediments freed from the upper reservoir are deposited along the river, the river bed, and with it the water level, will rise. The Elwha Act requires flood protection be provided for downstream landowners (National Park Service, 2010).

One federal levee currently protects the Lower Elwha Klallam Reservation near the mouth of the river. Before dam removal begins, this levee will be raised a meter, and armored with riprap. It will also be extended 503 meters to the south to protect against potential reactivation of two relic channels and 137 meters north to protect the northern portion of the reservation. Several other flood protection measures for the protection of private property include the raising of wellheads, dikes, roads, and property. Each of these mitigations must be individually negotiated with the landowners.

Phase Five: Dam Removal (two years, slated to begin in 2012)

Because of the structural difference between the dams, their removal methods differ. The Elwha Dam removal will begin with lowering the reservoir’s water by 5 meters, in order to allow for a diversion channel to be built. Coffer dams—temporary structures acting as dams—will be built to direct the reservoir water into this diversion channel. The water will be pumped out and the fill material behind the dam trucked out; then the remainder of the dam will be removed. The powerhouse and all other structures will be removed and the temporary diversion channel refilled. Before vegetation restoration takes place, the site must be re-contoured. This process is planned to take two years. The lengthiest stage of the process will be the hauling away of the 200,000 cubic meters of sediment behind the dam.

The Glines Canyon Dam removal will occur in tandem with the Elwha Dam removal. First, the water will be lowered 25 meters to allow the dam to create flood protection during the initial stages of the Elwha Dam removal. Once the preliminary work is done on the Elwha Dam, the removal of Glines Canyon Dam will begin. Through a process of notching on alternating sides, spillways will be created so sediment from upstream can erode through natural water surges. Once the majority
of sediment has been carved from the substantial upriver delta, the remainder of the dam will be blasted out and restoration will begin.

An adaptive monitoring plan has been written for monitoring of the sediment impacts in the reservoirs during drawdown and dam removal. Two major concerns during dam removal are increased turbidity in the river and the stability of sediment banks in the reservoirs.

**Phase Six: Restoration (several decades)**

Once the dams are removed, restoration of the river will entail the revegetation of both reservoirs, sediment monitoring to ensure viability of salmon populations returning upstream, and fishery re-stocking. Many of these restoration plans are contingent upon findings of ecological studies currently underway.

Put simply, the purpose of the reservoir revegetation plan is to restore the re-exposed land using native plants. Detailed plans for restoration are currently unavailable, but central concerns for the revegetation include minimizing encroachment of invasive exotic plant species into the reservoir basin and preventing erosion through native riparian planting. In the active river channel, restorationists will allow revegetation to occur naturally by wind and waterborne seeds and rooting of woody debris (National Park Service, 2010). Plant propagation will be conducted using seeds from cones, currently being kept in cold storage, collected by park botanists from Elwha River valley trees. Seeds and cuttings of most species planned for the revegetation project have also been gathered.

*Ecological Research on the Elwha*

Restoration ecologists and researchers have played a central role throughout the project. Mirroring the two directions in the field of restoration ecology discussed in Chapter One, ecological research on the Elwha has served two major purposes: 1) to address management priorities of the National Park Service and plan for the dam removals (i.e in EIS processes), and 2) to advance knowledge of dam removal and restoration ecology (Duda et al., 2008). With the passage of the Elwha Act, the removal of the two dams was not a foregone conclusion. By calling for the “full
restoration” of the watershed—terminology open to interpretation—the burden of determining the best course of action fell to ecologists. Initial research was conducted for the express purpose of making recommendations during EIS and EIA processes mandated by the Elwha Act. This process, discussed in the words of community members in Chapter Four, involved the combined research efforts of several land management agencies and restoration ecologists.

The ecological impacts of the Elwha River dams outlined above create corresponding levels of complexity in the planning for their removals. At the same time, the location of the Elwha simplifies some restoration concerns; eighty-three percent of the Elwha River lies within Olympic National Park, a higher percentage than any other watershed on the Olympic Peninsula. In ecologists’ discourse about the river, this is often a central argument for the potential success of salmon rehabilitation: “Natural ecological processes in many other north Olympic Peninsula rivers have been harmed by extensive land use, particularly timber harvest, but the Elwha basin remains largely in a natural condition above the dams.”19 [italics mine] (Wunderlich et.al, 1994:12) In this context, “natural” most likely means free of notable human impact or development. “The thing that’s so special about the Elwha is, if it [salmon restoration] can happen anywhere, it can happen here,” one ecologist told me (JC, 2008).

Aside from a higher likelihood of successful salmon recovery, the “untouched” upper reaches of the watershed make the Elwha River an extremely popular location for ecological science research. Recent research has focused on questions that may be more broadly applicable in other ecological contexts. It is no wonder the watershed is swarming with researchers; the dam removal process is practically a ready-made ecological experiment, and researchers frame it as such. One ecologist, introducing a special issue of Northwest Science dedicated exclusively to studies on the Elwha River, writes, “temporally, the restoration is a before and after study, with researchers frequently blocking their sampling into the periods before, during, and after dam removal. With respect to topics, the Elwha restoration

---

19 The use of the term “natural” here betrays an assumption that human impact is not; this is discussed further in Chapter Four, in a section entitled “River as Laboratory”.
touches on many areas of biological and physical science” (Duda, 2008: 6). At several meetings, I have heard the research coordinator for Olympic National Park refer to the river as a “pristine laboratory.”

The research is extensive: nearly every university in the Pacific Northwest has an ecological research program operating on the Elwha River, and the National Science Foundation, United States Geologic Survey, National Oceanic and Atmospheric Association, and National Aeronautics and Space Association have all sponsored baseline study projects.

Several fisheries-based research projects are underway, including monitoring options for assessing salmonid response to dam removals (McHenry & Pess, 2008); fish assemblage, density and growth in below and above dam sections of the river (Connolly & Brenkman, 2008); movement of salmon (Burke et al., 2008); and genetic inventories of stocks of salmonids (Winans et al., 2008). Other baseline studies focus on nearshore substrate and morphology (Warrick et al., 2008); distribution of black bear (Sager-Fradkin et al., 2008); benthic invertebrates and periphyton (Morley et al., 2008); seed dispersal effects of Glines Canyon Dam (Brown & Chenoweth, 2008); and a number of geomorphology and vegetation studies (e.g. Kloehn et al., 2008; Acker et al., 2008; Mussman et al., 2008). This scientific focus, so apparent in technologically driven decision-making processes and natural resource management policy and planning, also characterizes a number of the current avenues for community engagement, discussed in Chapter Four.

My research is situated during phases three and four of the Elwha River Restoration Project. Funding for restoration has for the most part been secured; the dams are owned by the federal government; design and planning are nearly complete. Currently, the main professional activity on the river is ecological research. This positions my research at a unique time, and one that ultimately I find characteristic of technological projects, in a “lull” between active community participation in decision-making, and before opportunities exist for volunteering or engagement in the restoration process itself.

This historical, ecological, and political context frames the Elwha River Restoration Project as a case study for my research, laying the groundwork for an
investigation of the ways that the public has and has not been engaged with the Elwha River Restoration Project, and how this might speak to the larger issue of engagement with technological restoration projects. In the following chapter I discuss the methodology I employed to explore these issues.
Chapter Three: Methodology

Social research is both a process and a product. Presumably, one informs the other…[and] the relationship between words and worlds is anything but easy or transparent.

John Van Maanen

The value of the case study is its uniqueness…

Valerie J. Janesick

Introduction

This thesis is the product of a qualitative exploratory research project, the overarching goal of which is to deepen the body of knowledge surrounding the community engagement with ecological restoration projects. My central research question is: “In what ways do large technological restoration projects enable or constrain community engagement, and in the case of the Elwha River Restoration, how might such engagement be enlarged?” In this chapter I describe the methods used to explore this question. I begin by reviewing the qualitative approach central to my inquiry, and follow with explicit descriptions of my methods. Finally, I discuss my process of data analysis and interpretation.

Qualitative Case Study Research

Denzin (1998) describes the qualitative researcher as *bricoleur*, creating an assemblage of methods uniquely suited to each study (3). The particular combination of methods I have assembled in this project most accurately situates this work as a case study. Yin (1989) and Robson (1993) describe “extreme cases” as ideal opportunities for holistic case studies and theory development. I principally work to develop Higgs’ 2003 theory of focal restoration. Considering the central theoretical tension I hoped to address, the limited capacity of technological

---

20 Denzin borrows this term from Claude Levi-Straus who introduced the idea in a 1962 book called *The Savage Mind*. *Bricoleur* refers to a “tinkerer”, one who used the tools at hand to complete a task. This is contrasted with the “engineer” who applies preformed tools to a task. The image of *bricoleur* in this instance is doubly appropriate; my work leans into the distinctions between technological and pre-fabricated approaches to endeavors, as opposed to grassroots, organic, and “on hand” approaches.
restoration to engage communities, I classified the Elwha restoration as an extreme case.

I worked to incorporate a variety of informed perspectives on the question at hand. My assumptions were that the Elwha River Restoration could easily be classified as technological, and the qualities that make it technological shape community engagement. In previous chapters I established the theoretical and situational underpinnings for this premise.

Data Collection
I collected data in four ways. First, a literature review helped me to place the project in both theoretic and historic contexts. Second, and most centrally, I conducted 18 in-depth interviews with community members. Third, participant observation broadened my understanding of agencies and organizations whose representatives I interviewed. Finally, extensive personal and field journaling accompanied the entire research process and informed my analysis. I describe each in sections below.

Literature Review
During the development of my central research questions and project design, I relied on an extensive review of ecological restoration literature. This helped me create my framework of inquiry and shape the lens through which I viewed the Elwha as a case study. The literature review of publications related to the project itself and the various programs for engagement served two roles: first, to help me write well-informed interview questions and second, to help me fill in details about topics participants raised in interviews. For example, several participants mentioned a weed-pulling event on the Elwha River but could not remember details. I used newspaper articles and websites to determine when the event happened and who hosted it.

Interviews
Stake (1995: 65) asserts that interviews are, “the main road to [capturing the] multiple realities” that are the essence of a good case study. Interviews made up the
centerpiece of this project. Interviews took place between October 2008 and April 2009. All interviews took place in Port Angeles except for two, which took place in Seattle. A list of interviewees is included in Appendix B.

Participant Selection

Through my previous work as an educator in Port Angeles between 2003 and 2007, I knew many of the main representatives from educational and governmental organizations involved with the Elwha restoration. I spoke to a number of people in the city, shared my research interest, and kept a list of suggestions they made about who might be crucial participants. On the advice of my academic advisory committee, I tried to limit myself to 15 interviews, and in a short amount of time found that the “small town” feel of Port Angeles and the scale of the project had provided me with many more potential participants than 15. Rather than allowing my informant list to haphazardly evolve, I systematically prioritized participant interviews so that I could be sure to direct my efforts in areas that would prove most fruitful in informing my inquiry. I attended an Elwha Research Consortium meeting in February 2008. At this meeting, I solicited participation by presenting my research proposal and passing around a sheet of paper asking people to sign if they were interested in participating. I used this document as my starting place for recruitment. I compared this list with the earlier suggestions I received and looked for overlap. Participants had to: be mentioned by at least four casual or formal informants, operate in a central role in the community or project, and represent an agency (or branch of an agency) not already represented by another informant. My initial contact letter and recruitment “script” can be found in Appendix C.

Travel between Victoria and Port Angeles is relatively easy, so I conducted my interviews in sets, generally visiting Port Angeles for three to five days at a time and scheduling one or two interviews a day. This afforded me the opportunity to spend time in the Port Angeles community as a researcher (rather than as a resident, as I had previously experienced the city), and work toward gaining more of a participant-observer perspective. Before each interview, I made a short preparatory
page with my central questions and notes on specific areas within these categories that I thought the particular informant might address. For example, I wrote myself a “brief” specifically focusing on estuary and nearshore issues before I interviewed two biologists specializing in nearshore ecology.

Interviews took place at participants’ workplaces or homes, and took between one and two hours. After reviewing the Participant Consent Forms (Appendix D), I began the interviews. I used a semi-structured interview technique, because each interviewee had such particular areas of expertise, and because I was interested in gaining rich data for analysis. Appendix E provides a sample of questions I used.

I transcribed the interviews myself as soon after the interviews as I could. Most often this was within two weeks. Once transcriptions were complete, I sent them to the informants for review. I had built three levels of confidentiality into my ethics agreements and several participants were willing to have their names used in the thesis if they could review the transcript before I began data analysis. Because I hoped to archive the transcripts and digital recordings for future use by Port Angeles area educators and researchers, and the omission of names and identifying details from these documents would, in my opinion, compromise their completeness, I chose to give informants the option to edit their interviews so that I could preserve their names and complete stories in the archives.

Transcribing the interviews afforded me multiple opportunities to listen to and critique my interviewing techniques, and I believe this helped me improve my technique as I proceeded. It also allowed me the opportunity to see large themes beginning to emerge from the interviews. As a means of checking my own bias, though, I did not begin formal analysis until after all of my interviews were complete.

**Participant Observation**

When possible, I participated in events and meetings in which participants were involved. Journalling helped me place my observations in context and informed my interpretation of the interviews during analysis. I participated in two Elwha Research Consortium meetings, watched two information meetings presented
by ecological researchers through Peninsula College and the Washington State Department of Fish and Wildlife, and visited the Olympic Park Institute\textsuperscript{21}, observing lessons given about the Elwha by educators there. I also visited the river and the dams several times during my trips to the study area.

**Analysis and Reduction of Data**

Once I completed the transcription of all of the interviews, I began the daunting task of analysis. Jane Ritchie and Jane Lewis, in their book, “Qualitative Research Practice,” cite Karl Popper as likening theory development to ‘building on piles driven into a bottomless bog’ and write that “such a description could well be applied to the process of qualitative data analysis” (216). Truly, at times it felt this way: while I endeavored to build on Higgs’ theory, I didn’t want to overdetermine my results by defining categories for analysis too distinctly.

I had over 350 pages of narrative, so I needed first to reduce this voluminous data to concepts or themes. I used NVivo 8 qualitative data analysis software to analyze my transcriptions, which allowed me to code interview selections in various categories, compare numbers of responses in these categories, and reorder my coding as patterns emerged. Paragraph by paragraph, I combed through the text of my transcriptions and asked “what is this about?” and coded accordingly. Consistently referring back to my central question: how has community engagement been enabled or constrained? helped me maintain focus. I looked for compelling stories and themes that consistently emerged throughout the interviews.

I created three types of codes: 1) *Informational*, in which I catalogued things like ecological information, explanations of programs offered, participant job description, and chronological details of the restoration--this category helped me understand the context of each participant and also to reconstruct chronologies. 2) *Analytical*, which included participants’ thoughts about the central questions of my thesis--for example, discussions about dynamics between agencies, opinions about

\textsuperscript{21} Olympic Park Institute is a non-profit residential environmental school that operates within Olympic National Park. It has featured prominently in educational programs centered on the Elwha River, and is discussed in more detail in Chapter Four.
the challenges to engagement, and explanations of motives or goals. This made up the majority of the data that I interpreted and used to answer my research questions because it helped me understand how and what participants perceived. 3) **Descriptive**, which included particularly vivid stories, passages of interviews that stood out for their emotional content, and metaphors. Naomi Quinn, in writing on the reconstruction of common schemas in narrative, argues for the identification of metaphors in people’s speech: “metaphors in speech are like flags waving, or Xs that mark the spot.” (48) This category was the most intriguing of the three, and I used it to help spark ideas, formulate deeper questions about my research, and to texture the writing in my findings section.

After coding four interviews, I found my body of codes was “saturated”; that is, I was no longer discovering new relevant codes in the interviews. I then arranged the codes by broader category, putting those aside that were either redundant or outliers. I diagrammed and charted codes, ordering and reordering them in order to try to understand their relationships. My interview journals and literature review helped me check the categories as they emerged. Arranging the most dominant themes into a narrative was a challenging task:

> The major problem we face in qualitative inquiry is not to get data, but to get rid of it. With writing comes the always painful task of winnowing material to a manageable length, communicating only the essence rather than exhibiting the bulky catalogues that testify to one’s painstaking thoroughness…. (Wolcott, 1989: 12)

Ultimately, the codes fell into four main themes. They are: controversy and collaboration, Olympic National Park, water treatment plants, and engagement in the spaces between. Each theme makes up a portion of the findings chapter that follows.

It was important that I approach the work very systematically, as I knew I had entered the work with a particular focus as a previous educator in the community. In attempting to interpret the interviews, I am acutely aware how, “even though committed to empathy and multiple realities, it is the researcher who decides
what is the case's own story, or at least what of the case's own story he or she will report” (Stake, 1995). While my findings were firmly rooted in the data as analyzed through my coding scheme, choices about storytelling with the data were interpretive.

I worked to preserve the words of the informants, particularly when their speech added texture or depth to a concept that could not be generalized. Gillham points to the importance of this technique: “the reduction of the narrative strands of an interview is more faithfully represented by an edited version of what the interviewee actually said than by a translation into the researcher’s words” (127).

**Limitations**

This study is neither longitudinal nor latitudinal. Its intent is to understand current community engagement and how it is shaped by the nature of the Elwha River Restoration Project. As a preliminary study on this topic, I chose in-depth, purposively sampled interviews as the centerpiece of my methodology. The project was not to extend beyond one field season. As such, I limited my selection of informants to people currently holding positions that involve the community with the Elwha River Restoration Project because I felt this population would be most cognizant of the limitations to engagement, having potentially experienced these limitations first-hand.

Another major limitation of this study is that I did not include interviews with members of the Lower Elwha Klallam Tribe. This is a truly unfortunate omission; the tribe has been central to the restoration project from the beginning. The tribe has lived in the Elwha Valley for centuries, was forcibly displaced by the building of the dams, and had a central portion of its livelihood destroyed as a result of the dams. The impetus for restoration came directly from their community, and in the past years they have taken lead roles in the fisheries science, nearshore management, and cultural programs developed around the Elwha River. I had an initial meeting with the tribe’s two land management directors, who graciously shared their perspectives off the record. However, during the course of my study I was unable to schedule another meeting or a formal interview with them, because my visits to Port Angeles
did not coordinate with their availability. Like many organizations on the Peninsula, the tribal offices are understaffed, and their staff time at a premium. Several researchers working on the Elwha River have demanded time and resources from the tribe recently, and in the past few years the tribe has suffered both racist attacks and exploitation of their traditional knowledge by Port Angeles community members. I sensed some reticence on their part in participating in this study, and I wanted to respect it. For these reasons, the lack of a tribal perspective is an unfortunate, but necessary omission. I felt I could not claim to understand the landscape of community engagement across the North Olympic Peninsula without including a tribal perspective, so I narrowed my scope to deal solely with the Port Angeles community.

In the following chapter I present my findings.
Chapter Four: Findings

[The Elwha is] one of those places where the economic, the social, and the ecological goals all came together and converged on one course of action.

LSW, Interview 2009

The combined contributions of federal, tribal, state and grassroots stakeholders… reflect our best methodologies for developing a shared vision of restoration for the Elwha River and its fisheries.

Virginia Egan, The Elwha River

For most [large ecosystem restoration] efforts… funding is the issue that receives the most attention from policy makers, stakeholders, the press, and the public, who find it easy to judge progress on the basis of funding levels alone.

Mary Doyle, Large Ecosystem Restorations

This research was not a latitudinal or exhaustive study of all the perspectives in Port Angeles on the issue of community engagement. As such, in my findings and analysis, it is not my intention to categorize informants into “camps” of conceptual agreement. Instead, I aim to lean into areas of conceptual tension, regardless of the professional position informants held. These tensions appeared in all of my sources of data: the words of my informants, the field notes and journals I kept, my observations of programs and the language used in other sources. When a theme or topic emerged strongly among a number of participants or within a few interviews, I held it up to the light and looked for alternate perspectives in all of my sources. Ultimately, more interesting themes emerged than could possibly be written about in the course of this thesis.

In this chapter I present my findings—the words of participants—in four major areas. These areas, as discussed in Chapter Three, were determined by collating the most common topics—in frequency and across participant responses—that appeared in the interviews. I ordered sub-themes into the larger topics that best illustrated the interplay between them, and structure this chapter around these topics.

First, I discuss the controversial and uniquely collaborative roots of the project. Next, I take up the issue of the ONP’s role as manager of the project. Then I examine a case-study-within-a-case-study: the issue of the water treatment plants in Port Angeles, and how this issue illuminates the complexity of agency relations and
financial issues in the Elwha project. Finally, I explore the places that community engagement has been uniquely enabled in the Elwha Project in a section entitled, “Engagement in the Spaces Between.”

One theme that dominated all of my interviews was the issue of the time scale of the project. The project has been delayed and prolonged throughout its nearly 40-year history, and this looms large in all of the narratives of the groups I spoke with. It cannot be untangled from any of the other four themes, and so it appears throughout.

4.1 Controversy and Collaboration

The controversy that surrounded the decision to remove the Elwha River dams is writ large on the mindscape of the people that I interviewed, particularly those that have lived in the community over at least the past two decades. Both collaboration and controversy shaped the social and political landscape of the Elwha River Restoration Project during its early phases; in my interviews, it became clear that issues of current community engagement could not be understood outside this historical context. While the focus of my study is on the community’s present engagement with the restoration project, and my suite of interview questions not designed to elicit a chronological telling of the story of the Elwha Restoration Project, every participant, save one, framed a large portion of their answers in the context of the decision making process, which happened in the eighties and nineties.

The phases of the Elwha Restoration decision-making process can be roughly split into three eras (Egan, 2007). The first era, the Federal Energy Regulatory Commission (FERC) relicensing procedures, from 1968-1994, was marked by political collaboration and the ultimate passage of the Elwha Act. The second era, from 1991-1996, involved the local community and federal agencies working to determine the best course of action for compliance with the Elwha Act. Three separate Environmental Impact Statement procedures and a unique community decision-making process ultimately resulted in the decision to remove the dams.

---

22 The Elwha Act calls for, “the full restoration of the Elwha River and the anadromous fisheries” (Elwha Act, 1992)
After 1994, the project entered an era focused on resolving community and budgetary issues. In this section, I discuss participants’ statements about community engagement during the first two eras. In later sections, I discuss community issues in the final era leading up to 2010.

Participants reported that collaboration among an assortment of state and federal agencies, environmental groups, and the Lower Elwha Klallam Tribe marked the early phases of the Elwha project. Unprecedented alliances formed between agencies for two main reasons: 1) in order to politically strategize the creation and passage of the Elwha Act; and 2) for scientific information sharing in the lead-up to the decision to remove the dams, during the EIS process. These alliances enabled the undertaking of such a large, complex, politically charged and expensive project. However, these alliances also formed partly in opposition to both FERC and the local community.

Controversy marked the local community's perception of the project, which was borne in an era of intense regional disputes over environmental issues that extended beyond the Elwha. At the heart of the Elwha controversy and other environmental controversies on the Olympic Peninsula is a perception, common in rural areas in the West, that undue control is exerted by federal agencies and environmental groups based in urban areas (Dietrich, Lien 2000, Egan 2007). Participants discussed at length how this narrative runs deep in Port Angeles; it is no wonder that the climate of strong agency collaboration, which created a united pro-restoration front during the passage of the Elwha Act, exacerbated this perception.

Crown Zellerbach, owners of the two dams on the Elwha River, filed for license of the Elwha Dam in 1968, and relicensure of the Glines Canyon Dam in 1973. In the early 1970s, Olympic National Park assisted the Lower Elwha Klallam Tribe and the Washington State Department of Fisheries and Game in collecting baseline data on Elwha River fisheries. Increasing regional concern about the state of fisheries in the Puget Sound and a burgeoning environmental movement sparked further interest in improving fish stocks in and around the Olympic Peninsula. By the mid 1970s and early 1980s, the idea of river restoration through dam removal had entered the agency dialogue.
Initially, when the question of relicensing the Glines Canyon Dam was raised, the National Park Service remained officially neutral. Three participants mentioned ONP’s history with controversy in the town, and suggested a reluctance on ONP’s part to step into what was shaping up to be a charged issue, saying that the park had to have its “arm twisted” to get behind the project (AI1, 2008). It was an unprecedented scenario:

*If you think about it, this was back in the early to mid 80s. Dam removal was not normally thought of. To FERC it would have been practically heresy. They had ordered dam removals but not over the owners’ objection before. Well here, the owner didn’t want the dams removed, but the tribe had treaty rights. You had four environmental groups saying we need the dams to come out. The agencies hadn’t taken positions at that point.* (BWin, 2009)

One participant noted that the park, “was seen partially as allied with the local industry in town” during this phase (BetW, 2008). Ironically, once the project entered its implementation phase in the 1990s, the park would be the agency on the frontline of negotiation with the community.

Despite the neutrality of ONP at the time, several participants characterized the decision-making phases of the project as a time of unique collaboration among agencies. The Lower Elwha Klallam Tribe (LEKT), Washington State Department of Ecology (DOE), Washington State Department of Game and Washington State Department of Fisheries\(^2\), with the support of the National Oceanic and Atmospheric Association (NOAA), combined efforts to challenge the licensing of the dams, with the express purpose of finding a means to restore the fisheries of the Elwha River. The agencies collaborated to amass scientific evidence that dam removal was the most important step towards recovering the fisheries.

---

\(^2\)The Washington State Department of Game was renamed Washington State Department of Wildlife in 1987. In 1994 it merged with the Washington State Department of Fisheries to become the Washington State Department of Fish and Wildlife (WDFW). In this chapter, I
Scientific collaboration proved crucial, because none of the agencies involved had the capacity or funding to undertake studies large enough to make the case for dam removal. Each agency involved in the Elwha Report and Environmental Impact Statement process contributed information specific to their areas of expertise or capacity, “so when you look at the Elwha Report, most of the information came from FERC, most of the dam removal stuff came from the tribe, as well as some of the cultural as well…that’s how that Elwha Report was cobbled together” (BW in, 2009). The Lower Elwha Klallam Tribe was central to this coordination. The Bureau of Indian Affairs (BIA) supplied the LEKT hundreds of thousands of dollars annually to participate in the FERC licensing process. The tribe redirected the money towards research related to dam removal, which significantly informed the report to Congress that the interveners authored (BW in, 2009).

Four environmental groups joined the relicensing debate (discussed below). This broad assemblage of advocates for the Elwha restoration challenged a larger agency (FERC) and a corporation, Crown Zellerbach, the owner of the dams. Creating a united voice in the relicensing proceedings was essential for success. One NOAA researcher who played a lead role in the coordination of the interveners, recalled:

\[ \text{[we]} \text{ made it very difficult for FERC because we had a common front. There was no disagreement. We spent a long time negotiating precise words in these agreements so all parties could sign. All FERC saw was a finished document with all the signatures. So it was much more difficult for them (BW in, 2009).} \]

Another participant, reflecting on the era of the FERC proceedings, commented that, “there was…this feeling of teamwork, of working together…the unlike groups sometimes thinking very differently coming around the table and agreeing on something…. I think it must have felt great.” (AI1, 2008) Notably absent from these “unlike groups” was the City of Port Angeles, which only became involved once it was clear that city water quality might be affected by the projects. This issue is discussed in section 4.3 of this chapter.
Four environmental groups—Seattle Audubon Society, Friends of the Earth, Olympic Park Associates, and the Sierra Club—united as “Conservation Interveners” during the FERC proceedings and filed official motions calling for the full restoration of the Elwha River through dam removal. The Olympic Park Associates is the only of these environmental groups with partial ties directly to the Olympic Peninsula; the rest are national organizations, which have offices based in Seattle, and a national membership base.

Like the National Park, these environmental groups were conscious of the political climate on the Olympic Peninsula, and were not optimistic about garnering support for the cause among the local community. One community member involved in the proceedings said,

_There were some in the town who were interested. The tribe was of course the lead on this. But by and large, the millworkers, the families of the millworkers, the chamber of commerce, the realtors, the business community were still very much opposed to the idea. Here we have these dams in place, they’re supplying essentially free power to a major economic engine in the community that at that time may have employed almost 400 people, and then, you know, the multiplier effect, those families, keeping other businesses going. It was a pretty unpopular cause (TM, 2009)._

Conservation groups were not unaccustomed to challenging the local community. Another participant, a local writer and long-time conservation activist with Olympic Park Associates, said,

_I knew that any conservation initiative on the Olympic Peninsula—I knew this from…the Shi Shi Point of Arches additions [to ONP], and from the 1984 wilderness designations of Olympic National Forest—that the community would not be particularly thrilled about this (TM, 2009)._

Regardless, environmental groups forged ahead in their advocacy; agency collaboration strengthened their position with FERC; legal precedent had been set;
and the scientific case was made. Community support of the project was not sought; as one conservation intervener recalled, “at that point to those of us involved in this issue on the conservation end, getting the community behind it wasn’t that important to us. What was really clear was that we had excellent legal precedent for moving it forward on a challenge.” (TM, 2009) Eventually three more environmental advocacy groups: Trout Unlimited, American Rivers, a national organization with a Northwest regional office in Seattle, and Long Live the Kings!, a Seattle-based salmon advocacy group, joined as interveners. Of these three, American Rivers remains the most engaged in 2010.

All participants agreed that in the early stages of the relicensing, aside from a small portion of the local community engaged in environmental activism, the community supported the licensing of the dams over plans to remove them, but the process was little more than an “unpopular cause”. Little controversy surrounded what at first appeared to be a standard licensing procedure, and public comment sessions held during the FERC scoping meetings in 1989 were sparsely attended by community members. Pro-dam sentiments expressed in the Peninsula Daily News and in some city and county meetings never got much traction. However, once the interveners were successful in impeding licensing and in passing the Elwha Act (1992), the process of Environmental Impact Statements began and dam removal seemed imminent. The NPS, now the federal agency in charge of managing the project, held four public forums in Seattle and the Olympic Peninsula in 1994. It was during these meetings that public opposition began to appear strongly in formal avenues. The project manager most involved at that time said,

\textit{Status quo, there's all sorts of reasons why lots of times people don't get excited until they're against something...it wasn't until we came along and started talking about dam removal...that's when the public really started getting interested} (BWin, 2009).

With community opposition re-enlivened, the park became the subject of criticism: “Some community members stated that they felt disenfranchised from having a voice on the fate of the Elwha. This was particularly true for those who had entered the
discussions late, and had not availed themselves of several opportunities for public review and comment” (Egan, 2007). During interviews with park employees, I sensed defensiveness about the number of opportunities for public participation during meetings. It was clear that the criticism had been strong on the public’s part, and park employees felt their avenues for engagement had been more than adequate.

In 1995, when Olympic National Park released its draft EIS statement recommending dam removal, the real controversy began. A group of Port Angeles residents formed REAL (Rescue Elwha Area Lakes), an organization dedicated to opposing dam removals as the strategy for restoration of Elwha fisheries. They contracted a biostatistician to review the Elwha Report and the park’s draft EIS. The contracted scientist determined that fish ladders, Eicher screens, and trap-and-haul movement of fish around the dams would be sufficient to restore the fisheries. This went against the findings of all previous federal and state reports (Egan 2007).

REAL was quite effective at garnering local support for their cause. Soon yard signs were all over Port Angeles, letters to the editor increased, and flyers handed out throughout the city challenged the park’s science and called for alternate measures to dam deconstruction. The rhetoric REAL used tapped into a deep community fear in Port Angeles: the issue of outside versus local power.

The public was already primed for this issue; during the early nineties, the Olympic Peninsula was embroiled in debate over the federal listing of the Spotted Owl as an endangered species. This had resulted in the Northwest Forest Plan, which severely impacted the logging industry. For some members of the community, the Elwha project could not be separated from what was perceived as a larger pattern of federal power exerted over local lands.²⁴

I think that with a lot of the old timers that have lived in our community for a long time, they see the Elwha in the same light that they have seen other federally mandated policies that have been passed or encouraged upon the local public, like the Northwest Forest Plan.

²⁴ This idea cut both ways in my interviews; while on one hand, participants perceived the public as being suspicious of the federal government, they also reported that government agencies had developed somewhat of a defensive posture in their engagement of the local public, possibly as a result of the powerful local opposition they faced during what came to be known as the “owl wars”.
Forest Plan…they see this as yet another time that the federal government has mandated something on local lands that affect the way that the local people can get out and do things in this place (DS, 2009).

Ironically, it was the use of the Elwha River Restoration Project on a national political stage that fanned the flames of local opposition in the early nineties. Bruce Babbitt, Secretary of the Interior under President Clinton, espoused strong pro-dam removal rhetoric. He had very publicly declared his interest in considering dam removal on the Snake and Columbia Rivers in the interest of salmon restoration. Slade Gorton, a Republican Senator from Washington State, decided to use the Elwha River Restoration project as a point of leverage for forcing the national debate over dam removal.25

The Conservation Intervener group became concerned that the tenuous public support in Port Angeles for the dam removals was waning because of the vocal opposition of Slade Gorton; “once the stage was set for a test of wills between Babbitt and Gorton, and with a fiscally conservative Congress at the helm, purchase of the dams and their removal was no longer looking like such a sure thing” (Egan 2007).

The renewed community opposition to the projects took some environmental and conservation groups aback, and forced them to refocus their attention on local community support:

All the real estate offices suddenly had “save the Elwha Lakes” and “stop the dams”.

Some of the city council people, some people who were very reasonable, you know former county commissioners, decided that no, this is a bad idea for Port Angeles, we want to keep these [dams]. And I never could figure out where that reaction came from. This was…after the legislation passed. Having an ear in Senator Gorton’s office, it just kind of fired up the local opposition…he could slow [the project] down and he did. So

25 This political technique—holding up the progress of the Elwha Project for explicit political means—is echoed in the City of Port Angeles’ strategizing around the issue of water treatment plants.
it became obvious to… the conservationists and the tribal folks that we need to do something in the community here (TM, 2009).

One conservationist felt that once the issue was polarized on a national scale, the divisiveness within the community increased. He reiterated that despite significant local support, the most prominent dividing lines were between those perceived as local, and those perceived as “outsiders”:

*When we filed suit, the troops immediately pulled back and it was the community against the environmentalists. And these were “the Seattle environmentalists”. The fact that some of the major movers in this whole thing were local…everyone always gets much more mileage saying it’s those damn Seattle environmentalists that have no stake in our little community here and the struggles we’re going through and so forth. That’s the standard kind of dialogue* (TM, 2009).

This narrative was very strong in Port Angeles; every participant I interviewed in 2008 and 2009 echoed or alluded to this perspective in one form or another. One participant gave a particularly nuanced assessment of the dynamic:

*So the Northwest Forest Plan took out national forest from harvest. Who lost there? All the small timber industry…not Rayonier, not Weyerhaeuser. ‘Cause they had their own land. Now they had less competition because there was none of these small people…it’s one of those examples where the desire to do right by the environmentally conscious of the urban community…Seattle…does something that is blind to the needs of the people in the rural community* (LSW, 2009).

In an effort to neutralize this perception that the decision was made from outside the community, three representatives from the Conservation Interveners group wrote a grant to create the formation of a “citizen’s advisory group” to be made up of prominent members of the Port Angeles community who were neither strongly opposed to nor supportive of the dam removal option. Once
assembled, the group held weekly meetings with various interest groups and ecological experts engaged in the controversy. Additionally, they held two “town meetings” during which community members shared their opinions and asked clarifying questions about the proposed restoration project. Ultimately, the Citizens Advisory Group (CAG) wrote a final report that recommended the removal of one dam, followed by assessment and possible removal of the second dam. This was financially impractical, and had been eliminated as an option during the EIS phase. However, according to Gini Egan’s 2007 research on the subject, it had the effect of calming some of the community anger over what had previously been viewed as an external mandate without local input.

But the formation of the CAG was not without its strategic importance in the national agenda—Slade Gorton had threatened to block funding for the dam removals unless a “community-based plan” was implemented. The findings of the CAG, although ultimately impractical, fulfilled this demand of Gorton’s, and were used as a tool by the Conservation Interveners to successfully argue for Gorton’s support of the restoration project.

Compared to the heated community battle that raged throughout the mid-nineties, the tone in Port Angeles about the dam removals in 2008 and 2009 was most often described as disinterest, at times even apathy. When I probed participants about the cause for this disinterest, their responses fell strongly into two categories: time scale, and lack of current controversy.

In my experience conversing with local residents, both formally as a researcher and informally as a resident of the Olympic Peninsula, I detected frustration and even resignation with the project because of how long it has been in a planning phase. One informant, who spent several years researching the dam removals, agreed with my perception: “You mention the dam removals in Port Angeles, and ten years ago people would get all fired up — for the good or the bad. Now they just roll their eyes” (AI2, 2009). The Elwha Act, passed in 1992, led to nearly ten years of research and political conflict. Once the conflict was officially resolved, the public’s interest largely diminished. One community leader commented, “recently I think it’s just been people have assumed it’s done, or it’s
happening, or they’ve forgotten about it ‘cause it’s taken so long” (AK, 2009). A small amount of public commentary still occurs, but it is largely neutralized. A park official told me:

*And now, some people are still against it, they may be resigned to it, we still get letters saying, “it’s stupid you shouldn’t be doing this, you should be doing something else.” But I think we’re getting a lot more [positive] interest because it’s been hanging on for so long* (BWin, 2009).

*So, there really seems to be a lack of sustained interest in any aspect of it, really* (DB, 2008).

Eight informants stated that in some respects, the lack of controversy may be what keeps the public from engaging more.

*It doesn’t offer anything I don’t think for much of the public here. So the dams come down, is that changing our lives? No. I think their perception is they don’t see how. First of all the project keeps getting pushed back again and again—“It’s never gonna happen!” And how it will change their lives is probably not by much and over a very long period of time, if it does at all…there’s no controversy. As it is, without much controversy, it’s difficult for people to get enthralled with it* (TB, 2008).

One informant expressed concern that controversy would be sparked anew when the dam removals themselves begin. Because of the complexity of the project, several secondary construction permitting and research projects have been required, none of which are quite as charismatic an event as dam removal, and so easily happen out of the public’s eye.

The long time-scale of the project has meant that the community has changed as well. The population of the North Olympic Peninsula has shifted significantly in the past 20 years, partly because Sequim, just 15 miles to the East, has developed into a destination retirement community. Several interviewees speculated that the
shifting demographics of the Olympic Peninsula have contributed to a population without roots in the controversy. One participant who often gives public talks about the project, related that at his most recent talk about the Elwha River, no one in the audience was originally from the area:

So you get this huge influx of new people and they don’t have the same history or resentments that the locals did because of the owl wars, [which] came down at the same time [as the Elwha debate]. And I think it’s just the typical rural western attitude, that the government’s telling us what to do and they’re not seeing how it’s going to destroy our livelihoods. That’s essentially just gone. So there was sort of that synergy fifteen years ago now, that created that resentment…the folks who were totally against that have either gone or moved on to something else now (DB, 2008).

Since the project entered its implementation phase, community opposition groups have disbanded or died down: “All those conservation groups came together, but they’re working on other stuff now… you go to an OPA board meeting, does river restoration come up? I don’t think so” (AI1, 2008). Locally based advocacy groups have turned their efforts towards other regional issues, leaving the majority of the project in the hands of the National Park at the time of this research (2008-2009). National environmental groups have little or no involvement in the project currently (2010). Some participants had recollections of volunteers from Seattle coming to the Elwha River Valley to remove invasive species, organized by the National Park Conservation Association. However, none knew of any groups that had been involved at any time in the past two years (2006-2008).

During the 2000s, ther local controversies arose to take the focus of the community, many of which contained similar local/national power controversy roots. Rather than this new era of non-controversy around the Elwha being filled

---

26 One informant put it this way: “The Peninsula has stuff imposed on it all the time, whether it’s the Hoh River Trust trying to buy the Hoh River, or the State Department of Transportation deciding to pull out of Tse-whit-zen [an ancient Elwha village uncovered during a graving yard construction project on the Port Angeles waterfront]…or deciding to do Tse-whit-sen in the first place. Some of those are good, some of those are bad. But people here don’t have control of the land in any significant way.
with concerted community engagement, the Port Angeles community has largely become detached from the Elwha River Restoration Project. Numerous reasons for this emerged in my research, and the following sections point to two prominent ones: first, the role and mandates of the National Park Service and second, the reticence on the part of the City of Port Angeles to support the dam removal project. In the final portion of this chapter I discuss the unique places that community engagement has arisen: in “the spaces between.”

4.2 Olympic National Park

In many ways, the location of the Elwha River within the boundaries of Olympic National Park enabled the project to be conceived of and executed in the first place. The fact that Glines Canyon Dam exists within the National Park boundaries gave Conservation Interveners a powerful argument for the dam’s removal because of the mandate of the Organic Act. Ecologically, the protection afforded the Elwha River by ONP’s wilderness designation makes it an ideal location for salmon restoration. More than one ecologist told me, “if [salmon recovery] can happen anywhere, this is the place.” Finally, an agency as big as the National Park Service is uniquely capable of undertaking such a large and complex project.

The topic of the national park was prominent in all of my interviews. Of 16 participants, 14 spoke at length about the role of ONP in the restoration project. The most prominent comments made about the role of the park in the project, in order of prevalence, were that the park: 1) facilitates the project 2) has a complex and contentious history with the town 3) excludes locals 4) is not engaging the public as much as possible 5) has limited capacity and funding, and 6) represents the

To draw on [William] Cronon, the land here is controlled like the hinterlands of a metropolis…” (LSW, 2009)

27 The National Park Service Organic Act of 1916 states: “The service thus established shall promote and regulate the use of the Federal areas known as national parks, monuments, and reservations hereinafter specified by such means and measures as conform to the fundamental purpose of the said parks, monuments, and reservations, which purpose is to conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations.” [italics mine] This mandate of the Organic Act—as applied to salmon—laid the groundwork for legal arguments made by the Conservation Interveners against the relicensing of the Glines Canyon Dam.
“technocracy” responsible for the project.

Most participants were quick to point out that the complexity of this unprecedented project far exceeds the capacity of the local community. The project necessarily depends upon financial and technical support available from outside the region, as accessed by the national park. It’s an uneasy reality for many community leaders and citizens in Port Angeles. The national park, while enabling the restoration project, epitomizes the type of federal control that threatens local autonomy. Several informants spoke of this dynamic. As one city council member told me:

*I think that this is probably true of a lot of communities, especially small communities where there’s always a push/pull between outsiders…this notion that there was a lot of push from Seattle to do this and it’s the big National Park Service that sees this project to the end is just part of that love hate relationship. Because we love to have outside influences come in and do good things for our community but we hate it at the same time, we resent it, we’re suspicious of outsiders, we don’t like to be done to under somebody else’s conditions, and yet that’s the reality…there’s not enough money in this community to do any kind of a huge project without an outside influence* (BetW, 2008).

Federal monies supporting the project enable it, but most participants voiced concerns that the jobs created during the project itself were not directly entering the community, or benefiting more than a few citizens. Companies from outside of Port Angeles will undertake the majority of the deconstruction contracts and construction work associated with the project. This, too, is a reality bound by the scale and cost of the project. For example, a revegetation facility in Roy, in central Washington State, will provide materials needed for the revegetation of the reservoir basins. When I asked ONP’s revegetation manager why the seed would not come from a local company, he explained that the Roy facility,

*…can extract seed and they do it for an incredibly affordable price…they know how to do it on a large scale, so when you can industrialize extracting and growing*
seed, then you’ve reduced the cost. So that’s why they take care of our conifer seedlings. Similarly, the place in Corvallis [Oregon]…they’ve industrialized the process. They’re a fellow government agency (JC, 2008).

While the federal status of the project enables cooperation among agencies, thus reducing costs to taxpayers, it also limits the ability of Olympic National Park to hire local people for restoration jobs. Legally, federal positions must be advertised country-wide in the national USA Jobs database, and applicants are rated on a number of criteria, none of which take into account the applicant’s current proximity to the place where the job exists.

This aspect of ONP’s directive contributes to another, less overt influence of ONP’s on community engagement. Many participants spoke of the national park and its employees as separate from the Port Angeles community, despite the fact that the headquarters are in Port Angeles and many of the employees have lived in town for years. Five non-park employee participants described the historical context of the park on the Olympic Peninsula as contributing to an estrangement on the part of the local public. One community organizer stated:

There’s a long history of people’s lands being annexed by the park. People lost their family homesteads to the park. You know there’s a real bitterness in some elements of the community between the federal government and the local community (AI2, 2009).

Another participant asserted that current Park activities aside from the Elwha project exacerbate this “bitterness”:

I really do hope that [the restoration] will lead so some kind of a community restoration, but I’m not hopeful really. I mean I am hopeful, but I don’t think it will really happen just because of the cultural barriers between the federal park and the local enemies. And now the park is trying to expand out west in the Lake Ozette drainage because of the sockeye. And they’re trying to acquire private forest land out there, and that’s being met with great resistance in some of the local community members who
have timber interests. They just see it as more federal land grabbing, and more land coming off the tax roles. So I think you’re always going to have that dynamic here, there’s just no way to avoid it (AI2, 2009).

Another thread of the community’s estrangement with ONP was spoken about in terms of the physical and ideological distance of ONP from the community. The city sits directly between the Strait of Juan de Fuca and Olympic National Park, the Elwha River runs north about 16 kilometers to the west of the town. Highway 101 passes over the river, and public access points exist either in ONP, at the mouth of the river (a fifteen minute drive from town) or at the Elwha RV park. The most accessible places to access the river are in Olympic National Park. Five participants described this physical distance as a factor in the community’s awareness of and engagement with the project.

People don’t go out to the Elwha River very often, see what’s going on…there’s a lack of realization on the part of the vast majority of people. Occasionally you may see something in the paper, but…I think that the benefit is probably recognized more on the part of the leaders of the community rather than the general population (OC, 2009).

One lifetime resident of Port Angeles also illustrated one way the park’s jurisdiction created a symbolic distance as well as a physical one:

This river is not in the heart of the community. As a resident, you have to pay to get into the park, you have to pay to get into your own damn backyard. If people don’t feel an investment in the restoration of the Elwha, maybe it’s because it’s the nation’s river, not theirs. The only geographically public place where you’re not entering some other jurisdiction is the lower reservoir, and that’s going to be gone! So it’s no wonder the Port Angeles public feels distant… (LSW, 2009)

In eight interviews, participants alluded to a lack of responsibility on the community’s part, and linked this feeling to ONP’s role in the project. Their logic
generally followed this pattern: because ONP maintains responsibility for designing and implementing the project, and outreach has been limited, the community doesn't feel responsibility to make the project happen. A research coordinator and college instructor summed up the dynamic:

Because this is a top-down thing, and it's run by the Department of Interior, and everything within the park boundaries is gonna be done by them, exclude the public, exclude even scientists, most scientists won't even be allowed in there during the deconstruction. Safety. And the lower dam, the deconstruction will be park service but once the deconstruction is done the restoration is gonna be given to the tribe, which is a closed community just by the essence of just being the tribe-especially with the relationship with Port Angeles over the years- so there is really no opportunity for community involvement. It's not like you can say, you know, oh, the dams are gone, let's do a big tree planting where everybody gets involved, which, you know there are plusses and minuses ecologically, but things like that always make people more involved with the ecosystems. And here there is no opportunity for that, none whatsoever. And so I think that even dissuades folks who are sort of on the margin of being interested, like, ah, the feds will do it, there's nothing we can even do so why bother looking at it... (DB, 2008)

Park regulations were also mentioned as impeding community involvement. A community organizer described the perception that physical engagement in the landscape, if not instigated or formally organized by ONP, would be seen as transgressive:

If the park put out a call and said, hey, we really need to pick all the Herb Robert [an invasive herbaceous plant] around the reservoir, and here's where it's located, and if you pick some please let us know what you did and how much you got, I think people would go out and do it. I would try to do that except I think the park would get mad at me for telling people to pick plants in the park. So it's like, if they don't sanction it then...
it’s not OK, so then you end up being antagonistic to the park which isn’t the point…

(LSW, 2009)

This separation from the activities within ONP leads, for some, to a sense that as residents they have little control over what happens there. The main opportunities for engagement with the project currently are through formal avenues: public comment periods, zoning and road permitting processes, and letters to the newspaper. One participant described how this estranges the local public from the processes that occur within the park:

*It comes down to a question of what do you think you have control over? I don’t feel like I have control over what goes on in the park, except for with my federal vote, maybe, and participation in environmental assessments, Environmental Impact Statements, and public comment periods, which close next Wednesday at 12 pm!* [laughter] (LSW, 2009)

Park employees displayed a similar “distance” in their responses through more subtle language that belied a conceptual separation between “Parkies” and “Townies”. While each of the participants I interviewed who were Olympic National Park employees had lived in Port Angeles for at least 7 years, they still uniformly spoke about the Port Angeles community as “they.” I had a distinct impression through their stances and discussion that town members were “other” and ONP was an entity “dealing” with the local community as one small subset of a larger public ONP answers to, namely, the American public.

Superlatives abound when people talk about the Elwha River Restoration Project. The political history, the location in a national park, and the unprecedented nature of the dam removals have catapulted it into national and global prominence. All sixteen participants alluded to the prominence of this project in one way or another, emphasizing its scale, its uniqueness. (e.g. “this is the first one like this!”)

Closely related to these aspects of the project was the idea that, “everybody is watching”. Three participants told stories about National Park delegates from Japan
visiting the Elwha, and also often told stories about educational groups from Universities across the country visiting the river.

Nearly always embedded in the “everyone is watching” narrative was an element of uncertainty: “everyone” is watching not only because the project will be impressive, but also because no one knows how it will turn out:

*It is the world’s largest dam removal and fisheries restoration project. There have been none bigger than this, and so many have been proposed and nobody knows what might happen ecologically or politically with this project, and so I don’t think it’s an overstatement to say that the world is looking at the Elwha project to see what might happen when other groups or other agencies or other areas try to take out their dams* (DB, 2008).

This connects to the idea that the restoration project is an experiment of sorts, and that the NPS and restoration practitioners have a responsibility to make sure it goes well, for the benefit of the nation, not just the local community.

ONP employees I spoke to talked about involving the public in three main ways: 1) through informational sessions delivered to community groups, 2) through interpretation and education within ONP, 3) through volunteer recruitment after the dams are removed (usually because of financial need). Every park employee I spoke with acknowledged that community engagement was an important aspect of successful restoration projects, and they uniformly cited funding limitations as the reason they were unable to more directly engage the public.

Brian Winter, the project manager, for many years was the sole full-time employee working on the Elwha Project. His responsibilities include: “taking the dams out, overseeing all the water mitigation, all the mitigation: flood, water, cultural. Overseeing the fish restoration planning and implementation, basically the entire project.” The restoration includes forty-three separate projects. In 2009, Brian had only one full-time employee. For years he used interagency grants with the bureau of Reclamation and Corps of Engineers to hire consultants to aid in his
management. A majority of his contractors as of 2009 were employed through the Denver Service Center of the NPS.

The main avenue for public engagement that the national park officially pursued was informational meetings to regional community groups. The revegetation manager for the project spoke of public education being crucial to the success of the restoration, mainly because he was concerned that the public would be disappointed at the appearance of the reservoirs as they undergo the natural revegetation process, which may take years:

\[\text{And it's gonna be on display for everyone to see. So I do feel like it's important to communicate these things. To the local population, but then probably also to visitors. Definitely the local population and of course the visitors (JC, 2008).}\]

Distinctions between the local population and visitors points towards a perception within the park that they answer to the greater American public, not just the local public. This is the directive of the Organic Act and other national parks throughout North America.

Because of the technical complexity of the project, and the lack of staffing, community engagement has fallen lower on the priority list than things like water treatment plant permitting and fisheries plan development. Even basic communications have been delayed. As Brian said:

\[\text{Our webpage is just getting updated finally, by…a student intern, because we haven't had the time or even the money to hire a professional to do it. She's doing a great job, really added all these pages, but what, this is 2009? And finally we're getting a fully functioning webpage? It's really sad…we're already getting tens of thousands of hits on it (BWin, 2009).}\]

Public interest exceeds the ability of the park staff to provide information or engage in meetings. Park officials have been forced to strategically choose outreach opportunities. As Brian Winter told me:
So people want the information, it’s just that often you just don’t have the time or the funding to do that. And the money we have for the project has no money for education or outreach. It’s just not there. So we put in, we compete for grants or what have you, and we’ve gotten some, but we could do a lot more. And so public community meetings, I turn down far more than I ever could, and we used to do 100% of them, but we’ve just gotten swamped. So there is a dearth of outreach, and we could do better at this point. Because it’s their community they’re interested in knowing what’s going on. That’s legitimate. Whether they’re for or against it, it would be nice to tell them where we’re at… I try and stick my presentations to agencies or groups that have a direct impact on the project, especially if they have potential to bring funding to the project… (BWIn, 2009)

Olympic National Park does have an education department, but I was unable to schedule a meeting with the education director. During the course of my research, a three-person education team in Olympic National Park was reduced to one position. Part of the reason the education director could not be interviewed was lack of time: she had recently taken on the work of two other people. The education team has collaborated with the Olympic Park Institute in curriculum design and creating some interpretive information, and hired an interpretive ranger in the summer of 2009 who talked about the Elwha River with park visitors.

Non-park employees seemed to distinguish between park education materials and town audiences, giving me the strong impression that interpretive materials presented by the park were seen as material for visitors, not locals:

*It is really interesting to see what a restoration looks like… I think the park is developing some displays, and educational organizations like OPI, and I think we can benefit from tourism always, but also what do our local people know about it?* (BetW, 2008)
Park employees spoke about involving public volunteers once the dam removals are complete, most specifically in the revegetation phase. The revegetation manager admitted this was principally due to necessity—he was not anticipating having enough funds to hire the staff needed for the task. The project manager was hopeful:

_We’re open to [community involvement], but we’d like to get the community much more involved in the implementation piece. It will pay dividends to us and it’s an education piece for them…it’s just, you know, again, you have limited staff and limited time. But we’ll get there (BWin, 2009)._  

Until now, opportunities for traditional “get your hands dirty” volunteer work on the river have been limited. While seven participants mentioned volunteer invasive species pulls, upon further questioning I discovered that all seven were speaking of the same two events, and it took significant investigation to discover who had organized them, (the National Park Conservation Association office in Seattle), and when (2006). Most recalled that the group came from Seattle a few times to pull the invasive weed Herb Robert from Elwha River campgrounds. One informant had participated in this event, and was critical of the fact that noxious weed pulling was the only avenue for involvement:

_The park has allowed for citizen engagement in the restoration project in some ways, but I mean here we are talking about restoration as go out and pull the weeds, right? It’s hard to get more...insipid in your restoration, than “go out and pull the Herb Robert.” (LSW, 2008)_

Another informant who lives in Seattle pointed out that while the project is in its planning stages, little physical work exists to be done. She commented:

_I thought that was a nice way, in this lull, when nothing’s really happening, of trying to keep people engaged and educated and they would like take people over from Seattle. But it would be interesting to see the mix of volunteers, how many were from Port_
Angeles area, how many drove from Seattle just to do the weed pulling, just to be part of the Elwha thing (AK, 2009).

Other more current volunteer research opportunities are also focused at communities farther afield than Port Angeles. An Olympic Park Institute program director pointed out that some citizen science volunteer programs are scheduled with the intent of attracting Seattleites rather than local citizens. This, he claimed, epitomized the urban-focused dynamic around engagement with the project:

That’s the position of the Olympic Peninsula. We’re Seattle’s hinterlands. We’re the playground for Seattleites, and this is Seattle experimenting in their hinterland…the way that we want the Olympic Peninsula to be…we being the people who live here…is not the way the Olympic Peninsula is shaped because so much of the Olympic peninsula is shaped by what people in Seattle or Olympia or Washington DC want the Olympic Peninsula to be. And sometimes that’s for the better, and sometimes that’s not. So in that sense, having the state intervention builds a model where [they’re saying], “The people on the Peninsula, they’re wonderful people, they just can’t be left to manage their own affairs” (LSW, 2008).

Many informants echoed this sentiment, pointing towards the nature of the project as an alienating factor for community engagement. In the section that follows, I explore the relationship between Olympic National Park and the Port Angeles community with regards to the Elwha River by examining the issue of water treatment for the city.

4.3 The Case of the Port Angeles Water Treatment Plants

During my time living in Port Angeles between 2002 and 2007, I often wondered why, when the city of Port Angeles struggles with its identity as a post-industrial town, has it not showcased the Elwha River restoration? This basic question, in part, animated my desire to conduct this research. Indeed, every
respondent commented on the city’s reluctance to vocally support the project. Orville Campbell, who played a central role as James River Corporation’s representative in the negotiations for the project and later served on the Port Angeles City Council, traced the city’s public ambivalence towards the dam removals to the contentious decision making phase:

In the beginning, when we as a company expressed concern about the relicensing of the facility in the process...the local political leaders, they just didn’t want to get involved...they didn’t want to appear to be promoting a particular industry or a particular company, for one. It was developing into a juicy fight that they didn’t feel they had a role to play in. And they thought the company would prevail anyway; let the company battle it out, the company always wins (OC, 2009).

When I probed during interviews about the city’s current levels of involvement with the project, I was surprised to find that the issue was much more heated than I’d anticipated. Rather than describing passive apathy, interviewees described a politically charged situation. Participants uniformly pointed towards one of the many projects associated with the dam removal as a central cause of the city’s reticence: the issue of water treatment. The issue exemplifies a central tension in the Elwha River Restoration Project: the complex relationship between federal and local governments, particularly when the costs associated with large-scale restorations come into play. This complexity appears in the competing narratives surrounding this issue, the contradictions which belie the relationship between federal and local governments, and the city’s lack of overt support of the project.

One city council member was quick to point out that the city of Port Angeles is somewhat unusual among small cities in that,

we have full service utility as well as typical city services. So we provide drinking water, sewage, garbage, solid waste, electricity, we’re responsible for storm water management as well as parks and recreation and finance and planning and those kinds of land use

---

28 This is despite the fact that I did not explicitly ask about the city’s role in engagement with restoration.
questions, and police and fire, of course. So the City Council is a policy body (BetW, 2008).

Water for both drinking and industrial uses in Port Angeles comes from the Elwha River. Currently, a Ranney collector system draws water from 50 feet below river level between the lower dam and the mouth of the river. Due to the high quality and low sediment load of water coming from the Elwha watershed—the vast majority of which is in Olympic National Park, behind Glines Canyon Dam—a simple chlorination treatment system has historically sufficed. Because of the increased sedimentation predicted during and after dam removal, however, plans for a new filtration treatment plant were worked into the restoration plan. The cost to construct these facilities, according to the Elwha Act, would be borne by the National Park Service through the Secretary of the Interior. However, wording within the Elwha Act allowed enough interpretive room that some question about the operating costs of the facilities, once constructed, remained.29

Unrelated to the changes in water quality anticipated after dam removal, in 2000 the Washington State Department of Health re-classified Port Angeles drinking water from 'Ground Water' to 'Ground Water Under the Influence of Surface Water'. As a result of the new classification, the City of Port Angeles was required to improve the treatment system from a simple chlorinating system to a filtration system, a much more costly process both in terms of facility construction and maintenance and operating costs.

At the time the Department of Health made this change and issued the order, the dam mitigation process was underway and the National Park Service had plans to construct a new system more than sufficient for the new requirements. The City

29 “The definite plan referred to section 3(c)(2) must include all actions reasonably necessary to maintain and protect existing water quality for the City of Port Angeles, Dry Creek Water Association, and the industrial users of Elwha River water against adverse impacts of dam removal. The cost of such actions, which may include as determined by the Secretary, if reasonably necessary, design, construction, operation and maintenance of water treatment or related facilities, shall be borne by the Secretary. Funds may not be appropriated for removal of the dams, unless, at the same time, funds are appropriated for actions necessary to protect existing water quality." (Elwha Act, 1992) [italics mine]
negotiated with the Department of Health to postpone construction of a new treatment facility, thereby avoiding bearing the financial burden of construction, since the NPS would soon be constructing new plants.

However, dam removal was delayed and the Department of Health began to pressure the city to comply with the new standards sooner than it appeared the park’s treatment facilities would be completed. The City had remained resistant to paying the higher operating cost of the park’s planned treatment facilities since the Elwha Report was published, and had not yet negotiated an agreement with the park on this issue. The new Department of Health requirements pitched the city and the park into a fresh battle over the financial burdens associated with the Elwha project.

Olympic National Park, struggling with restoration funding appropriations, argued that the city should pay for future operating costs since it needed a new treatment plant for reasons unrelated to the dam removals. The city, also financially struggling, argued that the treatment plants built to mitigate dam removal impacts were more elaborate and costly than those that would otherwise be required to satisfy the Department of Health regulations, so Olympic National Park should compensate the city for the difference between operating this system versus operating the simpler system.

The debate over how to proceed took nearly a year, during which time the city withheld permits for water treatment plant construction. Finally, in the summer of 2008, an agreement was reached. The treatment plant operations and maintenance cost will be paid for by the federal government until the impacts of dam removal have ended, estimated to be four to five years, at which point the City of Port Angeles will assume responsibility for the total cost of operations and maintenance.

I uncovered multiple competing and overlapping narratives about the issue of the water treatment plants and the City’s tactics throughout the negotiations. The interviews I conducted with park employees occurred during the tail end of the negotiation phase, so these informants were largely silent on this topic, although each alluded to the issue. One park employee mentioned that the water treatment plant had become something of a “powder keg” in the community, and that he was surprised anyone would talk with me about it. Upon initial review of interview
transcripts, one informant sent me a lengthy revised document that clarified her thoughts on the issue. Clearly, the water treatment plants are a loaded issue for the community.

Not only do the water treatment plants represent the one tangible connection every citizen of Port Angeles has with the river (in the form of water coming out of their taps), the water treatment plant is the one significant aspect of the restoration project for which the City might potentially bear costs. Admittedly, the City will benefit from the newly constructed plants, but these benefits have been largely downplayed in the context of the higher operating costs. In general, each of the narratives boils down to one concern: financial issues associated with the restoration project, who will benefit, and who will pay. The central problem was summed up by one participant who said, “on one level it’s like, this is so cool, Port Angeles is going to get a free…20 million dollar treatment plant from this process, but it’s certainly going to cost more for the rate payers of Port Angeles to pay their water bill because of this more expensive treatment system” (BetW, 2008). The diversity of perspectives on this issue, solely in the small sample size of informants I spoke with, belies the complexity of federal and local agency relations in the context of the Elwha Restoration.

One set of perspectives, prominent especially among city employees and those not professionally involved with the national park, characterizes the city as having been misled by the federal government and early advocates for dam removal. Participants who shared this perspective often painted the citizens of Port Angeles as “victims” of a larger political process, now unduly burdened with bearing the costs associated with dam removals:

In order to get the Elwha Act passed, the proponents knew they had a limit as to how much [money] they could ask for. So they were trying to keep the cost as low as possible...one of the things I remember is the environmental community offering great assurances that the cost of dam removal was not going to be disproportionately shared by the citizens of Port Angeles, that citizens of Port Angeles would not pay any more than the other citizens of the United States (OC, 2009).
Another participant echoed this sentiment:

*It’s one thing to hand a city a new water treatment plant and say, “well you got this shiny new treatment plant, now you can operate and maintain it.” But that was not the intention. At the time, everybody was assuring that the federal government was going to provide the funds to maintain the facility in perpetuity. Well that was, at very best, an inflated statement (OC, 2009).*

This view, that ONP’s reticence to pay for operations of the facilities was a betrayal of their original intent, positions power squarely in the hands of federal government, and thus out of the hands of the local one. A City Council member told me, “the park [held] that we should be grateful and just take [the treatment plant] and operate it.” (BetW, 2008)

A belief that this power disparity persists even once the compromise was ultimately reached is evidenced in an ex-city council member’s description of how the park would cover operational costs, “until *they* and their scientists determine that the impacts of dam removal are over.” In the context of this and the other interviews quoted above, I sensed resentment not only over increased financial burdens, but also over the way the park’s access to scientific expertise allows the park, not the city, to decide when their obligations to pay for operations have been met.

Another group of informants characterized the City as actively impeding the restoration process through stalling tactics and political maneuvering. As mentioned earlier in this thesis, the issue of the ever-lengthening time-scale of the Elwha Restoration project has been a source of frustration for many advocates. Indeed, anger that the City was impeding what had already been a drawn-out process was evident in several interviews. One informant said, of the negotiations, “the [Port Angeles] Public Works Director has seen the opportunity to hold the park hostage and extort from the park as much money as possible…it was a complete stonewalling” (AI2, 2009). Another informant described the scenario a bit more delicately: “Part of me wonders, well, how much of that [settlement] is just paying
off the local community to let the project happen. You know, here's these federal funds coming in and how much of it can the local community get?” (LSW, 2008)

In a study of the Elwha River Restoration decision making process, Gini Egan identifies the city’s approach and attributes its roots to a perceived power disparity:

*Stakeholder groups that are not engaged by the lead agencies or power brokers, do not perceive that they are being heard, or believe that their ideas or opinions are not respected, may invest in disrupting the process…by introducing stratagems for delaying or preventing implementation of a decision once reached. Delaying techniques are not the exclusive province of “radical” elements such as “environmentals” or “anti-government” groups. As we have seen in the case of Elwha… they may also be used by municipalities (such as the City of Port Angeles)...* (Egan 208)

Adopting this perspective, the City could be characterized as using the water treatment plants as a point of leverage to exert power in the context of the Elwha River Restoration Project. Ultimately, though, the agreement is not a wholly satisfying one for the city, “we got some cash to defray the high operating expense but not nearly as much as the city had hoped for” (BetW, 2008).

How has the city’s approach to the projects affected the community’s engagement with the Elwha Restoration Project? City council members that I interviewed seemed to exhibit a passive approach to the public’s understanding of the negotiations, and acknowledged that the community’s perspective would never be uniform:

…they read the newspaper, and there’ll be articles, like when the city and the park shake hands and agree to the compromise about the water treatment plant, and some people see that and are cynical think this is the biggest federal waste of money there ever was. And some people think the city’s being greedy to expect not just a treatment plant but also some money in the process. And I assume there’s people out there that see this is a good step in the right direction towards restoration and that it’s what needs to happen in order to complete the problem (BetW, 2008).
The “problem” here, presumably, is the restoration of the Elwha River.

Other informants, however, pointed towards more distinct impacts on the community’s engagement with the Elwha project. One community organizer claimed that the city’s passivity and occasional obstructionism had deeply affected the community’s perspectives on the project:

“That relationship between the city and the park as being not a willing partner in this process—the city’s role—has really limited and has really poisoned the whole project in terms of the community relationship with it. You know when you have the community leaders actively subverting the project, it doesn’t lend itself to community cooperation, in my opinion. It’s not like, let’s get on board with this and make it happen, it’s “let’s seize the opportunity and try to get as much money out of it as possible.” (AI2, 2009)

A city employee acknowledged that the water treatment plant negotiations had coloured and even divided the community to some extent:

…”this facet of the negotiation ... it left a bad taste in the mouths of some, people thinking that the city was being incredibly greedy, others thinking that the city’s water customers were going to have to pay too much to subsidize the dam removal project through higher water rates (BetW, 2008).

Characteristic of the ironies embedded in the Elwha project, the water treatment plants that have caused so much recent conflict in the community are also the most commonly cited tangible economic benefit of the project for Port Angeles. The degree to which interviewees spoke of the projects as a benefit to the community correlated loosely with their positions in the community.

Those who were involved in early advocacy for the dam removal project (many of whom live outside the City of Port Angeles) described the water treatment plants as evidence of the economic boost that the restoration project would bring to the struggling Port Angeles economy. One informant referred to them as, “super
Cadillac water treatment facilities that are being built.” (TM, 2009) This same informant saw the facility construction as an important part of “winning the community over” to support the project through money, “And as far as community acceptance, sure you funnel 100 million dollars [for the water treatment facility] into a small community, you’re going to get a little more popularity! So that, I suppose, that could be seen as a benefit as well.” (TM, 2009)

A few informants shared stories of someone they knew, or someone they had heard of, who was employed in the construction projects. While this “testimony” of the economic boost was widely shared among supporters of the project, none had specific knowledge of whether local contractors were running the projects, or how many jobs had been created. This seemed significant; rhetorically, the idea of job creation as a result of restoration is powerful, but concretely the economic benefits were not measured or widely known.

Skeptics of the project were quick to point this out, assuming that many of the employees of the projects were from other places, thus only adding money to the local economy for the short construction period. Interestingly, though, one informant spoke of the city council using the projects to quell fears about the economic downturn, “I know that our city council talks about it as being a really important project, the fact that there’s things happening on the ground already… you know, water treatment plants” (DS, 2009). Four informants in one way or another intimated that the projects being underway were most likely keeping the Port Angeles economy afloat during the economic downturn of 2008-2010.

Cities, municipalities, county agencies hold significant power in engaging, or not engaging, their public with projects. The City of Port Angeles has been notably absent as a promoter of the Elwha River restoration project. The issue of the water treatment plants in essence squeezed the City between the Department of Health, a state agency, and the National Park Service, a federal agency. As a small community, the city wrangled its power through delay tactics at only crucial times in the planning process, which caused delays in the project implementation. The external mandate of the Elwha Act put the city government on the defensive, particularly concerning finances. As a result, they have not actively engaged the
public in the workings of the restoration project, leaving the work to be done by other agencies, like the National Park Service. Economic reasoning has been used on both sides of this dispute. In the following section I discuss ways engagement has happened despite the city’s relative silence.

4.4 Engagement in the Spaces Between
As discussed in previous sections, participants characterized Olympic National Park and the City of Port Angeles as absent in promoting the Elwha project to the Port Angeles community. However, programs designed to engage the public have arisen at the fringes of these areas, both physically, (outside the boundaries of Olympic National Park) and institutionally (through organizations tangentially associated with both ONP and the City of Port Angeles). Many of the engagement programs use scientific investigation as their organizing principle. In this section I discuss my findings related to these programs.

When I analyzed interview data for metaphors used in talking about the restoration project, the most dominant metaphor was that of the river as a laboratory. Phrases like, “a grand experiment” and “pristine laboratory” appeared often in interviews with land managers, ecologists and educators. For those intimately involved in planning for the project itself, this conception of the ecosystem and restoration project as an experiment has contributed to a sense that it should be conducted by scientists and professionals, not the local population.

There was a widespread agreement that the scientific approach to the restoration has implications for the success of this specific project, but also for the larger body of ecological and experimental knowledge about watersheds. In several instances, participants “weighed” the benefits of the experimental nature of the project against other potential values, like clean energy, local ecological success, and even community engagement:

Well for me it’s the grand experiment. You know, there’s potential negatives to removing a clean energy source from the power grid….it’s a very small clean energy source so I feel like the benefits of the grand experiment outweigh the loss of that energy
source. In terms of ecologists, “can we do it?” is the big question… on this scale there have been no dams removed of this size ever, so there’s a lot of interest in removing dams and trying to restore fish runs, and all eyes will be on us to see if it can happen, if we can do it, if it can work (JC, 2008).

Whether the dams are there or aren’t is not going to impact the human species that much…much of the impact that it will have on the river is in areas where most people aren’t looking…so it’s sort of ideal for researchers, because they’re going to see great things without having to deal with a lot of people…or just the people factor in general skewing their results or interfering (TB, 2008).

With the idea that this “grand experiment” is being watched by the nation comes the perception that the benefits—material, in salmon recovery and intangible, in knowledge—will benefit management decisions in other rivers not just regionally, but globally:

The question will be if the salmon return in the numbers that have been predicted will be of great interest to me, to see how well habitat translates into salmon return. So [it’s] a huge benefit not just for the country, but for the world to see what sort of impacts dam removal will have on an ecosystem (JC, 2008).

The laboratory metaphor finds its strongest expression in the engagement that actually is happening with the project at this phase. The most dominant form of engagement with the project in 2008-2009 was in educational settings and citizen science groups. The following sections discuss the ways this engagement has happened “in the spaces between.”

I asked participants to identify who they saw as taking the most prominent lead in involving local residents with the Elwha Restoration project. Notably, of sixteen participants, twelve named educational program directors in the community, either Dwight Barry from Peninsula College, or Darek Staab, from Olympic Park Institute. A few others mentioned the work done by the Washington Department of
Fish and Wildlife and Clallam County biologists in addressing issues in the nearshore environment of the river. Only one identified Olympic National Park as an agency taking a prominent role in engaging the local public.

Dwight Barry identified Darek Staab as taking a lead in community engagement, and Darek, after a long pause, mentioned Olympic National Park. He said that the National Park has not been particularly active, but that they were the agency most expected to engage the public.

[The National Park is] definitely the organization or agency that the local public thinks about with the project, but maybe sometimes not in the most positive light. Seeing it as a big government project that’s kind of changed the way that people can access a place that they love or a place that they’re used to going to (DS, 2009).

Darek was quick to cite capacity limitations that kept the park from focusing energies on community engagement. In my field journal I wrote that I noticed an almost apologetic air around Darek’s response to this question.

Agencies that operate from outside the “label” of the national park have had more success in engaging the public. Two participants identified Anne Shaffer as a prominent community leader. Anne works for the Washington Department of Fish and Wildlife and organizes the Elwha Nearshore Consortium, a collaborative body discussed below. The following sections highlight agencies or programs specifically focused on engaging the public with the Elwha River Restoration.

4.4.1 Peninsula College

With a main campus in Port Angeles and two branch campuses in Forks and Port Townsend, Peninsula College serves roughly 10,000 students a year. It is the only institution of higher learning in the immediate region, and a majority of its students come from the North Olympic Peninsula. While most community colleges offer only two-year degrees, Peninsula College has established a cooperative agreement with Huxley College, at Western Washington University in Bellingham, allowing students to work towards a bachelor’s degree at the Port Angeles campus.
In the past six years, the college has established two programs that deal directly with the Elwha River Restoration Project: The Elwha Research Consortium (ERC), and the Research Experiences for Undergraduates (REU) Program. While neither is specifically aimed at engaging the local public per se, they each involve local residents because the population the college serves is mainly local.

The Elwha Research Consortium defines itself as, “a strategic partnership between governmental agencies, educational institutions, and community groups focused on understanding societal and ecological effects of dam removal and ecological restoration activities in the Elwha River watershed and nearshore environment.” The consortium is explicitly designed to connect the disparate groups and purposes that meet around the restoration project. They define their purpose as wishing “to create and maintain a wide-ranging education program linked to research on the Elwha, to fully distribute the knowledge gained to society, and for practical assistance in carrying out monitoring and research tasks.” (Peninsula College, 2009) The ERC facilitates annual conferences and occasional workshops designed to share education and research techniques, and publishes a monthly e-newsletter, Upstream, which provides updates on ERC members’ activities, funding and workshop opportunities.

Dwight Barry, ERC coordinator, told me that while the project is run through the College, it sprang from a strategic collaboration with Olympic National Park:

*The initial impetus for this was, more and more scientists were interested in studying the Elwha, and the park cannot apply for National Science Foundation funding. Higher education institutions can. So the park got together with the college and said, “let’s develop this consortium, put it through NSF for funding through their research coordinating networks grant program, which is specifically meant towards developing consortiums like this, get people together to do research in a framework that allows them to do more than they could by themselves,” and we got that grant. The research consortium is non-directive. It is only a place for researchers to come together to work together. So there is no top-down direction. Researchers don’t even have to share their*
I participated in two of the ERC meetings and noted that while the majority of people in attendance were researchers from both Port Angeles and Seattle, several local community members were also present. The ERC meeting in 2007 featured Storm Cunningham, author of *The Restoration Economy* as a keynote speaker. His talk was well attended by both researchers and community members. Several participants cited this public talk as an example of the way the ERC is working to connect the Port Angeles community to the benefits of the Elwha River restoration project.

Research Experiences for Undergraduates, or REU, is a separate National Science Foundation-funded project run through Peninsula College. Initially it was designed to focus on the Elwha Restoration project. The National Science Foundation funds projects designed to get science students working in the field in early years of university, and Peninsula College is one of the first schools in the country to engage first-year students in research through NSF programs. Students are awarded undergraduate credit for work in natural sciences, and then placed as technical field assistants with ecologists, biologists, and fisheries scientists working on the Elwha River. The NSF provides a living wage to students for their work as field assistants. As a part of the program, students make public presentations of their research. I observed two presentations during the course of my work.

The two Peninsula College programs are connected strategically and functionally. Dwight Barry directs both programs, so is able to connect REU students with ERC scientists. It is one of only a few instances I came across where local residents are at an advantage to be involved in the Elwha project. Dwight told me:

> You know students from UW Seattle aren’t going to spend three hours on the road just to come over here and sample the river and drive back. So I’m able to interact with those scientists directly and say OK we’ve got this student they’re interested in this and we think they’re capable, so we’re going to hook you up (DB, 2008).
Park employees identified Peninsula College as a valuable agency involving the public, often citing personal experience with an REU student:

*Our biggest partner in providing volunteers is Peninsula College…Peninsula College is a big deal for us and we’re trying to utilize that resource more…there are some good relationships there but I think the communication element with us and the college is limited, despite lots of efforts* (JC, 2008).

Some of the communication difficulties were described as having roots in political conflict within the city, and also capacity limitations. When I asked what made educational organizations uniquely successful at engaging the public, one Peninsula College professor told me:

*Peninsula College is sort of the Switzerland of all this. We’re the neutral party, in that it’s really wonderful that we have such a project of international magnitude here, but because of our position as an institution of higher education, we don’t have any dogs in the fight. We can just provide the support as best we can and provide the coordination but we don’t have to get involved in the politics, and so that makes it a very beneficial middle ground for everyone* (DB, 2008).

Three other participants echoed this assessment, mentioning that Peninsula College had an ability, through its research coordination, to bring together people that otherwise remained separate because of their contentious histories. While many of the REU students are local, the yearly enrollment is just sixteen.

Peninsula College professors in the humanities have also incorporated Elwha Restoration Project into their curricula, although a majority of the major grant funding goes to education in the natural sciences. One professor I spoke with talked about incorporating human history elements into her English classes. She described how education about the Elwha River has helped students connect to their home place:
We had Jaime Valadez come in from the Lower Elwha Klallam Tribe and tell stories... And it was just a really good way for us to help local people get more acquainted with where they live and what questions they might have... some students had lived here their whole lives had just these little soundbite bits of information and it gave them the opportunity to explore [the Elwha issue] because we didn't put any agenda on whether they needed to be pro-dam removal or pro-REAL, (Restore Elwha Area Lakes) (AI1, 2008).

In 2004, a multi-disciplinary group of educators at Peninsula College published a book called Landscapes of Home, a compilation of professors’ and students’ poetry, art, and writing about the Elwha River. This was the sole example in my research of engagement that dealt in some way with the humanities or art.

As a topic of study within environmental study courses on the Peninsula, the Elwha Restoration is often used. One environmental philosophy teacher from Peninsula College I spoke with said that her students had become so familiar with the Elwha River issue through their other Peninsula College classes that she had stopped using it as a case study in order to maintain student interest.

4.4.2 Olympic Park Institute

Olympic Park Institute is one of three campuses of Naturebridge, an independent non-profit environmental education organization known until 2009 as Yosemite National Institute. The organization operates residential field schools in national parks, bringing school and community groups on site for three- to five-day environmental education programs. Olympic Park Institute’s campus is 23 km west of Port Angeles, on Lake Crescent. Unlike Peninsula College, which serves mainly local students, Olympic Park Institute serves students from throughout the Puget Sound region, a majority of whom come from Seattle and the larger Puget Sound region.

The prominence of the Elwha Restoration project and its potential to be a symbol of larger restoration issues in educational applications was mentioned by
several participants, and cited as the impetus for the development of Olympic Park Institute's Elwha Science Education plan:

Olympic Park Institute, in 2004, 2005, the organization said, here's the Elwha Ecosystem Restoration… we need to be teaching about this more intentionally, because this is big, and especially when these dams start to come down, this is gonna be front page throughout the northwest. We could be teaching the history of the Elwha River to the young people of the Pacific Northwest. And when we're talking about the Elwha River, we're talking about the Snake River, we're talking about maybe even the Columbia River, we're talking about the whole system of land use in the Pacific Northwest. … (LSW, 2008)

Olympic Park Institute developed two programs: the Elwha Science Education Program and the Elwha Geosciences Program. The Elwha Science Education program was launched first. Initially, the program was designed to involve students in gathering baseline ecological data for ecologists studying the watershed.

The data collection was intended to benefit both students and restoration ecologists: first, educationally, students learned how to design ecological investigations. Second, the ecological data gathered by students would be useful to ecologists working professionally in the Elwha watershed. In practical terms, though, the quality of the data collected by students did not prove reliable enough for use by researchers. The program continued, though, to use the Elwha restoration project for teaching their science curriculum. The OPI website describes the program:

Students partake in groundbreaking research in preparation for the upcoming removal of the two Elwha River dams. Upon removal of the dams, the resulting watershed restoration project will be the largest in human history. This once in a lifetime opportunity will take your students to several monitoring sites throughout the watershed where they will conduct experiments and collect data, which serve as the basis of OPI’s ongoing research projects. www.elwhascienceed.org
While the Elwha Science education program serves OPI’s usual students, which come from various places, another program, the Elwha Geosciences Program, allows OPI to specifically serve North Olympic Peninsula residents.

Funded through a National Science Foundation (NSF) funding track called “Opportunities for Enhancing Diversity in the Geosciences”, the Elwha Geosciences program’s primary focus is to involve Native youth in geoscience education on the Elwha River. Any Native American high school-aged student can participate in the program. The majority of the students involved are from the Lower Elwha Klallam Tribe. The grant’s primary goal is to “increase the representation of Native Americans in geoscience degree programs and careers,” and its secondary goal is to increase the relevancy of the geosciences for Native American communities. Students visit the river, design inquiry projects, and learn about the cultural history of the river.

From this grant, OPI has also developed a program focused specifically on 8th grade students throughout the county. Educators, “pick up local students, take them to the river, do field studies on the river, learn about the cultural history and the geography of the river, and take them back to school for the bus at the end of the day.” (DS, 2009) Between 2006 and 2008, OPI involved every 8th grade science classroom in this project. OPI, through other cooperative agreements, has also created an Elwha-specific website (elwhascienceed.org), funded science curriculum and human history papers for use by middle and high school teachers, and given public talks in Seattle and across the Puget Sound region about the Elwha River Restoration.

Both Peninsula College and Olympic Park Institute created niches as “agency connectors”, often using their status as educational non-profit organizations to vie for grants that benefit the project through research or education. Each has acted as a collaborator with NPS, the LEKT, Port Angeles School District, and one another at various times in grant applications and project development. More than any other institution, OPI has utilized the “inspirational” nature of the Elwha Restoration...
project; their success in using this aspect of the project for attracting grants to was described by not only OPI employees, but ONP and state employees as well.

The Community Programs Director for OPI said:

_The Elwha is a really captivating story, being such a large dam removal, such an intriguing experience, experiment, watching this coastal river ecosystem change...I think people are very excited to jump forward and either fund or participate in larger projects. It also seems that folks within our region, whether they're scientists or educators, have followed this story for quite a while. So now as different projects are envisioned, we can easily link their expertise—whether it’s macro-invertebrates, whether it’s study of bears, whether it’s the study of river otters, the study of cultural groups and cultural traditions—to this very powerful story, to broaden our wealth of understanding of this project (DS, 2009)._ 

It is notable that most of the major programs centered on the Elwha River and run through educational organizations have ecological science, rather than cultural issues, as their central premise. While each of the programs makes mention of the social aspects of restoration, funding avenues are mostly natural science-oriented, and a majority of the funding coming from National Science Foundation (NSF). This is discussed more in the following chapter.

### 4.4.3 Elwha Nearshore Consortium

Eighty-six percent of the Elwha River is within the boundaries of Olympic National Park. The entire nearshore component of the watershed is not under park jurisdiction. As discussed in Chapter Three, the nearshore environment has been extremely impacted by sediment starvation as a result of the dams and shoreline armoring. This location has many jurisdictions at play, including the City of Port Angeles, Clallam County, the LEKT, and local private landowners. The complexity of jurisdiction complicates restoration activities including monitoring, land access and acquisition, project permitting, and communication. Unlike in the rest of the watershed, the park has not played a central coordinating role:
Distal to the watershed, the nearshore has gotten…second-tier attention [from the park]. Certainly the Elwha Tribe has always known there’s been a connection there, and the Tribe, or the park has known too, but it’s just…hit lower on the radar of the kaleidoscope of issues for the restoration project (AS, 2008).

A lot of the nearshore work, a lot of this basically marginal work that the national park isn’t focusing on, is the place where there’s engagement possibility for the community. It’s what the official process isn’t caring about, so that’s what [local people] want to work on and care about because it’s being ignored by the larger process (LSW, 2008).

As a result, in 2004, the Clallam Marine Resource Committee and the Washington Department of Fish and Wildlife, ONP, and the LEKT convened a workshop forming the Elwha Nearshore Consortium (ENC), a collaborative group that shares scientific information, monitoring, and project planning for the nearshore environment. The ENC’s primary goal is, “to understand and promote the restoration component in the nearshore associated with the project. A local citizen group, the Clallam Marine Resources committee, is one of the key players” (AS, 2008).

The organization has become a vocal advocate for nearshore issues, with a strong presence at ERC meetings, hiring REU students, and providing public presentations of their research. As an organization that occupies the spaces between, dealing with an area that is not prominently featured in the NPS plans, the organization has found funding difficult:

For the nearshore we’re stuck in this conundrum where we go for funding [e.g. grants] and there’s this perception that because we have “Elwha” in the title of our proposal that it should be funded by the Elwha Project. And so we go back to the Elwha Project [through the NPS] and the Project says, This isn’t in the project, we’re not funding this” (AS, 2008).
Participants mentioned that involvement with ecological surveys has also contributed to increased citizen support for the project. A story that one nearshore researcher told me illustrated the efficacy of such citizen participation in research. She had invited a local landowner who opposed the dike removal at the river mouth to participate in a fish survey. Her enthusiasm for the change he made in understanding through participation was palpable:

*We pull a seine over here, and we get, gosh, the day that Malcolm was out, we got Bull Trout, we got Chinook Salmon, we got EVERYBODY. And then we sampled over on the Dudley pond site, and we got nothing. We got like, stickleback. I mean, we couldn’t have made it any clearer. It’s like, here you have it connected to the river and you’ve got this fantasia of fish, here you’ve got in the area that isn’t connected to the river because of this dike, and we got, nothing. You know, he’s a smart man. He had a quantum leap like that.* [snap]  So yeah, pretty cool (AS, 2008).

This type of engaged participation in the restoration process both changes participants’ perceptions and attitudes about ecosystem health and helps increase support for the project.

Collaboration in the new phase of implementation in the nearshore environment in some ways mirrors the agency collaboration during the legislative phases of the decision making process, written about in the first section of this findings chapter. Agencies interested in engaging the public have necessarily had to find ways to cooperate because of natural overlap of their programs, the small nature of the community, the scope of the ecological problems and financial limitations. One fisheries biologist said:

*To do the whole gigantic project requires a lot of cooperation at a lot of levels. Everything from getting congress to pass the act…there’s some cooperation for you…down to the level of just sitting down and figuring out how you’re going to do something like SEPA. That required a huge amount of coordination and cooperation. Anne and I and folks like us are…interested in how the system works and how it’s not*
working. If we’re going to do restoration how are we really going to do restoration? So, at that level you’re starting to think about all the interactions of an ecological system and that means…everybody wants to talk to everybody because we’re trying to figure it out. (KL)

But nearshore biologists expressed some frustration about educational organizations competing with management agencies for grants. While the prominence of the project has created opportunities for funding, it has also created a sense that the Elwha Project pulls resources away from other “less glamorous” projects. This was mentioned by seven different informants and voiced most elegantly by one nearshore researcher:

> the identity of the project...there’s a political element to it, and in the environmental community...historically it’s pulled a lot of weight. If you can somehow hang your hat on the Elwha project, you know, you’re somehow ‘shiny’, and everybody wants to fund you. (AS, 2008)

Limited resources have created some animosity between organizations within the region:

> You have, you know, people competing for money want to work with local citizens to get water quality information that they’ve said they want in order to feel comfortable with having a restoration project on their property, and you have another entity...running at that same money to run a bunch of second grade education classes, and because they’re strategically located they get the money...that’s one of the less positive elements to all of this that I didn’t anticipate, but it's just a reality of it. And so from my perspective what I’d like to see for citizen restoration and actions, would be the actual resources available to get the county to be able to do what it needs to do for nearshore restoration...so that they could actually...pull the landowners together...to get a conservation easement going, or acquisition of the nearshore. (AS, 2008)

An education director said:
There definitely is an element of territoriality…there’s been struggles to fight over funds that are available, fights to be able to make sure that the right partners are involved at the right times, to be able to really link projects and programs leading forwards. (DS, 2009)

Three participants linked the paucity of funding to the rural location of the project and the economic nature of Port Angeles:

*I think that an agency that has an office located in a rural area inherently has less financial resources compared to a larger urban area where an office with NOAA, an office with the USGS, or an office with an organization like that that could be connected to the University of Washington instead of Peninsula College. We might have just enough extra resources of the faculty members helping with grants, connections with the national science foundation…I think urban pockets can be a little more savvy when it comes to supporting one another [in securing] those resources.* (DS, 2009)

Despite these funding issues, educational organizations have played a significant role in engaging the Port Angeles public with the restoration project, and have been enabled by the time scale of the project and their uniquely neutral position.

**Summary**

In this chapter I have described four major categories of participant responses that emerged from interview process: 1) Controversy and Collaboration, 2) Olympic National Park, 3) Water Treatment Plants for Port Angeles, and 4) Engagement in the Spaces Between.

The three most prominent influences on community engagement with the Elwha River Restoration Project were: the controversial history of the project, the role of Olympic National Park in its implementation, and the issue of the water treatment plants for the City of Port Angeles. All three of these categories point towards a question of perceived control of the watershed. While organizations like environmental groups, ONP, and at times the city of Port Angeles, have found
avenues for collaboration in the designing of the Elwha River restoration project, this active agency control has in many ways alienated the local population from engagement with the project, because of the politically charged history of external control over local lands. Funding limitations, directives focused on technical acuity rather than community engagement, and project complexities have prevented management agencies from actively pursuing further local community engagement.

Simultaneously, however, local educational organizations and community groups—enabled by the lengthy time scale and the prominence of the project—have created programs designed specifically around the Elwha River Restoration Project. Educational institutions are uniquely situated to engage the community during the current planning phase of the project, because of their political neutrality and their focus on science education and research collaboration. These groups, operating “in the spaces between” are not immune to funding issues, though; competition between them at times hampers their ability to collaborate.

In the following two chapters, I compare the findings of this chapter with my framework of technological restoration features, Higgs’ model of technological and focal restoration, and attempt to draw lessons from the Elwha for the larger field of ecological restoration and community engagement with it.
Chapter Five: Synthesis

“… the federal agency needed to determine what was the best use of a nation’s waterway: the Elwha River.” BWin, Project Director, Olympic National Park, 2009

…it’s important to involve [the public] in the process so they can see it, they can experience it, they can know that their hands, putting a plant in the ground, helped to achieve a restoration of an ecosystem.

JC, Revegetation Coordinator, Olympic National Park, 2008

The central question of this thesis is: “In what ways do large technological projects enable or constrain community engagement, and in the case of the Elwha River, how might this engagement be enlarged?” In this chapter and the following one, I attempt to answer these questions. I revisit the theory that shapes this research, compare it with my findings, and offer developments to the theory.

I argue that the political context of technological restoration projects shape who engages, and other distinctive features shape how they engage. I present a model designed to help classify types of engagement on a range from focal to technological, and then relate this model to five categories of engagement I observed in the Elwha project. In the following chapter, I discuss the applications of this model for managers and community members in enlarging community engagement strategies with technological restoration.

5.1 What is Engagement?

At the beginning of this research, I established the Elwha as a technological restoration project, based on Higgs’ work in the 2003 book, *Nature By Design*. This theoretical perspective proposes an idealized alternative to technological restoration: focal restoration. *Focal practices* make up one central strand of focal restoration. Recall that focal practices are acts that center people on focal things. In the case of ecological restoration, focal practices are activities centered on the restoration of an ecosystem, making the ecosystem, or particular species or places within it, a focal
thing.\textsuperscript{30} I used the term “community engagement” as a way of talking about the broad category of activities that might include focal practices.

All of my informants insisted that community engagement in one form or another with the Elwha project was important. They supported the idea of participation with restoration for various reasons that often echoed academic discussions on the subject. A partial list of informants’ reasons for participation includes: to keep the public informed, to increase local environmental literacy, to manage the public’s expectations of the project, to connect community members with one another, to decrease expected costs of the project, to bridge cultural divides, and to maintain local democratic control of the landscape\textsuperscript{31}.

Those participants who spoke about wanting to keep the public informed cited websites and public information meetings as the most important kinds of engagement. Others who spoke of decreasing costs described volunteering opportunities during the revegetation of the reservoirs, and during other more labour-intensive parts of the project. Others who talked about bridging cultural divides worked in educational capacities, bringing groups of students together to study the river.

I deliberately left the term “engagement” open to interpretation in interviews. I was interested in identifying the range of activities people engaged in and also how interviewees defined engagement in the context of a technological project. Far from simply naming “digging in the dirt” activities usually associated with restoration, I found that participants considered a wide range of activities engagement, and some participants defined “community” as much broader than just the Port Angeles community.

The following table lists of activities that participants placed in the category “community engagement” in interviews.

\textsuperscript{30} Paraphrased from, respectively: AS, 2008; JC, 2008; BWin, 2009; DS, 2009; AI1, 2008; LSW, 2008.
Table 5.1 Activities Identified as “Community Engagement with the Elwha Restoration Project” in Research Interviews (2008-2009)

<table>
<thead>
<tr>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participation in EIA hearings</td>
</tr>
<tr>
<td>Participation in planning meetings</td>
</tr>
<tr>
<td>Participation in comment periods on NPS regulations</td>
</tr>
<tr>
<td>Volunteering with nearshore science research</td>
</tr>
<tr>
<td>Jobs in hotel/tourism industry</td>
</tr>
<tr>
<td>Jobs in environmental sciences</td>
</tr>
<tr>
<td>Jobs in land management</td>
</tr>
<tr>
<td>Seed propagation</td>
</tr>
<tr>
<td>Volunteering in National Park revegetation project</td>
</tr>
<tr>
<td>Jobs in deconstruction</td>
</tr>
<tr>
<td>Elwha Research Consortium</td>
</tr>
<tr>
<td>Elwha Nearshore Consortium</td>
</tr>
<tr>
<td>Research Experiences for Undergraduates (internship)</td>
</tr>
<tr>
<td>Local field-based science classes</td>
</tr>
<tr>
<td>Visiting NPS website</td>
</tr>
<tr>
<td>Tours of river (non-local visitors)</td>
</tr>
<tr>
<td>Interpretive information</td>
</tr>
<tr>
<td>Voting for senators</td>
</tr>
<tr>
<td>Classroom-based lessons on Elwha River</td>
</tr>
<tr>
<td>Oral history project</td>
</tr>
<tr>
<td>Informational meetings (local community groups)</td>
</tr>
<tr>
<td>Informational meetings (REI in Seattle)</td>
</tr>
<tr>
<td>Letters to the Peninsula Daily News</td>
</tr>
<tr>
<td>Educational programs for non-local youth</td>
</tr>
<tr>
<td>“Landscapes of Home” (book)</td>
</tr>
</tbody>
</table>
Here, I confronted my own conceptual bias. Why did some forms of engagement intuitively sound more meaningful to me than others? An educational program that served local youth on the river sounded more valuable than a website about the project being visited by someone in another part of the world. Volunteer engagement through the citizen-organized Elwha Nearshore Consortium sounded more valuable than volunteers coming from Seattle for a day of invasive species pulling.

I realized that I unconsciously associated more value with focal activities than non-focal activities. Why was this something I had not articulated, and what were the qualities that caused me to intuitively distinguish focal from non-focal? My intentionally imprecise terminology actually revealed an intriguing question embedded in the theoretical perspective I was working with: namely, what kind of engagement with restoration might count as a focal practice in Higgs’ model, and what would not? This seemed an important distinction to make before I could assess how engagement was shaped by technological projects.

Higgs states that the benefits of building focal practices into restoration are threefold: 1) Creation of meaning, 2) Development of knowledge and skills within a community related to place, and 3) Increased democratization of the landscape (2003). These three goals are meant to address features of Borgmann’s device paradigm. Recall that the defining features of the device paradigm are the transformation of centering “things” into commodities, the replacement of focal practices with passive consumption of these commodities, and an eroding of democratic engagement with place.

Focal things are tangible, focal practices embodied and place-specific, and they demand skill and fidelity. Devices oppose focal things. Engagement characterized by devices—mediated through commodity-driven systems, image-based, or lacking characters of fidelity and skill—can thus be termed “technological.”

Figure 5.2 presents a list of attributes in engagement activities. These attributes exist on a continuum between focal and technological, and are organized around the benefits of engagement that Higgs proposes. Any single form of
engagement might exhibit a different combination of these qualities, and inhabit a range on each continuum between focal and technological.

**Figure 5.1: Continuum from Focal to Technological Engagement**
Any given activity may exist in a number of places on the continua listed here. Overall, the general focal/non-focal character can be assessed by combining its relative orientation in these ten continua.

While a hard-line follower of Borgmann might argue that focal engagement is inherently better than non-focal engagement, this is not my stance. I argue rather that different types of engagement serve different purposes, and that technological restoration projects have the capacity to enable a broad range of engagement. A broad range is necessary, but the complete replacement of focal engagement types with non-focal ones does a disservice to both the local community and the project itself. Conversely, an attempt to completely replace all of engagement with focal practices is not realistic in the context of large projects.

For example, a website could be classified as non-focal because it produces information about a restoration without demanding geographic continuity or bodily engagement with the place. It provides images and information, but the production of those images and information are hidden from the viewer (or “consumer”). Remotely accessing information about the Elwha River Restoration Project from a computer in India may not benefit the Elwha Project or the Port Angeles community directly, but it may serve as an inspiration to remove other dams, or provide ecological information useful in other locales. While not increasing the realm of
focal activities associated with the project per se, the value of this type of influence should not be discounted. Large technological projects, ambitious in their scope and impressive in their complexity, can uniquely serve as examples, even in their failures, and case studies may provide valuable lessons.

In local terms, websites may allow concerned or interested members of the public access to information without requiring direct communication with project managers, thus keeping the public informed while freeing time of project managers for other tasks related to community engagement. Reductions in government budgets has resulted in a trend to rely on informational technology solutions to replace face to face or phone to phone contact with website information. Websites could also serve as tools that enable focal practices, enabling public organizing and communication in order to bring groups together for a day in the field. The problem arises when websites (or other forms of engagement) substitute for more focal engagement, when the website becomes a device that provides the commodity of information at the exclusion of other physical or bodily involvement with the project.

A paradigmatic example of an activity that falls far on the focal end of these spectra is a community volunteer replanting of a stream bank. It would build local knowledge and skills by engaging the local public physically in their place. The knowledge built, while transferable, would arise from localized experience. Community members—socially involved, organized, and invested in the success of the project—would be participating in the democratic activities in their landscape. By engaging in a contextualized way, physically, socially, and skillfully involved, operating as volunteers rather than for financial rewards, the community members would be participating in the creation of meaning in the landscape, imbuing the project with narrative, continuity, and communal significance.

However, in large projects, community planting may not be appropriate. The number of willing volunteers may not be sufficient to complete the planting in a narrow window of time necessary for ecological success. Particularly hazardous conditions could make the planting unsafe, or a remote location may render volunteer participation impractical. Other parts of the restoration project might preclude volunteers because of their necessarily technical natures: dam removal, for
instance, or road building. Lack of community participation in these parts of a project need not diminish the overall value of a project; participation may need to be expressed in other realms of the project.

No single engagement activity would fall strictly on one end of the spectrum or another. For example, participation in an EIA process might engage local public in a communal way, include testimonial and volunteer elements, but be a one-time event organized by a bureaucratic agency, thus relying on societal elements described by the device paradigm.

One of the greatest challenges to community engagement may be the extent to which technology (in Borgmann’s paradigmatic formulation), as the “constraining pattern to our lives” has colonized not only our institutions, but our imaginations (Cypher, 1997). While restoration practitioners I interviewed sometimes discussed the benefits of participation in terms of benefits to the community, they more often framed the value of such engagement in instrumental terms; volunteer engagement can help save money or garner support for the project (thus preventing expensive conflict). Other benefits to engagement were framed in economic terms: contract jobs, increased tourism and an increased number of research positions within the park. Using this model to assess the types of engagement involved in restoration projects could help illuminate the underlying motivations for public engagement, and inspire movement towards engagement strategies that address other values beyond fulfilling political requirements or increasing efficiency. How do technological projects shape participation, when, as in the case of the Elwha River Restoration, common forms of on-the-ground focal participation may be unfeasible? In the section below I argue that the most distinctive way technological projects shape participation is by affecting who engages. Then, I explore how technological projects shape how communities engage.

5.2 Who Engages? Agency Control and Local Participation

The most distinctive quality in focal versus non-focal engagement with the Elwha project was the extent to which the local public is engaged. Local engage A significant number of local projects are underway in Port Angeles; why did the
dominant stories I collect deal with historical conflicts in local and national polity rather than examples of successful community engagement? The Elwha demonstrates how technological restoration projects most distinctively shape engagement through their prominence as political acts, and their enactment by non-local agencies. Perceived control moves out of local hands and into the realm of agencies and professionals, who tend to consider in their engagement strategies a broader audience beyond the local public. This can alienate local communities and individuals, thus decreasing the willingness of the local population to participate.

Geographic proximity alone is not enough to foster community engagement. Intangible barriers and contentious histories, like the boundaries of a national park, which transfer “ownership” of the landscape from the local community to the nation, render landscapes that may be geographically close, conceptually distant, and this affects local engagement.

For the most part, participants said the major limitation to community engagement was the perception that the project belonged to ONP, and the local public did not feel empowered to participate in park activities. The reasons for this lack of empowerment included: the history of land acquisition by ONP, the park’s focus on a national rather than local audience, the contentious history of the park within the community (including in its dealings with the city over the water treatment plants), and the perceived social divide between park employees and other members of the public in Port Angeles.

Central to the issue of community engagement is the question: who feels invested in a landscape to begin with? If people in Port Angeles do not feel a vested interest in the watershed, one would expect their participation in its restoration to be minimal. The fact that the drinking water for the city comes from the Elwha River might seem a powerful counter-argument. However, Albert Borgmann would argue that technological devices mediate connection to the river. Water collectors, water treatment plants, pipes and faucets, as devices, decontextualize the “commodity” (water), and make the connection to the watershed an abstract one for Port Angeles residents. The jurisdiction of the National Park or other federal agencies parallels this dynamic. The majority of the watershed lies in the federal government’s hands,
mediated through a complex bureaucratic machinery whose workings are outside the
direct influence of the local public. Participants mentioned the fact that they have to
pay to visit the park. This resonates with a sense of commodification, and
understandably reinforces the perception that the watershed is not theirs.

The political nature of restoration projects, particularly large ones that involve
numerous stakeholders and agencies, taps into historical community conflicts,
which, if left unaddressed, can continue to impede progress of the projects. This
dynamic has been observed in other instances of large restoration projects. Nawi and
Brandt (2008) chronicle the collaborative struggles that have occurred in the
restoration of the San Francisco Bay—Sacramento—San Joaquin Delta ecosystem in
California. Numerous agencies and dozens of stakeholder groups have worked for
decades to adopt a plan that both empowers local communities and utilizes agency
resources. Their central finding was that,

*The long history of mistrust and conflict and the natural tendency to revert to those
historic attitudes can be overcome only if stakeholders remain engaged [with] the
agencies’ representatives and if stakeholders perceive that their voices are being heard
and their interests considered through decision making and program implementation.*
(Nawi and Brandt, 2008: 127).

Community members in Port Angeles were cognizant of the costs of this
estrangement:

*It turns into a democracy issue. The more people that are engaged on the ground can
actually say, this is what’s happening…there aren’t actually any invasive species in the
reservoir. Or there are fish starting to come up the river. The more people can
experience, the more we can really say what’s going on. Whereas the fewer people that
are involved, the easier it is to distort the reality by a few people who may be writing or
reporting it. If it’s only a small group of people who go to the reservoir, or know what
fish are up there, then it’s only that group of people who can say whether it’s worked or*
Not, whereas if you have community engagement, you have accountability, which is part of democracy (LSW, 2009).

Notably, the local community has shown the most active organizing and engagement with the project in places outside of the National Park’s jurisdiction: the nearshore environment and on the Lower Elwha Reservation. This demonstrates that the impetus to engage exists within the community, but the park boundaries limits the realization of that impulse.

This estrangement of local communities points to the device paradigm, as expressed through the professionalization of restoration practice. While not beholden to the corporate financial objectives that overtly commodify ecosystems in some private restoration projects, government agencies are responsible for producing a symbolic commodity as well as an ecological one: in the case of the Elwha, a wild restored river, rich with salmon. This puts agencies and the public in a double bind; the local and national communities pay for and expect this outcome, while agencies operate with limited budgets and political pressure for success. While the Elwha River belongs to the nation (and therefore partially to the local public), the responsibility for its successful restoration lies with professionals, not the local public. If the device paradigm holds true, the public might feel no more ability or responsibility to participate in the “production” of a restored Elwha River than to participate in the manufacturing process of a car or the recording of a CD they purchase. Integrating focal engagement that is contextualized (bodily), local, and social—activities on the focal side of the engagement continuum—could be one way to challenge this pattern, perhaps providing local communities opportunities to relate in different ways to the federal agencies that control nearby land.

5.3 Types of Engagement: How does the public participate?

In order to develop a more finely tuned analysis of this issue, I catalogued and categorized the types of engagement mentioned in my interviews, and discovered that technological restoration projects also shape how communities engage by broadening the categories considered engagement. A far cry from the typical
“volunteering on a Saturday” that is usually described when discussing community engagement with restoration, five categories of engagement emerged from this research: participation in restoration activities, participation in decision-making, economic arrangements, research activities, and information/education. Notably, discussion of community engagement in ecological restoration literature generally falls into two categories: stakeholder consultation (through meetings, planning, etc.) and volunteering. How does an expansion of engagement activities affect the focality of engagement? That is, to what extent do these categories, in the context of a technological restoration, hold the potential for focal practice? In the following sections I discuss the categories from my interviews, their relative focal qualities, how technological features of the Elwha River restoration project affected each, and the ways that this may point to larger patterns in technological projects.

In each category, I plot various activities observed on the Elwha River on a scale from focal to technological, using the criteria outlined above.

Participation in Restoration Activities

This is a classic form of engagement in restoration, and a patently focal one; it includes the iconic work of community members out on a Saturday afternoon, replanting a streambank, removing invasive species, participating in the “performance” (Jordan, 2003) of restoration. As a class of engagement, it holds significant potential as a focal practice. Local knowledge and skills are developed through increased experiences located in the ecosystem, physical engagement brings community members into social contact with one another, allowing them to witness the restoration project first-hand, thereby democratizing the change occurring on the landscape. Social meaning is created through social interactions and by contribution of work done as a volunteer (Wahl, 2010).

A restoration project that involved local volunteers throughout all stages would fall far on the focal end of the spectrum, where a completely technological project might employ exclusively professionals. In reality, most technological projects (including the Elwha) fall somewhere in-between, either using volunteer engagement as an important source of labour in the implementation of the project, or
engaging volunteers for symbolic purposes, perhaps one or two times throughout the project (e.g. Gobster & Hull, 2000; Ryan, 2000).

<table>
<thead>
<tr>
<th>Participation in Restoration Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Volunteer</strong></td>
</tr>
<tr>
<td>Invasive plant removal</td>
</tr>
<tr>
<td>Nearshore monitoring</td>
</tr>
<tr>
<td>Park-organized volunteering,</td>
</tr>
<tr>
<td>(e.g. Reservoir Planting*)</td>
</tr>
<tr>
<td>Plant Propagation</td>
</tr>
</tbody>
</table>

**Figure 5.2** Selection of (physically located) activities involved with Elwha restoration mentioned in interviews. Towards the focal end of the spectrum are volunteer projects, organized locally. Towards the technological end are activities enacted by professionals. In the mid-range are participatory activities managed by Olympic National Park for audiences broader than the local. *denotes future activities.

Volunteering with the Elwha River restoration has been limited by many of its technological features, most dominantly its time scale and complexity: the majority of work in the past twenty years has been either politically focused or research-based. The physical work currently underway is patently professional, including the road building and water treatment plant construction. National Park jurisdiction creates a sense of professionalization around the project, and agency regulations and safety concerns preclude spontaneous volunteer work. As one participant said,

_Since the passage of the Elwha Bill, since the Elwha Citizen’s Committee transpired, the active engagement in the Elwha Restoration has primarily been the work of a technocracy now. It’s biologists, it’s Park people, it’s different agency people who are working on various aspects of this. It’s Peninsula College, it’s Western [Washington University], it’s University of Washington, it’s U Vic, and so it’s become kind of specialized, there’s no, really not much room right now for regular folks, volunteers to have much of an active role in the process. I think it’s just the natural evolution of a huge multi-multi million-dollar endeavor, that as we near the point of removal, the process just becomes more sophisticated and more specialized (TM, 2009)._
Safety and managerial considerations are one root of this dynamic; public participation in dam removal itself is hardly the type of activity that could be managed safely enough to pass National Park Service risk assessment. However, this specialization has the unfortunate effect of alienating the local community because it does little to value the localized knowledge that comes from living in a place over a long period of time; technical knowledge places emphasis on transferability, rather than locality (Higgs, 2003).

A combination of prominence and uncertainty increases the pressure for technical success and efficiency in large projects, which may be one reason that agencies do not take an active role in involving the local public on-the-ground: “a government agency may be unlikely to sponsor a volunteer restoration project, preferring the predictability and guarantees offered by a professional firm. This segment of restoration practice is growing and becoming a stronger force. The tensions between volunteerism and professionalism are escalating” (Higgs, 2003: 210). By hiring professional firms, agencies manage unpredictability of outcomes, thereby managing risk and ensuring a predictable return on their financial investment. This is certainly the case with the Elwha. As one Park employee told me, “You want the community engaged, but you don’t want them to impede.” Agencies may perceive the management of volunteers as a resource drain, preferring instead to do the work themselves.

The volunteering that has occurred on the river has resulted in large part from the prominence of the project, and this prominence attracts people from outside the local area. Talks about the Elwha River Restoration project happen regularly at REI, an outdoor equipment store in Seattle. A Seattle environmental organization planned and conducted the invasive species pull that happened on the Elwha in 2005. Informants characterized these volunteer activities as more symbolic than functional, indicating that this exacerbates a local perception that the Elwha is a “playground” for environmentalists from outside of the local community.

The issue of volunteers points out one distinctive feature of large technological restoration projects: implementation is but one step in a multi-phase process that may take years. If engagement is only conceived of in terms of
volunteering during implementation, there may be years of planning and research during which the public is not involved on-location at all.

The Elwha Project demonstrates that there are opportunities during these phases for different kinds volunteering—for example in scientific surveys and educational programs (discussed below). If opportunities like these are not realized, the public could be further estranged from the process, as the project is perceived of as run by “technocrats.” Nawi and Brandt (2008) cite examples of increased support for large restoration projects when responsibilities for participation were decentralized, and put in the hands of local citizens. This perception could affect the local public’s willingness to engage in volunteer activities during implementation. I sensed that interviewees perceived a reticence on the part of long-time Port Angeles residents to engage with organized volunteering in the park. It remains to be seen whether this will be the case once restoration implementation begins on the Elwha River.

Planning and Decision-Making

Participation in planning and decision making processes is one of the most formalized avenues of engagement with a restoration project, and also a distinctively democratic avenue for local citizens to influence restoration plans. Technological projects enable and even emphasize this kind of engagement because of their management by agencies, and the fact that legislated decision-making processes may mandate public participation or consultation. Geographically large projects often include various municipalities, agencies, and land ownerships, thus requiring public processes in decision making.

Where might this type of participation fall in terms of focal practice? A community physically gathering in one place to discuss the fate (even when contentious) of a nearby ecosystem is a model of the kind of democratic engagement that Higgs, Light, and Borgmann advocate, although the engagement might not be sustained if only enabled during certain project phases. Citizen negotiations with land managers also helps focus control locally. Some decision-making processes, like Structured Decision Making address multiple values and endeavor to
incorporate local knowledge, testimonials, and non-monetary values in decisions. Literature on this type of decision making acknowledges that not all community engagement in decision-making is of equal value in terms of creating knowledge or resolving disputes (Gregory et al., 2001). Decision making processes that are framed as “decision aiding” (ibid.) rather than “dispute resolution” may help increase community knowledge about and engagement with a local ecological issue. When cast as dispute resolution, however, some processes may aggravate community discord.

<table>
<thead>
<tr>
<th>Planning and Decision-Making</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Grassroots/Social</strong></td>
</tr>
<tr>
<td>Community Advisory Group</td>
</tr>
<tr>
<td>Nearshore Advocacy Group</td>
</tr>
<tr>
<td>FERC intervention</td>
</tr>
<tr>
<td>City Council Meetings</td>
</tr>
<tr>
<td>County Planning Meetings</td>
</tr>
</tbody>
</table>

**Figure 5.3** Planning and decision-making activities mentioned in interviews. Towards the focal end of the spectrum are more localized, grassroots activities that require social engagement and continued management. Towards the technological end are activities enacted by individuals within federal structures. In the mid-range are activities managed by the National Park for audiences broader than the local.

As the case of the Elwha shows us, this type of engagement does not necessarily result in sustained community involvement in a project throughout other phases of planning. Increased emphasis on public participation in environmental processes is widely acknowledged, and most commonly discussed in terms of decision-making processes (i.e. Beirele and Konisky, 2000). Focus on community participation in decision making only may not be enough to engage communities in the longer term management or stewardship of their ecosystems (McGinnis et al., 1999). This research on the Elwha supports these assertions.

Olympic National Park underwent three iterations of community participation during the Environmental Impact Assessment processes. Participants uniformly named this phase as the era of most concerted local engagement with the project. Participants described community engagement significantly falling off with the passage of the Elwha Act, then re-enlivened during comment phases of the
Environmental Impact Assessments. Now, as one participant told me, the project plans are seen as a “done deal”, and the public has little opportunity to affect them, except in the instance of the water treatment facility controversy.

There are two reasons for pause if participation in decision-making processes is seen as the sole avenue for local engagement. First, this can reinforce the perception of a restoration project as contentious. As the Elwha project director told me, local residents did not engage in the first two phases of the Environmental Impact Assessment processes; it was not until the plan to remove the dams was revealed that opposition—and thus participation—began in earnest. Doyle, 2008, characterized this dynamic as common in large-scale restoration projects: “because stakeholder disputes are common and chronic, project managers must search constantly for effective ways to manage and resolve conflicts or face stalemate” (xi). Lack of community involvement, from this perspective, is deleterious mainly because it might impede the progress of a project.

This emphasis is understandable. Management agencies lack models of and funding for other forms of community engagement, particularly when busy with the hard work of figuring out how to best implement complex projects; the Elwha project manager reported only responding to individuals that were either directly oppositional or held potential to contribute funding. Operating with these limitations, once a project is no longer controversial there is little need to engage public; this limits opportunities for locals to experience the project as something beyond its politically charged context.

The second reason for concern is that decision-making processes are the realm of agencies, not individuals. A participant who had been involved in the early advocacy for the restoration told me that he thought the project should have included an interpretive center for the community to share the story of the restoration project, as it was happening. He explained that, “during the negotiations, there wasn’t a

---

32 The field of consultation and community decision-making is a broad one. Models such as structured decision making endeavor to include a range of values and stakeholders in proceedings, working to make the process less contentious and more collaborative. Varying approaches to community consultation are beyond the scope of this project. However, the common thread that unites them—local stakeholders negotiating with governmental agencies—is the main feature that I mean to critique.
strong push for that [from the public]. I think it was assumed that the park will handle that” (TM, 2009). Ironically, federal jurisdiction—a powerful model of democratic land ownership—can create a sense of less local responsibility for the project and to the place.

Despite the fact that individuals were free to participate, often participants in these processes represented organized stakeholder groups, rather than individual interests. One participant said, “it’s easier to have a say with the park when you’re a part of an organization, and organizations all have agendas. So it forces the democratic aspect of the project to be streamlined into more divisive threads than probably exist within the community” (LSW, 2009). As individuals, local citizens can currently only interact with the park in one of two ways: through participation in decision-making processes (as in making formal comments on Park plans), or through passive “consumption” of information. Other experiences with the project must be mediated by agencies.

While participation in decision-making is a crucial role in the politics of restoration, and helps focus power locally, it does not constitute participation in the process of restoration, and thus does not necessarily help communities engage physically in their place, which is one important feature of focal engagement.

Economic Arrangements

Economic arrangements include jobs that result directly from the project, for example in labour, research, planning, preparatory work, or implementation. As a class of engagement it is significant because it is often used as an argument for restoration projects (e.g. Cunningham, 2002; Jones, 2008). Participants in this study—particularly those involved with environmental groups that advocated for the project—emphasized the economic benefits of the project in terms of jobs created.

For financial as well as technical reasons, large-scale restoration projects necessarily rely upon federal and state agencies and restorationists with professional experience. It is unrealistic to imagine that this could be otherwise: the scale of environmental degradation that communities face often exceeds their capacity to remediate it (Doyle, 2008). In some large projects initially managed by federal
agencies, local groups have stepped in to design and help fund local projects when agency funding dwindles (e.g. Nawi and Brandt, 2008). Large projects enable economically centered engagement because of their scale and complexity. While professionalized aspects of restoration have been critiqued by Higgs and others, some argue that local job creation could go far towards increasing public interest in and support of a project (Cunningham, 2003). Others have argued that work in restoration can help increase local capacity, in post resource-extraction communities with high unemployment and low education rates. Durning (1999) chronicled the creation of watershed restoration training programs for ex-mill workers in Hayfork, California after the closing of a local mill. This phenomenon has not been quantified in relation to the Elwha River, but training programs through Peninsula College (discussed below) may be building opportunities for similar job economy shifts.

Focal economic arrangements would include jobs that are long-term or permanent, jobs located in place (e.g. employment of locals), and jobs that involve the local public in the restoration project. These arrangements could help stimulate local economic systems, which is one part of Borgmann’s reform strategy for the device paradigm. Examples of jobs like this in the Elwha Project include jobs created in the educational sector through grant funding of projects, national park employee positions directly related to the project, and fisheries jobs. Moving towards the technological side of the spectrum are jobs in the service industry or tourism industry, which one participant characterized as “fickle” (OC, 2009).

Other forms of economic arrangements, more towards the technological end of the spectrum, include short-term projects done by local contractors, research conducted by non-locals, and projects contracted by the NPS to companies from outside the local community. Finally, on the far end of the spectrum, would be jobs completely outsourced, like the seed propagation project mentioned in Chapter Four.
Ironically, in the case of the Elwha, the scale and federal management of the project has not necessarily meant more local work. The National Park Service does not hire exclusively locally, and several of the contracts have been sourced from outside the local area, because the project’s needs exceed local capacity. One ONP employee told me, “You know I think it would be great to focus on locals for hiring, but we don’t live in a big community” (JC, 2008). Federal grant funding, from the National Science Foundation, has supported the creation of educational programs and research facilitation through the Elwha Research Consortium.

The long time-scale of technological projects can also complicate the economic promise: as time goes on, cost of the project increases. Many of the jobs created with the Elwha will either not be sustained or are not projected to occur in the near future. Contract work for dam removal or road building will occur briefly—over the course of a year or two—and longer-term economic benefits (such as jobs related to increased tourism as a result of the restored fishery) will not occur until the restoration is complete, which could be as long as 20 years after dam removal.

Informants told me that the most significant realm of economic engagement with the project is the number of researchers and educators that spend time in the area studying and teaching about the project. They cited the diffuse economic impact of these “participants” in hotels, restaurants, and other service industry sectors. Ironically, none of my informants—a majority of whom held positions like these, directly related to the Elwha Project—cited their own jobs as examples of the economic benefits of the project.
As a central form of engagement with restoration, economic arrangements can increase the local knowledge and skills of a select portion of the community (those who receive jobs), while commodifying the process of restoration, and existing in a neutral range in terms of democratization of the landscape.

Research Activities

Participation in scientific research on a restoration project includes assisting professional researchers in planning and monitoring stages of a project and engagement in citizen science initiatives. The Elwha River restoration project includes a significant range of research activities that span the spectrum from focal to technological.

Activities in this category that exhibited focal qualities might involve both professional and non-professional researchers, and would build community knowledge and investment by occurring over long time periods. The science in this realm might be mostly focused on applications for the restoration project itself. The Elwha Nearshore Consortium (ENC) is a patent example of this type of research; a community group formed in response to a lack of agency attention to the nearshore environment, it is a collaborative effort between county biologists and local citizens. The results of ENC studies have been used to shape planning around treatment of the nearshore during dam removal, and participation in research has resulted in changing some public attitudes about the value of the restoration project (see Chapter Four).

Research that falls towards the technological end of the spectrum includes research conducted by professionals that is focused on transferability of findings rather than localized applications. Some studies on the Elwha fall to this side of the spectrum, particularly descriptive studies on fluvial geomorphology and aquatic genetics. These studies are highly technical and designed to contribute to the larger field of ecology.

In the middle range of the spectrum are mentorship programs with scientists like the Research Experiences for Undergraduates program. This program partners
local students with professional (often non-local) researchers, helping build scientific expertise within the community.

<table>
<thead>
<tr>
<th>Research Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Focal</strong></td>
</tr>
<tr>
<td>Citizen science</td>
</tr>
<tr>
<td>Nearshore Consortium</td>
</tr>
<tr>
<td>Research Experiences</td>
</tr>
<tr>
<td>WWU</td>
</tr>
<tr>
<td>Huxley College Program</td>
</tr>
<tr>
<td><strong>Technological</strong></td>
</tr>
<tr>
<td>“transferable”</td>
</tr>
</tbody>
</table>

**Figure 5.5** Research activities mentioned in interviews. Towards the focal end of the spectrum is local volunteer research designed for local application. Towards the technological end is professional research, aimed at transferability rather than application. In the mid-range are mentorship programs that, while not entirely local, build professional capacity within the local community.

Ecological restoration literature (e.g. Zedler, 2008) emphasizes the importance of establishing monitoring programs. Ecological research is often field-based, localized, and involves social engagement to some degree. As a class of engagement, research activities can play a crucial role in allowing participation during the long stages of preparation before implementation begins. Additionally, local participation in scientific research can deepen community members' knowledge of their place, and contribute towards increasing local professional capacity.

Such “citizen science” initiatives have proven useful in saving resources, and in turn, democratizing knowledge about the environment in resource-poor communities (Braschler, 2009). Citizen science projects, while offering mixed success in terms of accuracy of data collection, both on the Elwha River and in other instances (i.e. Cohn, 2008), has been shown to markedly increase participants’ knowledge about specific species and ecological processes (Bonney et al. 2009). This increased understanding of local ecology contributes to one of the underlying goals of focal practices: increased local knowledge and skills.

Technological projects enable this kind of participation because of their complexity and prominence, and the sheer amount of research that these features both inspire and require. Limited federal funding (in the case of the Elwha, most prominently through the National Science Foundation), often emphasizes scientific
research over education. Programs designed to involve citizen scientists respond to a lack of sufficient funding for researchers. While this frustrates some researchers I spoke with, in the Elwha it has increased opportunities for local engagement in the scientific process.

*Information/Education*

This category of engagement includes the avenues through which ecological restoration projects are taught about and communicated. In technological projects, it encompasses a vast array of engagement strategies, including interpretive information, formalized educational programs, informational meetings, tours, websites, and public media.

There are several reasons this is a pertinent category for technological projects in particular. First, as was so clearly demonstrated in the Elwha project, large projects can be extremely politically charged. Communication between agencies and the public plays a crucial role in expectation management, transparency, and responsiveness when the local community is not closely involved with the restoration. Second, particularly in communities that have a history of antagonistic relationships with regional agencies, educational organizations may inhabit neutral ground. Third, technological projects that have particular emphases on scientific research may present unique opportunities for long-term educational programs. Fourth, information and education are often equated with “engagement.” Recall that ONP employees’ three priorities for engaging the public were: information, interpretation and education, and volunteer coordination once the dams were removed.
Education and Information

<table>
<thead>
<tr>
<th>Local/Experience-Based</th>
<th>Broader Public/Information and Image-based</th>
</tr>
</thead>
<tbody>
<tr>
<td>Focal</td>
<td></td>
</tr>
<tr>
<td>OPI Elwha Ed. Program</td>
<td>Community information meetings</td>
</tr>
<tr>
<td>Local school curriculum</td>
<td></td>
</tr>
<tr>
<td>Elwha Geosciences Program</td>
<td>Press releases</td>
</tr>
<tr>
<td>NPS Interpretive tours</td>
<td>Newspaper articles</td>
</tr>
<tr>
<td>Tours (non-local groups)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>PBS show</td>
</tr>
<tr>
<td></td>
<td>NPS Interpretive Materials</td>
</tr>
<tr>
<td></td>
<td>Research Briefs</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 5.6 Education & Information activities mentioned in interviews. Towards the focal end of the spectrum are experience-based, interactive programs for local residents. Towards the technological end are information or image-based products for broader audiences. In the mid-range are activities for the local public that involve more passive “consumption” of information, and interactive activities for non-local public.

Educational programs can be enabled by technological features of restoration projects. Organizations like Peninsula College and Olympic Park Institute have had time to develop, find funding for, and establish long-term programs dedicated to involving the local public in education and research in the watershed. A project that occurred on a shorter timeline might not facilitate such programs. At the same time, the long time scale has increased the overall cost of the project, forcing Olympic National Park to redirect limited educational funding towards more technical aspects of the project. Technological projects hold unique potential to help build sustained engagement in a landscape because of their long time scale, particularly when educational programs are directed at multi-aged audiences. People engaged in early processes of restoration can build personal investment in the long term success of the project, which as residents they can follow throughout the course of the project.

The National Park dominantly sees information as engagement, as the director told me:

And you know, we try not to spin it, we try to say, obviously we try to say the good things. We don't hide from the potential negatives, which is two reservoirs are going to be permanently gone, those people that like those reservoirs... those will be gone, and there's nothing you can do about that. Talking about Lake Crescent being there is not satisfactory to them. You know, I acknowledge that. But we think there are a lot of
good things that we just want to get outreached to the public, but more than that, we kind of covered that during the EIS phase. Now we more want to say where we’re at and what can they expect to see, so that they’re not surprised, so that when they see muddy water coming down, they see this actually was planned. It’s part of the process and it’s short term, because there will be a lot of folks who when they see the river muddy up will say I told you so and we’ll say yeah you did, and we actually told you too. Give it some time, it will clear up [laughter] (BWin, 2009).

Several participants cited the creation of websites as engagement tools. The Lower Elwha Klallam Tribe, University of Idaho, Peninsula College, and Olympic Park Institute all have recently developed websites dealing with the Elwha restoration. As tools for educators, researchers, and the general public, websites are valuable, but they potentially lack the community and place-specificity that define focal engagement. The caution here, again, is not to use websites as replacements for engaging a local community physically with a project, but to use them as tools to share the project with a broader audience.

**Summary**

In this chapter I have argued first that the main distinguishing feature in engagement is locality, and that technological projects drift towards an expansion of who is engaged. Where small, community-run projects by definition engage the local public, larger, agency-run projects engage a broader audience in some instances, and at other times agencies are adverse to local public engagement. Agencies have accountability to a larger public than the solely local one, and may avoid engaging the local public because of historical conflicts, capacity limitations, or a perception that local engagement threatens the efficiency or success of the restoration. The local public may be reticent to participate for similar reasons.

Second, I have argued that local engagement in restoration—as a form of focal practice—is important in order to 1) increase local knowledge and skills related to place, 2) contribute to the democratization of the landscape, 3) foster the creation of meaning within a community.
But to simply classify “local” engagement as “good” engagement is to paint with too broad a brush. Some forms of engagement with restoration projects—even if local—do not help increase local knowledge and skills, democratize the landscape, or create meaning within a community. Conversely, some engagement that draws on a broader public—like educational programs—actually achieves these goals more than if the project were purely local.

Technological projects enable a broad range of engagement opportunities, across a number of categories. They expand opportunity for participation in educational programs, research activities, and decision-making processes (though these processes are discrete and usually only occur during the early phases of projects).

However, technological projects can constrain community engagement by limiting opportunities for physical engagement in the landscape. These limitations are a result of resource allocation towards other goals in the face of capacity limitations, administrative approaches and degrees of risk tolerance in the agencies that administer the projects, public safety and liability concerns, and the worldviews of those who hold decision-making power. Establishing a framework to assess the qualities of community engagement with a project could help managers and communities focus their efforts to ensure that the potential of ecological restoration to become a focal practice is realized. This is the subject of the following chapter.
Chapter Six: Ways Forward

*Part of the value of restoration work is firsthand teaching of the laboriousness of an entropy battle—how very difficult it is to put a casually torn-apart ecosystem back together!*

Stephanie Mills, *In Service of the Wild*

*It is a communal experience to restore an ecosystem. It’s for the benefit of the community and if you can celebrate the process and get people involved, then it does excite the local community, it does get them interested in ecological issues which impact us all whether it’s water quality or fish populations or landslide issues or whatever, having healthy ecosystems has direct benefits to the local community.*

JC, Elwha Restoration Project Vegetation Coordinator

Technological projects are a necessary reality in the landscape of ecological restoration. The range of engagement that is possible with these projects presents ample opportunities and some challenges for focal practices. Focal practices are important in creating room for local community investment in restoration projects through increased knowledge and skills, the democratization of the landscape, and the creation of meaning through social engagement. How, though, do we “ensure that the political terrain remains hospitable” (Higgs 2000: 208), and find ways to encourage reasonable types of focal engagement with these projects?

This question is a conundrum, because it implies the question: ‘whose responsibility is it to catalyze engagement?’ If one aim of increasing focal engagement with restoration is increasing democratic involvement in a place, and agency control dilutes local investment in a place, the onus to involve the public might not best be placed completely in the hands of large government management agencies. However, as administrators of funds and directors of projects, management agencies dominantly set the priorities in technological projects. In this chapter, therefore, I offer suggestions and tools for managers and community members alike.

I started this research by asking, “how might engagement with the Elwha restoration be enlarged?” My findings actually demonstrated that in real terms, engagement opportunities with the project are quite numerous already, because the features of technological projects enable a broad range of engagement. I now realize
a more appropriate question when applying Higgs’ theory, is not how to *expand* engagement, but how to *focus* engagement, such that the benefits of focal practice—creation of fidelity through increased democratization of the landscape, the building of local skills and knowledge, and the creation of meaning—can best be realized. Such refocusing would entail moving the suite of engagement activities associated with the project more towards focal activities—embodied, locally-focused, citizen empowering activities—with an acknowledgement of the natural limitations of large projects. Figure 6.1 illustrates this concept.

![Figure 6.1: Focusing Engagement in Technological Projects](image)

Bringing technological projects towards focal engagement strategies. Inside the “funnel” exist the range of activities associated with restoration projects. As projects increase in scale, time, professionalization, cost, the range of possible engagement activities increases. Smaller, shorter projects possess less possible activities, but are inherently more focal. A threshold exists beyond which it is unrealistic to move technological projects. However, movement towards activities that can be both focal and serve technological projects will increase the focal nature of projects.

As the technological features of a project increase, so does the breadth of engagement activities associated with the project, and the potential for both focal and technological activities. In the upper level of the diagram are activities that are not
focal, but that are essential to large, complex, scientifically oriented projects. For example, dam deconstruction, essential to the project, is necessarily completed by professionals. Information-based materials aimed at a national public would also exist somewhere near the top of the diagram. Technological restoration projects may naturally and more easily exist in this realm. Towards the bottom of the diagram are activities that are patently focal: community planning and design of a project, all-volunteer participation in the project, local sourcing of materials and labour. These sit below a threshold, through which technological projects cannot realistically move.

The act of focusing engagement is the act of nudging the position of a restoration project into the middle zone, towards this threshold, in which activities that hold potential to be focal are also enabled by features of technological projects. An example might be a long-term educational program enabled by the prominence and time-scale of the restoration project, or a park-organized “locals only” volunteer day (as opposed to one that is organized for visitors from outside the region). This movement may require the sacrificing of some technical accuracy or economic efficiency, but would be worthwhile if it meant increasing local fidelity to the project. Local buy-in to projects such as the Elwha is essential for durability, but must be supported and enabled by larger bureaucratic structures.

In order to locate where a particular project sits in this diagram and in what direction the suite of community engagement needs to move, we need a means by which to assess current engagement types and areas for potential expansion. In the sections below I suggest a series of steps towards focusing engagement.

1) Identify and Assess Current Engagement

Significant organization amongst scientific researchers has occurred throughout the Elwha Project. The Elwha Research Consortium has quite effectively connected researchers through meetings, resource sharing, and regular communication. If the local community’s engagement in other facets of the project is to be taken seriously and focal engagement attempted, the same concerted collaboration and organization should be applied to issues of engagement. I discovered a lack of collaboration in this realm during my research; while many
participants were familiar with other activities, there were several instances when I found myself as a “messenger” of sorts, alerting people of other projects going on that related to theirs. I also perceived a disconnect between the reasons people cited for engaging the public and the ways it was actually happening, but there was not a clear articulation of what caused this discrepancy. Some participants said their organizations had expected the national park to achieve certain engagement goals that park employees did not address. Some of the actions the community either expected or hoped for are “falling through the cracks” and others are done but the results are not being communicated to groups or agencies that could offer support. Communicating the full range of engagement activities between groups could help strengthen the collaborative roots of the project.

The first step in focusing engagement with the Elwha project would be to compile a complete list from all of the various agencies, political groups, and organizations working with the project in order to create an analysis of the types of engagement currently happening and the types planned for future phases. This could happen in a forum, community meeting, or in tandem to an annual Elwha Research Consortium meeting.

The following questions (which correlate to the features listed in figure 5.2) could be asked of each engagement activity:

1. Who is engaged? (local/non-local, age, employment, income, education)
2. Where does it take place? (e.g. on-site or not?)
3. Is it experience or information based?
4. Do the skills & knowledge relate to this place, or other places?
5. Is it ongoing or a one-time event?
6. Do people participate together or alone?
7. Who organized the participation? (Community? Agencies?)
8. What role do stories and non-technical information play into the activity?
9. Is the experience situated in the context of local region, culture, history?

10. Does anyone receive money? Who?

The answers to these questions, when combined, could help place each activity somewhere on a scale between “focal” and “technological”. Categories of engagement could then be plotted on a chart in order to visually reveal overall patterns of engagement with the restoration project. Figure 6.2 is a prototype of a chart of this type. Overemphasis in one category of engagement might signal a need to develop opportunities in other categories. In some categories, projects could bump up against “thresholds”. As an assessment tool, the chart could be used to illuminate areas of resistance or areas where engagement of a particular kind is not possible. In this way it could spark communities to ask the right questions and test their assumptions, before they offer answers or jump to conclusions.

<table>
<thead>
<tr>
<th>Category</th>
<th>Community Engagement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participation in Restoration</td>
<td>XXXXXX</td>
</tr>
<tr>
<td>Planning &amp; Decision Making</td>
<td>xxx</td>
</tr>
<tr>
<td>Economic Arrangements</td>
<td>x</td>
</tr>
<tr>
<td>Research Activities</td>
<td>xxx</td>
</tr>
<tr>
<td>Education &amp; Information</td>
<td>xxx</td>
</tr>
<tr>
<td>Community Conversations</td>
<td>x x x x</td>
</tr>
</tbody>
</table>

Figure 6.2: A matrix for assessing engagement opportunities in restoration projects with hypothetical activity placements. Different activities are plotted in each category. “Community Conversations”, a sixth category, is proposed and described below, and offers potential for bringing overly technological suites of engagement more towards the focal end of the spectrum.

2) Increase an emphasis on engaging the local public.

Potential to engage the local public differently than the national public exists in all categories of the project, particularly in participation in restoration activities and education and information. The importance of localized involvement in projects has been emphasized by scholars who argue that, “having restoration projects in

---

33 Rather than creating a quantitative scale, the assessment of these activities could be an engagement form in itself. I envision round-table discussions about the qualities of different activities resulting in a deeper understanding of the implications of and motivations for each form of engagement.
each ecoregion will provide demonstrations for local citizens, and this visibility will vastly increase environmental literacy” (Cairns 2002). The largest barrier to local engagement was the local public’s history with the national agency. Activities designed to equalize perceived ownership over the place could increase the benefits of the project for the local community.

3) **Enlarge opportunities to physically engage in the landscape**
In the context of the Elwha, one of the factors that limited local support of the project was the lack of experiences people had in participating in the restoration itself, “as people’s use of an area increases, so does their attachment. Building these connections between people and the natural environment is essential for creating advocates for natural areas restoration and preservation.” (Ryan 2000: 218) Wahl (2010) found that physical participation in environmental stewardship increased individuals’ sense of ownership of a place. Local perceptions of ownership of the Elwha River were distinctively low, and opposition to the project itself has historically been most powerful within the local public. Involving people physically in the restoration may help to begin to balance the sense of responsibility locals feel to the watershed.

4) **Continue to foster and utilize connections between educational organizations and management organizations.**

Educational programs like the ones at Olympic Park Institute and Peninsula College are effectively connecting the local public and the “technocrats” during the current research phase. Free from the burden of project management, they have been able to focus efforts in engaging the public. In the time afforded by the delays in the project, they have quite effectively bridged gaps between over-extended agencies and a weary public.

Federal agencies and the local community interact during specific formalized processes, but generally operate in different worlds. Educational organizations, however, have the potential to form links between these two entities, occupying a largely apolitical space, and connecting the two entities. Educational organizations
can access funding that federal agencies cannot, may be uniquely suited to communicating ecological concepts, and have more regular contact with local community members.

They often are working with young members of the community who will, throughout their lives, witness the recovery of the ecosystem. Their role in its success will depend upon what they know about it, how they’ve participated in it, and the ways that they bind their stories to its story.

4) *Create arenas for “Community Conversations”*

This suggestion is one that arises from an elegant confluence of theory and experience. Borgmann argues for the need for “deictic discourse” in reforming the device paradigm. These are, “languages of reflection (which often turn out to be from literature) that remind us of the greater importance of these centering things and practices and help to provide the resolve to engage in them. Only then can we begin to make wise basic choices that roll back the universalization of devices. “ (Strong and Higgs 2000: 33) Higgs, through emphasizing the importance of narrative continuity in linking past, present, and future in restoration projects discusses “restorying” a landscape. He proposes that restoration is best conceived as a conversation, and writes, “conversation is *talking with*, not *talking to*” (2003: 286).

At a visit to the Clallam County Historical Society in Port Angeles I met an 85 year old man who had been the Elwha Dam operator for forty years. When I told him that I was interviewing people about the restoration project, he shook his head and said, “well, I was on the losing end of that story. No one wants to hear what I think!” Who was recording his story, his perspective? And what of the perspectives of the fishermen who are anticipating the loss of Lake Mills and Aldwell? The story of the Elwha Restoration is generally told in one voice: Olympic National Park’s. It seems the community would be engaged more by a tapestry of stories rather than a monolithic one told through the formal avenues of the National Park Service, in official press releases, research updates, interpretive information and government or institutional websites.
Increasing arenas in which the public can be part of the dialogue rather than passive recipients (consumers, in Borgmann’s terminology) of information could help focus the community on the Elwha Project. This approach could also reveal the real emotions within the community that may be the root of historical dissent and current disengagement:

loss or grief is not always verbally expressed. However, sometimes the environmental changes [in restoration projects] are significant enough that people with a strong attachment to an area will voice their opposition in the public arena, often to the astonishment of well-intentioned managers or designers who thought that their changes would be indisputably good for the particular natural area (Ryan, 2000: 215).

A few examples of “community conversation” activities already exist; the publication of “Landscapes of Home”, a compilation of writing from researchers and students at Peninsula College who spent a term focusing on the Elwha River, and a researcher who has collected stories of some community members involved in the project. But participants voiced a desire for more engagement of this type.

One of the most revealing questions I asked participants during this research involved a magic wand. I asked everyone to tell me how he or she would change community engagement with the project if they had a magic wand—no financial, political, or logistical realities limiting them. The answers were doubly interesting because they revealed not just ideal visions of the future, but also what participants saw as limiting. Notably, no one’s first answer was “more money” or “extra staff”; their answers uncovered a more symbolic realm of hopes and perceived obstacles.

Two biologists envisioned a photography exhibit at a Port Angeles gallery, in which the stories and images of researchers on the river could be shared with the public. Both a city council member and a community activist suggested a community center somewhere in Port Angeles focused on facilitating volunteers, educating the public about the project, connecting Lower Elwha Klallam Tribal members with Port Angeles citizens, and sharing the history of the river.
The National Park project manager answered the question by telling a story about an early opponent of the project who had become an ardent supporter, and indicated that his “magic wand” would change the opinions of other unsupportive Port Angeles citizens. One educator mentioned having young people in the city gather stories from older generations, and compile them as archives and public record. At the center of all of the visions was a sense of the potential of the project to bring people together, often through sharing narrative or stories. Many visions included a physical place for this connection to happen.

These responses uncovered an intuitive truth in ecological restoration, described by Higgs’ model of restoration and felt by those working on the Elwha Project. Regardless of the bureaucratic apparatus that at times may weigh it down, the act of restoration sets the imagination in motion, and holds enormous potential to restore more than ecosystems. One participant put it this way:

*The Elwha is this powerful story of environmental hope! People have realized that we’re willing to allow this place to change. A lot’s going to change, and we don’t really know how. When it comes down to it and the wood and the sediment starts to move and the water starts to re-sort and the salmon find channels and work their way up...that’s going to resonate with a lot of people. [It’s] the realization that we’re taking a powerful environmental step forward to give back to the place some of what has been lost in connections—ecological connections, and also the connections between people and place. I think that we don’t have enough stories like this...* (DS, 2009)

Projects like the Elwha River restoration challenge us to expand our notions of what constitutes meaningful engagement. In an idealized world, Port Angeles community members would be intimately involved in the restoration project, working in concert with Olympic National Park to restore the Elwha River. The national park would strike an easy balance between facilitation of the project and engagement of the public. As demonstrated in this thesis, the reality is much more complicated than this.
Rebuilding connections between people and place will take conscious work just as rebuilding ecological connections will. If we can start at this heart of the story, though, where hope inspires the monumental communal effort it takes to agree to dismantle a dam and rebuild a watershed, perhaps the work it takes can be joyful, and the path a clear one.
Conclusions

*Will restoration become a practice that turns out ecosystems as predictable commodities, in perfect order, according to the principles of technical expertise? Alternatively, will it remain a heterogeneous ambition, one imbued with community intelligence and scientific modesty? *

(Higgs 2003, 187)

*What it comes down to, I think, is what kind of world are we trying to create through these actions? And there’s two different visions, one is this focal restoration, is a means toward more grassroots democratic control over the spaces in which we live. Whereas technological restoration leads to more of a representative control over the spaces in which we live, where we are consumers of restoration, or the recipients of restoration rather than the agents of restoration.*

(LSW, 2009)

I undertook this research for two reasons: first, as a preliminary investigation into the ways Higgs’ theory of focal restoration applied to a real-world technological project, and second, to document specific observations about community engagement with the Elwha River Restoration. I entered the study anticipating that the technological features would largely influence community engagement, and found that while these concrete features contributed to the general manner of engagement, a more conceptual limitation dominated the project. Central to the issue of community engagement was the role that agencies play in the restoration project, and the ways that community relationships with agencies colour their sense of responsibility to a landscape.

First, a community’s history, in particular its relationship with management agencies, cannot be ignored when considering how best to engage them with restoration. Second, National Parks answer to a national public, and the prominence of large projects can create pressure for success that discourages agencies from involving local public, 1) for fear that community efforts may compromise technical “accuracy” and 2) because agency capacity is limited. Third, local governments influence a community’s acceptance of a project through their support or non-support of a project, and funding issues with large projects can bring local governments into opposition with larger mandating agencies. Local communities
may be reticent to bear a disproportionate costs of restoration, particularly if they perceive that the impetus for the project as coming from outside the community. Fourth, educational and non-profit organizations play essential roles in connecting the local public with restoration projects. Long time-scales and scientific uncertainty of projects create opportunities in particular for science education and research participation. Finally, community members are cognizant of these limitations and see potential for increased engagement, particularly in the realm of community conversations.

Community engagement opportunities are broad in technological restoration projects, and they contribute to nurturing focal things (i.e. the ecosystems of the Elwha) and practices (i.e. learning opportunities). The categorization and assessment of these engagement activities can help communities and agencies alike assess whether, why, and how these engagement activities can be refocused to increase the potential of restoration to help create meaning, democratize the local landscape, and increase local knowledge and skills related to place—the three central goals of focal practices as they relate to ecological restoration.

**Limitations of this study and ideas for future research**

While the Elwha restoration project does in many ways exhibit features that define technological projects, there are a few factors that set it apart from other projects Higgs might define as technological. Most centrally is the role that the National Park plays in the project. The government manages the project, so the profit motive (and resulting overt commodification) that may colour other large private projects is largely absent. A similar study conducted on a project run by a professional restoration agency could contribute to this conversation.

Another limitation to this project is that the investigation was not latitudinal. While I was able to compile a select few community leaders’ perceptions of the public’s opinions about the project and the role of agencies in the project, I did not gather primary data from a sample of the public itself, and I did not assemble a complete catalogue of engagement activities happening. This thesis became the story of agencies partially because I interviewed people in the context of their work with
agencies. A study that measures public perceptions of the Elwha restoration project could help management agencies and educational organizations focus their efforts in engaging the community, and a study centered on individuals’ stories about the project could add to the community interest in and attention to this technological project. As mentioned in Chapter Three, the omission of the perspective of the Lower Elwha Klallam Tribe is a significant gap in this research. An exploration of tribal engagement with the project and the factors that influence this engagement could constitute an entire study in itself.

When I began this research in 2007, dam removals were projected to begin in 2009. I quickly discovered—when removal dates were pushed ahead to 2012—that rather than occurring during the pivotal moment in this long-term project, my study would occur during yet another lull in momentum. The nature of this timing certainly affected the perspectives of those I interviewed, and may have magnified frustration with the National Park Service who, as the public face of the project, had recently delivered news of the new delays. I have no doubt that community interest and engagement will increase when dam removals begin; documentation of this dynamic would be of particular interest to other dam removal project managers, and other agencies or jurisdictions contemplating dam removals.

While this study did not deal directly with the reasoning behind dam removal, a study of dam removal reasoning in the face of climate change would be fascinating. Thirty years ago, the rationale for dam removal had to do with disappearing species. Today, as concerns about climate change and clean local power sources increase, support for the removal of small hydro projects like the Elwha Dams may be changing. Harris et al., (2006), suggest that as ecosystems transform as a result of climatic shifts, the public’s interest or trust in ecological restoration solutions may wane. Increasing extreme weather, hydrologic regime changes, and rising ocean temperature may adversely affect salmon to the point that their restoration in the Pacific Northwest is unrealistic. Notably, only one participant in this study spoke about the Elwha in relation to climate change. A possible future research project could investigate whether local support for such restoration projects changes when understood in the context of global issues like climate change.
A friend I spoke with about this project said, “you’re basically writing about how bioregionalism is at odds with the nation state.” In some ways, the idea of focal restoration, when applied particularly to publicly owned lands, does come into opposition with the political structure of the nation. Fostering local values and local care for local land is at the heart of Higgs’ proposition. An exploration of these political dynamics in relation to the practice of ecological restoration could inform the further development of his theory.

At its heart, the major limitation to this study is that it was a study to begin with. At a certain point in restoration, we must experiment and learn from your experience in an adaptive manner. Similarly, at a certain point in communities, people must simply engage. It is no more the sole responsibility of the NPS to engage with the public than it is the role of the public to engage with the NPS, or researchers to engage the public with the park. Democracy requires participation, and communities must ask for and foster participation in their place. More than one interviewee told me that our interview had sparked new ideas about ways to approach their work, including new connections to make in the community. The simple act of starting a conversation about the restoration process, however flawed it may have been, could have ripple effects that alter the future of community engagement.

**Future Questions**

If the National Park Service suddenly vanished, what would happen to the Elwha River? Who would know how to care for the watershed, and what might its restoration look like? One could argue the river would take care of itself. Over years, the dams would eventually crumble, the sediment wash to sea. But by then, would there be salmon to return? Without the scientific and governmental authority of the National Park Service looming over the project, the community might turn to the people within it who have worked these past years learning about the watershed through educational organizations like OPI and Peninsula College. Or perhaps they would turn to the people who have lived on the river for millennia: the Lower Elwha Klallam Tribe.
In any case, engagement with the project needs to happen in multiple ways, incorporating a diversity of perspectives and a diversity of expertise. Not all engagement can be focal engagement, but a large portion of it could be. This study of the Elwha demonstrates that engagement cannot be easily facilitated by just one entity. Just as we can’t ignore the history of a landscape that we attempt to restore, we can’t ignore the historical context of the community in which a restoration is taking place.

If we expect the results of ecological restoration to be The National Park Service may never create a museum version, a “predictable commodity,” of the Elwha River with giant salmon, abundant salmon-fed bear and wolves, a bustling city nearby, and homespun community groups diligently tending to the watershed. Human community dynamics, like ecosystem dynamics, are messy. In restoration we attempt to achieve dynamic stability. Community engagement with a restoration project creates buy-in, involvement potentially fosters a deeper understanding of and appreciation for place, and the technical skills to care for that place.

In the time that I wrote this thesis, a new president was elected in the United States, an economic crisis loomed large on the national consciousness, Port Angeles and Olympic National Park finally reached a financial agreement about the funding of water treatment plants. Four participants moved away from Port Angeles, and Olympic Park Institute cut funding for its community coordinator position. A local Seattle public television station produced a short documentary on the Elwha River restoration. The Economic Stimulus bill accelerated preparatory projects on the river, and a new set of greenhouses dedicated to plant propagation was built in the nearby town of Sequim. Community interest and momentum may be building as the dam removal dates approach. Regardless, the ambition of the project and the hope it inspires—whether in the community adjacent to the river or in communities elsewhere in the world—certainly contribute to the field of ecological restoration, expanding the possibilities we may consider when we focus on caring for and repairing our ecosystems and our communities.
WORKS CITED


Responses to Dam Removal.” Northwest Science 82 no. sp1 (December 2008): 72-90.


Shaffer, J. A. et al.. “Nearshore Restoration of the Elwha River Through Removal of


Winter, Brian D. and Patrick Crain. “Making the Case for Ecosystem Restoration


# Appendix A

## List of Acronyms

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BLM</td>
<td>Bureau of Land Management</td>
</tr>
<tr>
<td>WDFW</td>
<td>Washington Department of Fish and Wildlife</td>
</tr>
<tr>
<td>EIS</td>
<td>Environmental Impact Statement</td>
</tr>
<tr>
<td>EPA</td>
<td>Environmental Protection Agency</td>
</tr>
<tr>
<td>ERC</td>
<td>Elwha Research Consortium</td>
</tr>
<tr>
<td>ESA</td>
<td>Endangered Species Act</td>
</tr>
<tr>
<td>FERC</td>
<td>Federal Energy Regulatory Commission</td>
</tr>
<tr>
<td>LEKT</td>
<td>Lower Elwha Klallam Tribe</td>
</tr>
<tr>
<td>NEPA</td>
<td>National Environmental Policy Act of 1969</td>
</tr>
<tr>
<td>NPS</td>
<td>National Park Service</td>
</tr>
<tr>
<td>NSF</td>
<td>National Science Foundation</td>
</tr>
<tr>
<td>ONP</td>
<td>Olympic National Park</td>
</tr>
<tr>
<td>OPA</td>
<td>Olympic Park Associates, Sequim, WA</td>
</tr>
<tr>
<td>OPI</td>
<td>Olympic Park Institute, Port Angeles, WA</td>
</tr>
<tr>
<td>REU</td>
<td>Research Experiences for Undergraduates, Peninsula College</td>
</tr>
</tbody>
</table>
# Appendix B

## List of Informants

<table>
<thead>
<tr>
<th>Code</th>
<th>Informant/Title</th>
<th>Affiliation</th>
<th>Date Interviewed</th>
</tr>
</thead>
<tbody>
<tr>
<td>MT</td>
<td>Matt Toerry, PhD Researcher, Writing Instructor</td>
<td>Peninsula College</td>
<td>13 October 2008</td>
</tr>
<tr>
<td>TD</td>
<td>Tara Demers Community Organizer</td>
<td>Self Employed</td>
<td>13 October 2008</td>
</tr>
<tr>
<td>AI 1</td>
<td>Anonymous Informant 1 Instructor</td>
<td>Peninsula College</td>
<td>13 October 2008</td>
</tr>
<tr>
<td>LSW</td>
<td>Lindsey Shromen-Wawrin Elwha Science Education Coordinator</td>
<td>Olympic Park Institute</td>
<td>15 October 2008 3 June 2009</td>
</tr>
<tr>
<td>CL</td>
<td>Cathy Lear Habitat Biologist</td>
<td>Clallam County, Washington</td>
<td>16 October 2008</td>
</tr>
<tr>
<td>AS</td>
<td>Anne Shaffer Coordinator</td>
<td>Washington Department of Fish and Wildlife Elwha Nearshore Consortium</td>
<td>16 October 2008</td>
</tr>
<tr>
<td>AK</td>
<td>Amy Kober National Communications Director</td>
<td>American Rivers</td>
<td>30 October 2008 2 April 2009</td>
</tr>
<tr>
<td>BetW</td>
<td>Betsy Wharton Deputy Mayor</td>
<td>Port Angeles City Council</td>
<td>13 November 2008</td>
</tr>
<tr>
<td>JC</td>
<td>Josh Chenoweth Botanical Restorationist</td>
<td>Olympic National Park</td>
<td>14 November 2008</td>
</tr>
<tr>
<td>DS</td>
<td>Darek Staab Community Programs Director</td>
<td>Olympic Park Institute</td>
<td>17 November 2008 10 February 2009</td>
</tr>
<tr>
<td>DB</td>
<td>Dwight Barry, PhD Director</td>
<td>Peninsula College Elwha Research Consortium Research Experiences for Undergraduates</td>
<td>18 November 2008</td>
</tr>
<tr>
<td>TB</td>
<td>Tammy Barry, PhD Adjunct Professor</td>
<td>Western Washington University</td>
<td>18 November 2008</td>
</tr>
</tbody>
</table>
| OC    | Orville Campbell  
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Member</td>
</tr>
<tr>
<td></td>
<td>Port Angeles Chamber of Commerce James River Corporation</td>
</tr>
<tr>
<td></td>
<td>13 January 2009</td>
</tr>
</tbody>
</table>
| AI 2  | Anonymous Informant 2  
|       | Chair              |
|       | Biologist          |
|       | Surfrider Olympic Peninsula Washington Department of Fish and Wildlife |
|       | 14 January 2009   |
| TM    | Tim McNulty  
|       | Writer, Board Member |
|       | Olympic Park Associates |
|       | 14 January 2009   |
| BWin  | Brian Winter, PhD  
|       | Elwha Project Manager |
|       | Olympic National Park |
|       | 10 February 2009  |
Appendix C

Human Research Ethics Protocol: Recruitment Materials

Participant Initial Contact Script
(for email or phone)

Hello! My name is Ryan Hilperts and I’m a graduate student in the school of Environmental Studies at the University of Victoria. I have been a resident of the North Olympic Peninsula for the last 7 years, and recently returned to school in order to study ecological restoration. As a part of my master’s project under the supervision of Dr. Eric Higgs, I’m conducting interviews with members of the Port Angeles community about the Elwha River Restoration Project. My research is aimed at understanding the various perspectives that community members have of the restoration project.

I’m contacting you because I understand you are involved with the (dam removals/Elwha River) as________________________________. I would love a chance to talk to you about your experiences on the Elwha and your thoughts and feelings about the restoration project. I am conducting interviews with several people involved in different ways in the project. Interviews take between one and two hours. If you are interested in participating in this project and contributing your stories and perspective, please let me know. I will send you a consent form that explains in more detail the project, its aims, and what the interview will be like. Please do not hesitate to contact me with any questions you might have. I can be reached at the number below; my supervisor, Dr. Eric Higgs, can be reached at (250)472-4568.

Thank you so much! I look forward to speaking with you.

Ryan Hilperts
ryzome@uvic.ca
(250)472-5923 Victoria, BC office
(360)450-5878 Port Angeles local
Appendix D

Human Ethics Research Protocol: Participant Consent Form

School of Environmental Studies
University of Victoria, BC

Elwha River Restoration Community Project
Participant Consent Form

Thank you for participating in the Elwha River Restoration Stories Project. This research project is being conducted by Ryan Hilperts, a Master of Arts candidate in the School of Environmental Studies at the University of Victoria.

About this project:
The purposes of this project are:
• To foster conversations about the Elwha River restoration project.
• To contribute to the wider understanding of ways communities engage with and think about dam removals and ecological restoration projects.
• To contribute this knowledge to the field of ecological restoration.
• To gather and archive stories about the Elwha River and the related restoration project for the North Olympic Peninsula.

You have been asked to contribute to this project because of your involvement in the restoration project, your experience on the Elwha River, or your role as a community member in Port Angeles or the surrounding area. Your stories and perspectives are greatly appreciated.

Your contribution
If you agree to be a part of this project, your participation may include:

• Discussing your views on the restoration of the Elwha River.
• Participating in a group interview focused on the Elwha River.
• Allowing Ryan to observe you in your work related to the Elwha River.
• Engaging in a 1-2 hour interview with Ryan Hilperts on the topic of the Elwha River Restoration.
• Allowing your interview to be digitally recorded.
• Allowing your interview to be transcribed and analyzed for research purposes.
• Allowing your interview to be archived by the Clallam County Historical Society.
• Allowing Ryan to take a photograph of you for use in presentations and/or publications.

There are no known or anticipated risks to you by participating in this research.
Participation in this research will give you an opportunity to discuss your views on the restoration of the Elwha River with the interviewer and other members of the community. Your views may in turn inform other related restoration projects, and help to increase the understanding of the social dimensions of ecological restoration for practitioners, participants, and policy makers.

In addition, your stories will contribute to an archived collection of your community's unique history as the location of the largest dam removal project to date.

**Voluntary Participation**
Your participation in this research is *completely voluntary*. If you do decide to participate, you may withdraw at any time without any consequences or any explanation. If you do withdraw from the study your data will only be used with your express permission. If you do withdraw and would prefer your data not to be used, the recording of your interview will be erased and not used in the study. Additionally, if you have consented to being photographed or observed, these photographs and observations will be erased and not used in the study.

You may know Ryan Hilperts as a friend or acquaintance from her time living and working in Port Angeles. To help prevent this relationship from influencing your decision to participate, this form is intended to reiterate that your involvement in this study is purely voluntary and you are under no obligation whatsoever to contribute. Should you choose not to be involved in the study, you may do so with no explanation whatsoever.

After your initial interview, Ryan may request a follow-up interview with you. By signing this form, you are indicating your ongoing consent for use of all interviews or meetings you participate in as a part of this project.

**Confidentiality**
Please indicate the level of confidentiality you would prefer in this study by initialing next to one of the three options below:

- **________waived confidentiality:** you may be identified by name in thesis.
- **________moderately protected confidentiality:** Data from your interview may be used in the thesis without your name being included, and any identifying information about you will be changed. However, because of the small community in which this study is taking place, your identity may be understood by other participants reading the study, though your name and identifying information not be included.
- **________protected confidentiality in the thesis:** General concepts from your interview will be included, but not your name or direct quotes.

*Please note:* If, at any time, you should desire to change your level of confidentiality, you are free to do so by contacting Ryan Hilperts. The use of your data will be adjusted accordingly.
Your level of confidentiality is assured according to your request above. However, there may be some practical limitations to your confidentiality:

1) Your participation in group meetings or interviews will limit your confidentiality in that other participants will be present for your contributions to the project. If you prefer a higher level of confidentiality, please participate in individual interview instead.

2) Due to the small community in which this research is based, your identity may be easily discerned by others familiar with this project, even if your name is not included in the data.

3) I may have been referred to you for participation in this research through word-of-mouth. If this is the case, I will inform you who suggested I contact you so that you may know of their awareness of your participation in this project.

**Photographs**

Please initial below if you consent for photographs from you interview to be taken by Ryan Hilperts and used in presentations and publications in relation to this project. **Photographs are a completely optional portion of participation in this project.** Even if you do consent to have your interview photographed, you are free to ask that photographs not be taken at any point during the interview. Additionally, you are free to withdraw permission for photographs to be used at any point. If your photographs are included in this study, you may be identifiable, even if you are not named.

___ I consent to have photographs taken during my interview, and have read and understand the above paragraph.

**Use of Interviews**

It is anticipated that the results of this study will be shared with others in the following ways. Please initial next to the uses of your recorded interview of which you approve:

___ Academic purposes of the study, including master’s thesis, and future academic publications and presentations.

___ Production of radio documentary or podcast dealing with the Elwha restoration.

___ Used for educational purposes by local educators.

**Archival of Interviews**
Digital recordings of interviews, transcripts and photographs from this study will be archived the Clallam County Historical Society. The Clallam County Historical Society makes its archives available to the general public, including researchers, educators, the North Olympic Library System. By initialing below, you consent to the archival of your interviews with the Clallam County Historical Society. If your interviews are archived, your anonymity may be compromised.

____I agree to have my recorded interviews, photographs, and transcripts archived with the Clallam County Historical Society.

Interviews that are not archived will be kept by Ryan Hilperts and destroyed after 10 years.

Contacts:
Ryan Hilperts is a graduate student in the School of Environmental Studies at the University of Victoria and you may contact her if you have further questions by email at ryzome@hotmail.com, or by telephone at (250)472-5923.

This research is being conducted under the supervision of Eric Higgs. You may contact him at (250)472-4568. In addition, you may verify the ethical approval of this study, or raise any concerns you might have, by contacting the Human Research Ethics Office at the University of Victoria (250-472-4545 or ethics@uvic.ca).

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

_________________________  ________________________  ________________________
Name of Participant       Signature       Date

Thank you again for your participation. A copy of this consent form will be left with you, and a copy will be taken by the researcher.
Appendix E

Sample Interview Questions

We’ll conduct the interview in three parts: first, if you could please introduce yourself, and talk about your relation to the project. Next, I’ll have you talk about your observations of community engagement and the features of the restoration project that have affected it. The final portion of the interview is a sort of visioning process during which we’ll talk about how you think community engagement could be improved or changed in the future.

Personal:

How long have you lived in Port Angeles?
How long have you held your current position?
How did you first get involved in your current position?
Can you describe your duties in your current position?
  Who do you engage?
  How many people do you engage?
  Who supports your work financially?

Observations:

How are people engaging with the Elwha project currently?
How has this changed during the time you have been involved with it/living here?
What do you think encourages people to get engaged?
What do you think limits community engagement?
Do you think community engagement is important? Why?

Visioning:

If you had a magic wand, and no limitations, how would you change the way the community engages with the Elwha River?