PRAGMATISM AND ENVIRONMENTAL PROBLEM-SOLVING: A SYSTEMATIC MORAL ANALYSIS OF DEMOCRATIC ENVIRONMENTAL DECISION-MAKING IN BUTTE, MONTANA

by

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Butte, Montana has served as the epicenter of hard rock mining and mineral processing in the Upper Clark Fork River Basin (UCFRB) for nearly 150 years. As a result, the UCFRB contains the largest contiguous complex of major environmental clean-up projects in the United States. Contemporary U.S. environmental problem-solving is characterized by an emphasis on meaningful public participation in environmental decision-making. The U.S. is committed to the realization of environmental justice, which requires that affected publics, especially the working classes who tend to bear a disproportionate share of the environmental burdens, influence environmental clean-up efforts. However, much of the critical literature on the subject suggests that in practice the public is rarely included as a significant force in decision-making. In hard-used places like Butte, Montana, the community's ecological problems

are compounded by their democratic problems. This constitutes an integrated crisis in ecology and democracy, the problem at the heart of this inquiry. This dissertation presents a pragmatic interrogation of U.S. environmental problem-solving from an ethical and environmental communication research perspective. It is a work of pragmatic moral philosophy in the tradition of John Dewey. The overarching methodology is Systematic Moral Analysis (SMA), which unfolds in five phases: problem recognition, problem diagnosis, moral analysis, evaluation, and moral action. This research concludes by suggesting philosophically defensible principles to guide future U.S. environmental decision-making based on pragmatic criteria emphasizing the health and well-being of both democratic and environmental systems as the highest good in environmental problem-solving.

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For Margi, Kaitlyn, Karly, and Sophia

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CHAPTER 1

INTRODUCTION

Environmental historian Mark Fiege (1999) pinpointed a compelling reason to study what he called "hard-used landscapes" when he wrote:

> Always my curiosity carries me back to the hard-used landscapes: to the mines of Butte…It is in these apparently unnatural places, I believe, that we most directly confront the reality of our deeply tangled and problematic relationship to the natural world that we inhabit. (10)

This research, born of my experience growing up in Butte, Montana, represents my attempts to understand an often perplexing landscape and community. Butte is a hard-used place inhabited by nearly 34,000 hard-used people. 150 years of environmentally devastating hard rock mining practices have radically transformed the people and place through a number "ecological revolutions" (Merchant, 1989) on "the Hill." Today, Butte is the point-source and epicenter of the nation's largest complex of toxic cleanup sites. In 2003, a journalist from *CounterPunch* magazine described present-day Butte, Montana, this way:

> Butte, Montana isn't a mining town. It's a mined town…The core of the city is hollow, tunneled out. Beneath the shattered surface of the Hill, there are more than 10,000 miles of underground passages and thousands of shafts, glory holes decending deep feet into the bedrock. Every now

> and then, holes will open in the crust of the earth, swallowing sidewalks, garages, and dogs...The tunnels of Butte are also a catacomb, holding the bones of more than 2,500 miners. (¶1-2,4)

In Butte, it is an unfortunate truth that the working classes and the environment have nearly always shared a common and often tragic fate.

Yet, the community survives. It persists. It hangs on, even if only precariously. People have survived in Butte, in part, by banding together to cope with problems they share, sometimes by any means necessary. Several historians (Malone, 1981; Calvert, 1988; Emmons, 1989; Murphy, 1997; Finn, 1998; MacMillan, 2000) have noted the importance of social solidarity and organization in the unfolding drama of Butte history. The mining camp nearly dwindled into one of the many ghost towns that litter the northern Rocky Mountains on several occasions, but it has always managed to hang on and survive. The common people of Butte, Montana, continually organized, reorganized, and struggled against the entrenched systems of power at work on the Hill. A recent nationally syndicated Public Broadcasting System documentary, *Butte, America* (2009) by Edwin Dobb and Pamela Roberts, admirably captured the spirit of these hard-used people during their many struggles for justice in Butte during the last century and a half.

As a member of the Butte community, and as a student of ethics, communication, and history, this research represents my attempt to contribute something meaningful to the vibrant and ongoing academic conversations about Butte and its history. It is also an attempt to discover useful lessons from the city's colorful—and often sorrowful—past. Primarily, this research is my attempt to draw lessons from the past that may help us reorder the present in ways that might bring about a future that is consonant with our interests and values. What we have done, and what we are doing, is not working as well

as it ought to be. There must be a way to do better than this. This dissertation is a search for better ways to understand and cope with Butte's many serious problems in democracy and ecology.

The Public and Its Environmental Problems

For the last 25 years, Butte, Montana, and its neighboring communities within the Upper Clark Fork River Basin (UCFRB) have participated in a grand experiment in democracy and ecology—an extreme makeover of an entire watershed and its communities. The UCFRB contains the nation's largest contiguous complex of environmental cleanup projects, including "the biggest total floodplain removal and restoration on the face of the planet" (Siegner, 2005). The *Comprehensive Environmental Response Compensation and Liability Act* (1980), also known as *Superfund*, created the legal framework and procedures for this ongoing experiment. *CERCLA* endeavors to restore environmental health to hard-used places and environmental justice to hard-used people.

Since its inception, Superfund has evolved in some interesting ways. Most importantly with regard to this research, Superfund cleanup projects have adapted to what political philosopher John Dryzek (2000) has called a "deliberative turn" (1) in contemporary environmental problem solving in the United States. This deliberative turn is characterized by a shift in the federal government's understanding of the importance of public involvement in environmental decision-making. "Today, EPA is working continuously to increase community participation" (EPA, 2000: 25). These new and diligent efforts to involve the public are considered moral issues because they concern the

basic needs, rights, and duties of US citizens. Moreover, these new efforts to meaningfully include the public revolve around the ethically charged notion of *environmental justice*.

The environmental justice movement was born of a collective acknowledgment that the working class, the poor, and other disenfranchised people tend to bear a disproportionate and unfair share of environmental problems in the United States and around the world. Put bluntly, environmental injustices abound hence the need for the restorative measures associated with the environmental justice movement. The environmental justice movement, unlike other contemporary green movements, emerged from social justice movements such as the Civil Rights Movement of the 1960s (Cole and Foster, 2000). As the US environmental consciousness was coming to the fore during the 1960s-70s, the relationships among class, race, gender, and environmental problems were made apparent through the work of journalists, social scientists, moral philosophers, and environmental justice activists.

According to the US EPA, environmental justice means the "fair treatment and *meaningful involvement* of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies" (EPA, 2009, emphasis mine). By "meaningful involvement" the EPA means that:

> (1) people have an opportunity to participate in decisions about activities that may affect their environment and/or health; (2) the publics contribution can influence the regulatory agency's decision; (3) their concerns will be considered in the decision making process; and (4) the decision makers seek out and facilitate the involvement of those potentially affected. (EPA, 2009)

The United States, first through Executive Order 12,898 (1994) during the Clinton Administration and then through subsequent recommitment statements through the Bush and Obama Administrations, is committed to the principle of restoring environmental justice today to hard-used people and places. With regard to meaningful involvement, the "Public Participation" provisions in *CERCLA* (sec. 9617) specifically require that important information concerning cleanup plans be made public in a variety of ways, and that the EPA "provide a reasonable opportunity for submission of written and oral comments and an opportunity for a public meeting at or near the facility at issue regarding the proposed plan and regarding any proposed findings."

Environmental justice, at a root level, concerns the restoration of a state of wellness and balance to communities which have been harmed through destructive environmental practices. Environmental justice requires the restoration of environmental health and democratic fairness to the communities who have been environmentally and socially harmed. The EPA, by its own criteria, must make every effort to ensure that public involvement is meaningful, that the people can influence the decisions of the regulatory agencies in charge. If public involvement is not meaningful in this sense, the legitimacy of agency decisions is suspect.

Despite the triumphal rhetoric about the progress and successes of the UCFRB Superfund projects espoused by the powerful environmental decision-making agents operating in this Superfund complex, many local citizens and citizen groups claim that the EPA falls far short of its criteria for environmental justice and meaningful involvement. The "Decide, announce, defend" (Hendry, 2004) mode of bureaucratic

decision-making at work in the EPA is problematic because it often ignores the public input it seeks. Public participation opportunities are built in to the decision-making process, but according to a collection of critical essays edited by Depoe and Delicath (2004), the public is rarely a meaningful participant. For example, according to environmental justice advocate John Ray concerning the environmental cleanup projects in central Butte where a high proportion of the town's working poor live, the "EPA ignored the overwhelming public comments opposing its preferred waste-in-place (i.e., threat-in-place) remedy" (2005).

A report on the status of public participation in Superfund decision-making by the *American Bar Association* (1994) characterized the problem this way:

> The consensus of our panel is that decisional processes under Superfund have resulted in an elaborate process for public involvement; however, this involvement is more superficial than substantive. (40)

Butte's many serious environmental problems are thus exacerbated by its democratic problems. A gap between what is and ought to be exists in the UCFRB's environmental and democratic systems. These rifts prompted this dissertation—a search for pragmatic moral guidelines for future US environmental problem-solving.

Dissertation Overview

This research is atypical in form, content, and methodology. It is an attempt to carry out a largely theoretical inquiry that is ground in the actual problems of the community and place I inhabit. It is an attempt to apply a diverse range of conceptual instruments—from moral philosophy to environmental history—toward the ends of

understanding these problems deeply and suggesting principled resolutions to them. I attempt to accomplish this through the exercise of mixed methods and "disciplined interdisciplinarity" (Hechter, 2003: 1). The ultimate goal is to present a new and better way of talking about the problems at the heart of the inquiry, a way that ultimately might lead to new and better ways of resolving them. The goal is to shift the environmental problem-solving conversations in positive ways, in ways that might result in both a vital democracy and a healthy environment in hard-used places like Butte, Montana.

Chapter I—*Introduction*—introduces the dissertation, provides a broad context for the research, and gives an overview of the project chapter by chapter.

Chapter II—*Integrated Crises in Democracy and Ecology in Montana*— recognizes and deeply describes the problems at the heart of this inquiry. It describes these problems at both global and local levels, paying particular attention to the experience of the communities in the UCFRB complex of Superfund projects originating in Butte, Montana.

Chapter III—*Pragmatic Visions of Natureculture*—defines key terms (*nature, culture, communication,* and *environment*) and presents a useful alternative way to conceive the problems under study, a way grounded in a contemporary understanding of natural and human sciences and based on the pragmatic philosophies of John Dewey and Charles Sanders Peirce. In this chapter I take words seriously. Chapter III also serves a diagnostic function in the overall inquiry, that is, it endeavors to understand root causes of the problems described in Chapters I and II. Diagnosis is a necessary first step to moral prescription and action, the ultimate aims of this dissertation.

Chapter IV—*Ethics, Democracy, and Ecology: Moral Dimensions of US Environmental Problem-solving*—diagnoses ethical aspects of environmental problem-solving in general, and within the Superfund restoration projects along the UCFRB in particular. Because this research is grounded in a pragmatic conception of the relationships among nature and culture discussed in Chapter III, Chapter IV concludes by exploring the pragmatic moral philosophies of John Dewey, Jurgen Habermas, and Andrew Light as they relate to US democratic environmental problem-solving.

Chapter V—*Systematic Moral Analysis*—interrogates the moral problems under study through a rational and systematic process. Chapter V introduces the concept of systematic moral analysis (SMA) and explores the analytical processes of several communication scholars before it outlines the SMA process developed to examine Butte's integrated crises in democracy and ecology. The SMA is carried out in two parts. *Part I: Recognition, Diagnosis, and Analysis* constitutes a descriptive/analytic mode of the SMA. *Part II: Evaluation and Action* constitutes an evaluative/practical mode of the SMA. The ultimate goal of Chapter V is to come to principled conclusions that will set a course for future moral action in hard-used places like Butte.

Chapter VI—*A Short Environmental History of Butte, Montana, 1864-2009*—describes the conditions and guiding forces that worked in concert to shape Butte's injured ecological systems from a critical materialist perspective. In this chapter I take worlds seriously. Butte's ecological problems are the result of a perfect storm of animating forces including the logic of capitalism, technological innovation, and human labor. This chapter is a history of environmental problems in Butte, 1864-present.

Chapter VII—*Conclusion*—summarizes and evaluates key insights and contributions of this research, examines limitations of the work, and suggests future directions for academic inquiry into the ethical dimensions of US democratic environmental problem-solving systems.

CHAPTER II

INTEGRATED CRISES IN DEMOCRACY AND ECOLOGY IN MONTANA

This thesis is predicated upon a warranted assertion that our very real and pressing problems in the public sphere (our democratic crises) exacerbate our very real and pressing problems in the ecosphere (our environmental crises). Put another way, our democratic public problem-solving systems are themselves in crisis, and because of this, seem to be ill-suited to the task of effectively coping with our serious environmental problems.

By crisis I mean a time of acute difficulty, a problem that presses for solutions, a decisive moment. Crises are crucial stages in the lifespan of dynamic systems, like democracies and ecosystems. Crisis states are problematic circumstances, turning points that require immediate, measured responses in order to avert impending disasters. Today, the term is frequently used to describe the scale and scope of the problems we confront in politics, economics, ecology, and culture. A defining characteristic of the present moment may well be our seemingly perpetual state of complex and integrated crises.

This chapter will describe integrated crises in democracy and ecology at global and local levels, paying special attention to the particular experience of the hard-used hard rock mining community of Butte, Montana, USA. Butte is my home town and ground-zero within the largest complex of toxic Superfund sites in the nation. The 120-mile stretch of injured watershed from Butte to Missoula, Montana is the result of more than a century of hard rock mining and mineral processing in a harsh, rugged, and sometimes unforgiving landscape.

Environmental Problem-solving in Montana: A Model of the World?

In *Collapse: How Societies Choose to Fail or Succeed* (2005), Jared Diamond ably demonstrated that the effectiveness of a civilization's problem recognition and response systems softly determines the future viability of that civilization. Societies that recognize and adapt their collective behaviors in response to pressing needs continue to exist. Several socially complex pre-modern societies—Maya, Easter Islanders, Greenland Norse, and Anasazi, to name a few—failed to recognize and/or effectively respond to the social and ecological crises they faced. These societies blinked out of existence. They collapsed.

Diamond, a Pulitzer Prize winning historian and UCLA geography professor, intended that *Collapse* might help us learn "practical lessons" (417) from the past, lessons applicable to the complex social and ecological crises we currently face. While Diamond did not believe the US is in imminent danger of collapse, he did believe that certain

places in the United States today are good analogs for comparison with past societal collapses. The state of Montana is his primary example and case study.

In the first chapter of *Collapse*, titled "Under Montana's Big Sky," Diamond wrote, "Montana provides an ideal case study with which to begin this book on past and present environmental problems" (32). Why? Because the state is precariously situated; it persists but, at least in certain respects, it hangs in the balance. Montana is distant from the cities and markets upon which it depends, for example. The state is known for its beautiful landscapes, but relative to lands closer to the equator, Montana is only marginally productive. We do not often think of Montana as environmentally imperiled, but according to Diamond, "Montana's environmental problems today include almost all of the dozen types of problems that have undermined pre-industrial societies in the past, or that now threaten societies elsewhere in the world as well" (35). In short, contemporary Montanans are like the Maya and Anasazi in certain ways. They live precariously close to their ecological carrying capacity.

Also like the Maya and Anasazi, the decisions Montanans make softly determine future viability and well-being. Will contemporary Montanans recognize and effectively cope with their immediate and pressing environmental problems? Or, will we fail to act? Will we falter? Will we act decisively but make poor decisions? Will Montanans choose to fail or succeed? According to Diamond we ought to monitor what happens in modern Montana because it may well be "a model for the world" (73-75).

Before I turn to a discussion of the integrated crises in democracy and ecology as they are expressed in the environmental restoration projects of Butte, Montana, I will

outline the contours of both the democratic crisis and our environmental crisis in broad strokes. This discussion is not meant to be comprehensive, but rather, it is an attempt to identify and describe each crisis alone before considering them as an integrated phenomenon.

US Democracy in Crisis

In a 2005 keynote address to journalists and media professionals, Al Gore warned, "American democracy is in grave danger."

> It is no longer possible to ignore the strangeness of our public discourse. I know that I am not the only one who feels that something has gone basically and badly wrong in the way America's fabled marketplace of ideas now functions.

Critics from across a broad spectrum of American political thought—from Republican Congressman Ron Paul to Democratic Congressman Dennis Kucinich—tend to agree (though for sometimes wildly different reasons) that in the United States we have a "democracy in the balance" (Gore, 2007). American democracy is in a state of crisis.

Four Ways to Think about American Democracy

For this purpose of this discussion, I define US democracy in four ways: (1) democracy as an expression of popular sovereignty—*democracy as people power*; (2) democracy as a systematic method of recognizing and addressing problems of a diversely constituted public—*democracy as public problem-solving*; (3) democracy as a purposeful, open, and free public conversation—*democracy as deliberative discourse*; and (4) democracy as a way of community life—*democracy as culture*.

First, the radical meaning of democracy is "people power." The word is derived from Greek roots *demos* (the common people) and *cratia* (power, influence). Democracy is any form of government in which the common people, and not the elite, hold the power. Democracy is, according to Aristotle, "that form of government in which the greater number are sovereign" (Jowett and Twining, 1957: 96.) Democracy, as Lincoln put it in the Gettysburg Address, means "government of the people, by the people, for the people." According to the *New Oxford American English Dictionary* (2007), democracy is "that form of government in which the sovereign power resides in the people as a whole, and is exercised either directly by them (as in the small republics of antiquity) or by officers elected by them." Democracy means people power.

Second, democracy is a public problem recognition and response system. According to the US State Department web site, "Democracy is in many ways nothing more than a set of rules for managing conflict." As Xavier Briggs put it in *Democracy as Problem-solving* (2008):

> At their best, democracies confront important public problems…The theory and practice of what makes democracy work necessarily include the study of problem-solving in action and of the collective capacity to problem-solve—not only to deliberate about the world and set directions for government, but to change the state of the world through collective action, not only to devise and decide but to do. (4,8)

Third, democracy is a purposeful and ongoing conversation—deliberative discourse. For John Dewey (1927), the ideal democratic community—"the Great Community"—should be a "communicating community." Our decision-making processes should be born of open and free discourse within the public sphere. And, these conversations should be pointed, that is, deliberate—purposeful and methodical

conversations aimed at addressing the problems we share. American democracy is how the people influence problem-solving processes through deliberative discourse. This conception of contemporary American democracy is captured by the terms used by political theorists like John Dryzek (1997) and Collin Farelly (2005) to describe American democracy: deliberative and discursive democracy.

Finally, democracy is a way of life—a culture. Democracy is more than democratic structures and rules, it is also cultural practice. "A healthy democracy depends in large part on the development of a democratic civic culture" (US State Department). Democracy requires certain cultural structures and processes, a democratic communication framework. Dewey (1927) described democracy as the very "idea of community life":

> The idea of democracy is a wider and fuller idea than can be exemplified in the state even at its best. To be realized, it must affect all modes of human association, the family, the school, industry, religion. And even as far as political arrangements are concerned, governmental institutions are but a mechanism for securing to an idea channels of effective operation…Regarded as an idea, democracy is not an alternative to other principles of associated life. It is the idea of community life itself. (327)

These four aspects of democracy, of course, are not a comprehensive way to look at subjet. But they do provide us a framework for understanding the nature of our democratic crisis.

The Is/Ought Gap: a Democracy in Name Only?

Is the United States a democracy in the radical sense of the word; that is, does our democracy express the will of the people? Does our democracy effectively cope with our common problems? Does our democracy emerge from free, open deliberative discourse

in the public sphere? Is our democratic way of life—our democratic culture—flourishing or languishing?

First, let's consider the power of the people. In the sociological sense, according to Max Weber, power is the ability to realize one's visions, even in spite of resistance. The radical meaning of democracy is people power; but in practice, our forms of government tend to leave people feeling impotent—powerless. In a blurb for Frances Moore Lappé's book *Democracy's Edge* (2006), Noam Chomsky wrote, "A great many people do not like what is happening to their lives and their country, and what is being done in their name, but [they] feel isolated and helpless, victims of forces beyond their control." For Lappé (2006) the fundamental aspect of our prevailing crisis in democracy lies in our collective perception that that we are incapable of solving problems we confront. "The problems aren't the crisis…the crisis is our feeling of powerlessness to address them" (5). If democracy means people power, but the people feel powerless, a chasm exists between what is and what ought to be.

Second, does US democracy effectively cope with the real and pressing problems we face in our daily lives, problems in education, healthcare, the economy, or the environment? The current state of dis-ease in each of these aspects of the American experience would suggest that our democratic decision-making structures and processes are ineffective at solving, or even adequately coping with, the problems that press for solutions.

Our public K-12 education systems are underachieving and producing students ill-prepared for the rigors of the 21st century global economy. Our healthcare system leaves

the most vulnerable among us uninsured and uncared for. Those lucky enough to be covered by insurance end-up struggling their way through bureaucratic mazes to meet basic healthcare needs, and still often come up short. The US economy has crashed to a level not seen since the Great Depression, leaving millions without work and with dramatically depleted retirement savings, as we simultaneously "rescue" the corporate lenders responsible for the crisis in the first place. Environmental problems, from local watershed pollution to global climate change, immediately affect the health and well-being of every human being on the planet. Our problems are many and varied, I argue, partly because our democratic problem-solving systems are failing to realize the promise of democracy.

What about the discursive and deliberative aspects of our contemporary crisis in democracy? In *The Assault on Reason* (2007), Gore identified the problem when he wrote:

> There is...something fundamentally new and different about our current crisis of democracy...It is based on several serious problems that stem from the dramatic and fundamental change in the way we communicate among ourselves. (15-16)

The technological mediation of human communication in the 21st century, the rhetorical tendency toward debate and argument instead of deliberative dialogue, dogmatic attitudes and failure to think critically, public apathy and alienation from political communication, structural obstacles limiting access to vital information, and decreasing opportunities for meaningful public participation in decision-making all contribute to the discursive aspects of our contemporary democratic crisis.

Finally, what does the democratic crisis look like in terms of democratic culture, democracy as a way of life. Harvard Sociologist Theda Skocpol (2004) documented the

shape-shifting of America's vibrant participatory civic culture, the democratic culture that so fascinated Alexis de Toqueville in the 1830s, into a management culture that relies on dues-paying members and boards of directors. Before, people directly participated; today they are members of memberless organizations. The title of her book, *Diminished Democracy*, suggested that contemporary American civic culture is somehow lacking in important ways. Our democratic culture is less than it ought to be.

Each of the four ways I suggest for viewing democracy reveals an incongruity between the way things are and the way things ought to be based on our basic pragmatic standards for US democracy. Put otherwise, we have an important is/ought gap. There is inconsistency and a failure to realize our guiding ideals and principles. Our democracy does not walk its talk; it is not true to its promises. Government action, though consequential, is too often the expression of bureaucratic inertia, or market forces, and not, as democracy requires, a response to the needs of the public.

Our guiding pragmatic conception of democracy is not just a form of government—it is a way of life, the very "idea of community itself." As such, democracy affects all modes of human association and decision-making. Democracy disconnected from social practice is irrelevant and disconnected, like the free-floating signifiers of the postmodernists.

In a speech to the House of Commons in 1947, Winston Churchill said, "No one pretends that democracy is perfect or all-wise. Indeed, it has been said that democracy is the worst form of government except all those other forms that have been tried from time to time" (Keyes, 2006: 43). Democracy is messy and difficult and seems to move in

lurches and fits, toward and away from our collective democratic ideals. Nevertheless, as I will address in Chapter IV, there are sound moral reasons to support democracy.

My main points are these: if the people are powerless to influence decision-making, if our problem-solving systems do not or can not recognize let alone solve our problems, if public participation is smoke and mirrors obfuscating the real mechanisms of decision-making, and if our democratic way of life—our culture—is languishing, what we have is a democracy in name only. This constitutes a democratic crisis.

Ecological Crisis: Something New Under the Sun

In the previous section I tried to describe the chasm that exists between our pragmatic democratic ideals and our actual "democratic" practices, and I further suggested that this inconsistency constitutes a crisis in democracy.

In this section I intend to describe the ecological crisis we face. From the polluted rivers that flow through and connect our communities to global climate change, each and every human being on the planet is confronted by some kind of serious environmental threat today. In part, the simple act of living is difficult and necessarily a problematic endeavor. Life is struggle. But, the problems we confront today are new problems we have added to the struggle of life, problems we have created only in the last several hundred years.

In *Something New Under the Sun: An Environmental History of the 20th Century* (2000), environmental historian J.R. McNeill challenged the wisdom of King Solomon as expressed in Ecclesiastes (1:9):

> What has been is what will be
> and what is done is what will be done,
> and there is nothing new under the sun...

According to McNeill, there is in fact something new under the sun. Human societies have transformed in significant ways, and their modes of social organization, their political economies, their energy and technology regimes, and their "ecological revolutions" (Merchant, 1989) have resulted in fundamentally new relationships between humans and the environment.

This section describes our global environmental crisis, and concludes by identifying the symptoms of crisis—the ecological signs, indeces, and indicators of the scope and scale of our problems.

Earth in the Balance: the Vulnerable Planet

Critics often charge influential environmental thinkers with presenting apocalyptic, millenarian, or doomsday scenarios in the titles of their major works on the present state of the environment. Rachel Carson's *Silent Spring* (1962), Carolyn Merchant's *The Death of Nature* (1980), Al Gore's *Earth in the Balance* (1993), and John Bellamy Foster's *The Vulnerable Planet* (1999) are a few such titles. In the essay, "The Scale of our Ecological Crisis", Foster (2002) noted that critics try to paint the authors as emotional, irrational criticizers of a fundamentally robust and integral global ecosystem. David Harvey (1996), one such critic, wrote:

> The subtext is that the earth is somehow fragile and that we need to become caring managers or caring physicians to nurse it back from sickness into health...Against this it is crucial to understand that it is materially impossible for us to destroy the planet earth, that the worst we can do is to engage in material transformations of our environment so as to make life less rather than more comfortable for our own species. (194)

Foster noted that Harvey is correct when we apply a geological time-scale to our analysis of global climate change. The earth as a dynamic and living system has existed without humans for almost all of its existence, and life from bacteria to mammals will likely live on after we pass from the planet. Yet, we are human, and a more human time-scale of analysis suggests that human-hastened planetary change and instability will likely shock our social orders into radically new forms. That the earth will live on with without us likely is true, but Harvey's statement is only an interesting (and practically irrelevant) thought experiment. What matters is what is in front of us now. How we respond to crisis will determine, again referring to Diamond's words, whether we fail or succeed.

In *Marx's Ecology* (2001), Foster described our problematic relationship with our environment as another form of alienation—a "metabolic rift." The scale and intensity of our biophysical transformations have fundamentally altered the dynamics of the living systems we depend on for continued survival. Humans have always lived in unsustainable ways on a small scale (Easter Island, for example). What is new is the scale and intensity of our ecological metabolism and the resulting rift. The earth is home to more of us, and our metabolic footprints are bigger, deeper, and longer lasting. The earth's responses to our new ways of living in relationship to the planet are increased volatility and decreased ecological resilience. The earth and its inhabitants hang in the balance.

Before Gore wrote about our "democracy in the balance" (2007) he wrote of our "Earth in the balance" (1993):

> Now that our relationship to the earth has changed so utterly, we have to see that change and understand its implications…Global warming, ozone depletion, the loss of living species, deforestation—they all have common cause: the new relationship between human civilization and the earth's natural balance. (31)

In *The Vulnerable Planet* (1999), Foster put it this way:

> Human society has reached a critical threshold in its relation to its environment. The destruction of the planet, in the sense of making it unusable for human purposes, has grown to such an extent that it now threatens the continuation of nature, as well as the survival and development of society itself. (11)

The precarious nature of our ecological conditions render the planet vulnerable—it exists in harm's way. Ecological problems are human problems because humans are ecologically situated and dependent upon their environments for continued existence. While the earth—especially when considered in geological time—is not in immediate peril, human societies are, at the very least, precariously situated—poised somewhere between order and chaos.

Signs of Ecological Crisis

What forms do our environmental problems take? What are the indicators of environmental crises? Foster's (1999) "long list of urgent problems" includes:

> …overpopulation, destruction of the ozone layer, global warming, extinction of species, loss of genetic diversity, acid rain, nuclear contamination, tropical deforestation, the elimination of climax forests, wetland destruction, soil erosion, desertification, floods, famine, the despoliation of lakes, streams and rivers, the drawing down and contamination of ground water, the pollution of coastal waters and estuaries, the destruction of coral reefs, oil spills, overfishing, expanding landfills, toxic wastes, the poisonous effects of insecticides and herbicides, exposure to hazards on the job, urban congestion, and the depletion of nonrenewable resources. (11-12)

Diamond (2005) lists a dozen of what he calls "the most serious environmental problems facing past and present societies" (486). The first four concern destruction or losses (destruction of habitat, threats to wild food populations, loss of biodiversity, and

loss of farmland and soil); the next three involve ceilings on natural resources (loss of the world's major energy sources, pollution of freshwater resources, and loss of photosynthetic capacity); the next three are about "harmful things that we produce or move around" (toxic chemicals, alien species, and global climate change); and the last two deal with human population (human population growth and increased human impact).

According to Diamond (2005), each of these problems is connected to and sometimes exacerbate the others. Human population growth and the growth in the use of toxic chemicals, for example, sometimes combine to contribute to global climate change, the destruction of habitat, and threats to wild food populations. Moreover, each of these problems alone, and all of them together, "are like time bombs with fuses of less than 50 years" (498). These problems press for solutions and thus constitute an ecological crisis.

Integrated Crises in Ecology and Democracy: The Case of Butte, Montana

I started this chapter by asserting that our real and pressing problems in the public sphere (our democratic crises) exacerbate our real and pressing problems in the ecosphere (our environmental crises). These distinct and recognizable categories of problems—democratic and ecological—are mutually defining, co-evolving phenomena. Because democracy is one way we recognize and cope with common problems, when democracy is in crisis, our problem-solving capabilities are diminished. Thus, our democratic crises lead to dysfunctional problem-solving, which by definition, fails to adequately cope with other kinds of problems, such as those we confront in our environment. The ecological

problems associated with our earth in the balance, our vulnerable planet, will not likely be solved by our dysfunctional democracy in practice. These crises are complex and integrated. My research is an attempt to identify, define, and cope with these problems.

Abstract notions such as the one I have presented above—integrated crises in ecology and democracy—are practically insignificant if they fail to help address the real problems of real people. This is a fundamental tenet of Dewey's notion of Pragmatism as amelioration and problem-solving. Put differently, academic inquiry is irrelevant if it fails to arise from and address real human suffering. Therefore, I begin this systematic look at the integrated crises I have situated at the heart of this work by examining the particular experience of one of the places Diamond (2005) suggested we use as a model for the world: Butte, Montana.

This research is born of my experience growing up in Butte, Montana—a "hard-used" (Fiege, 1999) place populated by a hard-used people. The community of Butte emerged as the epicenter of industrial hard rock activities during the Civil War Reconstruction Era in the Rocky Mountain West. Butte was born where the Western frontier and the industrial revolution overlapped and merged.

Hard rock mining is one of the most ecologically transformative processes in which humans engage (McNeill, 2000; Hooke, 2000). In Butte, massive amounts of earth have been mined: blasted, shoveled, treated, and dumped. For every ounce of gold or pound of copper, tons of waste rock are produced (Power, 1996). Open mine pits measured in miles, like the Berkeley and Continental pits, border the community of roughly 34,000 people. In Butte, mountains of mine waste create man-made foothills to

the Continental Divide. The community's horizontal contours are a fluid and dynamic feature of the landscape. Significant mountain peaks and old neighborhoods (like East Butte, Meaderville, and McQueen) have disappeared as, ever so slowly, the mine pits grow wider and deeper.

Hard rock mining and processing dramatically altered the dynamics and integrity of the living communities in Butte's Summit Valley. For most of Butte's history the idea of protecting the environment was a non-issue. Although this impulse was expressed through ephemeral toxics movements in the early part of the 20th century (MacMillan, 2000; Diamond, 2005), industrial mining activities continued apace with little or no regard for the health and wellness of the living communities residing atop "The Richest Hill on Earth"—that is, until the second half of the 20th century and the rise of a broad-based environmental movement in the United States.

In the 1960s and 70s, a diverse coalition of Montana citizens united under the banner of environmental protection. In 1973, they rewrote Montana's State Constitution. Article II Section 3 of the document defines the right of every Montanan to live in a clean and healthful environment. During this same period, federal and state governments enacted new laws designed to protect human health by insuring that the environments within which humans live and recreate themselves are also healthy (e.g., *Clean Water Act*, 1977, etc.). Under the Nixon Administration, agencies such as the Environmental Protection Agency (EPA, established 1970) were created to execute US environmental law and policy.

However, by the end of the Carter Administration such mediagenic environmental tragedies as Love Canal made clear the impotence (powerlessness) of existing environmental protection systems. As one of his final acts, in December of 1980, President Carter signed *CERCLA* into law. Superfund put teeth in existing environmental laws, provided opportunities for public participation in environmental decision-making, established a tax on environmentally destructive industries (this tax funded the "Superfund") to be used to reclaim and restore hard-used places, and created legal mechanisms for recovering environmental clean-up costs from responsible parties.

One of the first tasks of the EPA under Superfund was the creation of a National Priorities List (NPL)—a list of the country's most pressing environmental problems. In 1982 four sections interlocking around the stream channel of the Upper Clark Fork River, originating in Butte and extending to the Milltown Dam near Missoula, were included on the EPA's NPL. According to Diamond (2005), "The Clark Fork River, including the Berkeley Pit, is now the largest and most expensive Superfund cleanup site in the US" (39).

For 25 years, federal, state, and local governments have been working with the responsible corporate parties and citizen groups to create an extreme make-over of polluted watershed and its communities. The process is a slow and complex experiment in environmental remediation, restoration, justice, and democracy.

The Upper Clark Fork River Superfund projects are often propped up as exemplary models for environmental problem-solving by the federal government and the responsible corporate parties. Local government, citizens, and citizen groups, however,

frequently voice dissatisfaction with the structures, processes, and consequences of the system in practice. Some feel as though they've been left out; others are included but marginally. They feel as though their participation falls far short of the EPA's guiding ideal of "meaningful participation"—the procedural measuring stick legitimate decision-making for the EPA.

According to a letter written to the EPA from environmental justice advocate Dr. John Ray (2005), several problems converge in Butte's Superfund projects. First, the environmental contamination is concentrated in areas inhabited by the poorest of Butte's citizens.

> The [Butte] area is contaminated with arsenic, lead, mercury, cadmium, and copper. The site is also unique in that people live and work amidst the toxics. The Butte Hill also has a disproportionate number of low-income citizens. The dust in many of their homes and yards is contaminated with lead, arsenic, and mercury. Health surveys of the area show elevated levels of cancer and other illnesses directly related to heavy metals exposure.

Second, the low-income people most directly affected have been ignored, and "Ignoring public comment is contrary to EPA national policy and contrary to sound, democratic public decision-making" (2005).

Along the Upper Clark Fork River Basin complex of NPL Superfund sites, the ecological crises associated with mega-mining and its aftermath are, in the view of the affected publics, exacerbated by democratic crises in decision-making. These integrated crises have prompted this academic project in applied moral philosophy—a search for a normative guidance for US environmental problem-solving.

CHAPTER III

PRAGMATIC VISIONS OF NATURECULTURE

In *Communication as Culture* (1989) James Carey noted that we hardly need social scientists and philosophers to tell us certain things. That culture is born of communication, for example. Or, that nature and culture influence each other. These observations are obvious to anyone who takes a moment to consider them.

However, especially in light of the integrated crises in nature and culture I described in the second chapter, pragmatically minded social scientists and philosophers can and should describe the dynamics of nature-culture relationships through critical inquiry. Once understanding is reached through deep description, we ought to interpret and suggest meaning. We should submit our ideas to the scrutiny of a critical community of inquirers. And, by virtue of pragmatism's necessary search for practical wisdom, we should suggest careful and rational paths of action as experimental correctives to our most pressing crises.

Chapter II described Butte, Montana's integrated crises in ecology and democracy as a connected complex of problems entangling nature and culture. Chapter III considers

the meaning of *nature* and *culture*, and the related terms of *environment* and *communication*. My intentions are to ground the problems outlined in Chapter I, and all future discussion, in a pragmatic and integral vision of nature-and-culture, an alternative vision to the deep-seated, commonly held, and problematic notion that nature and culture are somehow distinct and oppositional.

In the present chapter, I also suggest that environmental communication (EC)—a relatively new and vital field of inquiry and practice that studies where nature and culture overlap and merge—is well-positioned to contribute to a more sophisticated understanding of nature-and-culture by exploring and integrating relevant work across the natural and human sciences. The ultimate goal, as Clifford Geertz (1973) put it, is "to make better the precision with which we vex one another" (29).

I conclude Chapter III with a discussion of two under-considered visions of natureculture put forward by Pragmatism's principal philosophers: Charles Sanders Peirce and John Dewey. Peirce's triadic semiotics and Dewey's philosophy of experience (late in life he changed this term to "culture") and nature are useful instruments that help ground environmental communication theory in both natural and cultural reality. These philosophies can help us realize Donal Carbaugh's (2007) normative prescription for environmental communication studies as a crisis discipline: to serve a dual allegiance to both words and worlds.

Defining Key Terms

Nature and *culture* are two of the most complex words in the English language, according to Raymond Williams (1983: 87; 1988: 221). Nature and culture are also

defined, at least in part, in relation to one another and, in this dissertation, function as a kind of semantic couplet: nature-and-culture. Or, better yet, the words function as a hybrid or internetwork, as in Bruno Latour's *nature-culture* (1987), or Donna Haraway's contraction, *natureculture* (2003). Here, I will define these ideas in working form. I will also define the related terms of *environment* and *communication.*

Nature and Environment

Nature, according to the *American Heritage Science Dictionary* (AHSD, 2002), refers to "the world and its naturally occurring phenomena." Nature is a process noun, referring to both the things of nature and the processes by and through which nature unfolds.

When I use the word "nature" I mean something very similar to what Aldo Leopold meant when he referred to the land in his essay, "The Land Ethic" (1949). For Leopold, the physical environment, along with the plants and animals that inhabit it, form an ecological unit, a living community composed of biophysical elements in constant transactive relationships. He called all of this "the land." Nature unfolds through interactions among living systems, and between living systems and the non-living systems they rely upon for survival. Nature is most concisely defined by the AHSD as, "living organisms and their environments."

Nature and the concept of "the lifeworld" are synonymous. The lifeworld is a complex, dynamic, and integrated phenomenon born of the interactions among what ecologists call the "physiosphere" (the abiotic elements of earth) and the "biosphere" (the biotic elements of earth). This realm of abiotic/biotic interactions is also called the

"ecosphere." Nature as "living organisms and their environments" conjoins the organic and the inorganic elements of life into integrated and biophysically enacted ecosystems—the lifeworld.

Nature, the lifeworld, defined as "living organisms and their environments" is a useful starting point, but does not do the job of more fully communicating the dynamic interplay and continuities between living organisms and their environments.

The word *environment* comes from the French, *environ*, which means to surround, envelop, or enclose. An environment does not simply surround an organism like a bubble, however. A continuity between an organism and its environment exists. Organisms have a unique relationship to their immediate, subjective, perceptual environments—their *umwelts* (Deely, 2004). Organisms emerge within hospitable environments and renew themselves through biochemically enacted metabolic transactions, the biological build up and breakdown of the organismic body. Humans, for example, metabolize what they eat, breathe, and absorb through the skin into flesh and bone. Environments enflesh in living creatures. Conversely, living organisms, also through metabolic processes, eventually transform living tissues into the stuff of environments.

Dewey's theory of experience proves useful here because it is, as Kevin Armitage (2003) noted, fundamentally dynamic, ecological, and embodied. For Dewey, experience is born of and defined as organism-environment transactions. He wrote, "Life goes on in an environment; not merely in it but because of it, and through interaction with it...The career and destiny of a living being are bound up with its interchanges with its environment, not externally but in the most intimate way" (Dewey, 1934: 13).

Karl Marx, a dialectical materialist and humanist who like Dewey, studied both Darwinian evolution and Hegelian dialectical thought, elegantly described this continuity between organism and environment by referring to the environment as an organism's "inorganic body" (Marx, 1844).

In general, the environment is that which surrounds something. In particular, when that something is alive, functionally the environment becomes more than just the stuff around the living organism; it becomes the stuff from which life renews and sustains itself. The environment becomes the medium by and through which living systems carry out the business of living. Organisms emerge within, are coupled with, comprised of, conditioned by, and dependent upon their environments. As they are born of their environment, so, too, do they recreate their environment.

For the purpose of this discussion, nature refers to the things and processes of the lifeworld. Nature refers to organisms and environments, and to the ways that organisms and environments mutually constitute each other in the process of bringing forth this buzzing, blooming, living world.

Culture and Communication

Human beings are live creatures living in transactional relationships with their environments. We are part of nature; we are natural. Yet, we are a peculiar kind of animal: cerebral, social, creative, moral, technological, rational, irrational.

In part, our peculiarity is derived, not from the fact that we communicate, for life of all kinds is communicative, but from the relative sophistication of our communication as a species. We are semiotic creatures, a "symbolic species" (Deacon, 1997). We make

meaning through communication, and our communication changes the general drift and direction of the unfolding lifeworld.

I define "communication" as the semiotic negotiation of meaning and behavior. And in spite of a living spiritualist tradition of communication that views the process as disembodied sharing of ideas in some distinct mental plane—soul to soul (Peters, 1999)—I take communication to be a fundamentally embodied and biological process. The following ideas are nuanced variations of this notion of communication: semiosis (Peirce, 1955), symbolic interaction (Mead, 1934), symbolic action (Burke, 1966), encoding/decoding (Hall, 1980) and languaging (Maturana and Varela, 1987/92).

Through communication we semiotically negotiate meanings and coordinate actions. Together, we nudge and guide nature, bend the world around us and signify the meaning of it all.

The lifeworld is the context of our cultural practices, and it also is the material and energetic limit and potential of culture. Nature often pushes back, sometimes in ways we have trouble coping with, a sign that crucial ecological thresholds have been crossed and that a metabolic rift exists. Nature and culture are conjoined through this negotiation, this push and pull of one upon the other.

The dynamic and recognizable patterns that come about because of our incessant reorganization of the living world, along with the processes of meaning-making, are what I mean by culture, the subject of this section.

Culture, like nature, is a process noun describing both the things of culture and the processes by and through which culture emerges, most notably, communication.

Williams (1981) noted that the earliest meanings of the term culture were associated with the cultivation of crops and with the rearing and breeding of animals. Culture, in this sense, refers to coordinated and purposeful human intervention in natural processes, the re-directing of the lifeworld to better realize human needs and desires.

The meaning was later extended to include the cultivation of the human mind through learning and the arts. In 18th century Germany and England, culture came to signify the spirit that informed "a whole and distinctive way of life" (Williams, 1981: 10).

As Williams pointed out, culture is both the general drift and direction of common human social experiences and a creative process (*poiesis*). Sometimes we make it up as we go along. Communication and meaning-making constitute culture-in-process.

Williams (1981) thought of culture as a "signifying system," that is, an emergent and dynamic network of communication among people sharing common cause and making this life significant. Geertz (1973) described a similar view of culture (culture as a network of meaning) when he poetically wrote, "man is an animal suspended in webs of significance he himself has spun...I take culture to be those webs" (5).

Cultures are dynamic networks of meaning—webs of significance—that emerge through communication among people sharing common cause and trying to cope with the world they have inherited—and the one they create anew. Culture, like nature, is a way of bringing forth the world.

In defining each of these key terms, I intended to clarify, not what separates them, but what connects them. In the pragmatic understanding of natureculture I propose, nature and culture, communication and environment, are all inextricably bound with one

another in a mutually constituted and structurally coupled intersystemic living materiosemiotic network—a natureculture, the lifeworld.

Nature and Culture

Next, I will examine three ways of thinking about the relationships between nature and culture. The first two are questions of ontology and consider what exists and how existing things are related to each other. The first of these is a deep-seated, commonly held, and problematic vision of nature and culture as distinct and oppositional phenomena. The second is an alternative vision, more in line with contemporary philosophical and scientific understandings of nature and culture, which sees culture as an expression of nature. The third is an epistemological view. It sees nature and culture as different ways to know the world. I contend that we ought to expose the faults of the first and shift our notions of common sense toward the two alternative visions based on contemporary scientific understanding of humans and the living world.

Nature and Culture as Distinct and Oppositional

"It is commonly accepted that the western view of humanity's place in nature," wrote Haila (2000), "is dominated by a dualistic opposition between nature and culture" (156). This is one way to think about the relationship between nature and culture, as "radically different ontological spheres, hyperseparated and oppositional" (Hawkins, 2006: 3). Our Western philosophical traditions, from Plato to Descartes and beyond, have passed on to us a predisposition toward dualistic thought, a tendency to define dyads as

distinct and polar opposites. Dewey described the Western philosophical tradition as a "brood and nest of dualisms" (1920: xix).

In this view, the emergence of human culture marked the birth of something new. And, that something is somehow separate from and opposite of nature. While born of nature, the emergence of culture represents a higher, and ontologically distinct, phenomenon.

This view of the relationship between nature and culture is expressed in one of Western literature's dominant themes: man vs. nature. In this theme, humans represent a peculiar form of God-touched animal, and civilization and culture represent a transcendence of the brutal natural world. Culture tames nature. As Leo Marx (1964) and others have documented, America's westward expansion—in fact, the entire notion of manifest destiny—is a sign of the cultural belief that culture can and ought to transform nature (wilderness) into something more and better (culture/civilization). Katherine Hepburn's character embodied this common-sense American notion in *African Queen* (1951) when she said, "Nature…is what we were put in this world to rise above."

This line of thought represents a cognitive map that sees culture as somehow different than, superior to, and opposite from, nature and the lifeworld. This notion lacerates culture from nature and has led to several interesting varieties of anthropocentrism and human exceptionalism in the humanities and social sciences. For example, environmental sociologist Raymond Murphy (2001) criticized what he called the dominant sociological paradigm as "sociology as if nature did not matter" (27-42).

This view mistakes a map for the living world. It is still prevalent and deep-seated, and, at least in part, helps explain the natural blind spot of so much contemporary inquiry in the humanities and social sciences.

Culture as Another Form of Nature

Another way to view the relationship between nature and culture is to see culture as expression of nature. Like the previous vision of nature and culture, this view sees culture as an emergent property of nature. However, unlike the other, culture is not necessarily elevated, separated, or oppositional. Culture is how nature expresses itself through human social action.

Nature unfolds in the ecosphere, and culture unfolds in what Yuri Lotman (1989) named the *semiosphere*. The semiosphere is an integral part of the ecosphere. Jesper Hoffmeyer (1997) wrote the global semiosphere "is a sphere like the atmosphere, the hydrosphere, or the biosphere. It penetrates these spheres and consists in communication" (¶ 1). This is as elegant a way as I have ever encountered to describe the interconnection of communication and culture to the natural environment.

Dewey's philosophy of experience with its emphases on continuities among organisms, communities, and environments represents this second way to think of nature and culture. For Dewey, humans are simultaneously natural and cultural. In fact, human social experience entangles nature with culture. For Dewey, culture is another form of nature.

Nature and Culture as Ways of Knowing

A third way to view nature and culture is to see them as ways of knowing, as epistemic, as modes of cognition.

One of the most interesting contemporary definitions of life and living systems was developed by Chilean biologist Humberto Maturana and his colleague, cognitive scientist Francisco Varela. Their theory was outlined in *Autopoiesis: The Organization of the Living* (1973). Autopoiesis literally means self-creating or self-generating. According to autopoietic theory, a fundamental characteristic of life and living systems is the ability of organisms to continually self-generate their biological structures by metabolizing environmental elements into the stuff of life.

Fritjof Capra (2002) has noted that the central insight of autopoietic theory "is the identification of cognition, the process of knowing, with the process of life" (34). This expanded definition of cognition, a concept once limited to the world of mind, means that the biophysical transactions (metabolism) that occur between organisms and environments are a basic biological way of knowing the world. "Cognition," according to Capra is, "the continual bringing forth of a world through the process of living" (36).

Organisms are structurally coupled with and dependent upon their environments for survival. According to autopoietic theory, the most basic mode of biological cognition occurs as organisms self-create through metabolic transactions with their environments, their inorganic bodies.

Human beings, as noted earlier, are a peculiar kind of live creature. We know and bring forth a world, not only through the biophysical transactions of our earthly bodies

(cognition as metabolic autopoiesis), but also, as Niklas Luhmann (1989) has observed, through communication and culture (cognition as symbolic autopoiesis).

Humans, social creatures that we are, are the knot that binds nature and culture. Nature and culture are coupled, resonant, and mutually constitutive. Nature and culture are connected through the conduit of social experience in the human species. Humans simultaneously inhabit both worlds and, thus, we connect nature to culture in a materiosemiotic web.

Environmental Communication: Inquiry at the Nexus of Nature and Culture

In the inaugural volume of *Environmental Communication: A Journal of Nature and Culture* (2007), editor Stephen Depoe described environmental communication studies as a nexus, "a place of global connection and conversation among scholars working in a variety of academic disciplines who explore communication about and within both natural and cultural environments" (1).

Mark Meisner, founder and director of the Environmental Communication Network (ECN), defines environmental communication on the ECN web site as "a diverse synthesis of communication and environmental theory that examines the role, techniques, and influence of communication in environmental affairs" (¶ 4).

Environmental communication studies occur where systematic inquiries into environmental issues overlap and merge with systematic inquiries into human communication, culture, and society. As such, it is one of the modern hybrid modes of inquiry peculiar to 20th century academics (see Peters, 1993). Environmental

communication studies endeavor to transcend and include traditional disciplinary boundaries, theories, and methods in an effort to acquire useful knowledge about- not nature and culture in isolation—natureculture as an integral phenomenon.

Generally speaking, EC studies have existed for as long as communication and rhetorical scholars have considered environmental issues and as long as environmental scholars have considered communication a significant ecological process, about forty years or so.

Shanahan and McComas (1999) observed that mass communication research started looking into environmental issues during the period in the late 60s and early 70s when the US environmental consciousness emerged and coalesced into a mass social movement. Early mass media and environmental research was structurally and theoretically identical to other mass communication research of the period. The only significant difference was that the media content under scrutiny took the environment as its subject.

Cox (2006), Stephen Depoe (2007), Mark Meisner and others associated with the Environmental Communication Division (ECD) within the National Communication Association (NCA) and the Environmental Communication Network (ECN), trace the origins of environmental communication studies to the pioneering critical environmental rhetorical studies of Christine Oravec (1981, 1984). The ECN began to coalesce around a body of recognizable research in the 1990s, and at the turn of the 21st century, has become a living field composed of a diverse array of organized and practically minded scholars and practitioners.

Today, EC inquiry is broad and deep. Cox's typology of environmental communication research has expanded to include the following seven primary areas of study: environmental rhetoric and discourse, media and environmental journalism, public participation in environmental decision-making, advocacy campaigns, environmental collaboration and conflict resolution, risk communication, and representations of nature in popular culture (2006: 6-11).

In the first comprehensive textbook on the subject, *Environmental Communication and the Public Sphere* (2006), Cox defines environmental communication, through Kenneth Burke (1966), as a form of symbolic action. For Cox, environmental communication is:

> the pragmatic and constitutive vehicle for our understanding of the environment as well as our relationships to the natural world; it is the symbolic medium that we use in constructing environmental problems and negotiating society's different responses to them. (12)

By "pragmatic" Cox means that environmental communication studies is practically concerned with environmental problem-solving through purposeful communication (deliberative discourse). By constitutive, Cox means that environmental communication is not simply descriptive, but rather, that symbolic actions concerning environmental affairs help create, guide, and influence our perceptions, beliefs, and creaturely behaviors. Environmental communication partly constitutes and creates our relationships to each other and the living world.

Toward a Dual Allegiance to Words and Worlds

In "Social Practice and Biophysical Process," a phrase inspired by Niklas Luhmann's *Ecological Communication* (1989), Peterson, Peterson, and Grant (2004) wrote, "...applied ecologists rarely address human society with the intellectual or analytical rigor they normally employ for evaluating ecological processes and functions, and social scientists and humanists rarely analyze nonhuman nature" (15). This makes sense given the charge of both natural and social scientists. However, through the looking glass of EC research, disciplinary myopia is limiting. Several scholars have suggested a broader, deeper, trans-disciplinary mode of research, one that considers nature and culture as mutually constitutive and coevolutionary.

In a *Journal of Communication* article titled "Biosocial Theory and Environmental Communication" (1995), David Backes wrote, "Research to date has focused on problems and processes related to human social systems, and has almost entirely ignored linkages to problems and processes in biophysical systems" (147). According to Backes, environmental communication is communication-centered and neglects (or lightly considers) the living world. He observed that this is ironic based on the fact that most environmental communication scholars conduct their research because of a recognition of our serious environmental problems.

Not much has changed between then and now in this regard, according to Donal Carbaugh (2007), who described this problem as the tendency of EC research to emphasize words, not worlds. Carbaugh warns, "We must be careful not to load the dice in favor of our own interests in the linguistic, rhetorical, socially constructed nature of

things" (69). He further suggests that environmental communication researchers take ecological processes seriously, and that "we ground our views of environmental communication in a dual allegiance to words and worlds" (71).

Pragmatic Visions of Natureculture

So far in this dissertation, I have devoted much space to pragmatic philosophy, especially to the thought of Dewey. His ideas about culture, communication, community, democracy, ethics, nature, and the environment are the narrative threads that run through this work from beginning to end. However, as I hope to make clear, another seminal thinker from this philosophical tradition also plays an important role in framing the pragmatic visions of natureculture that ground this research. In this section I present both Peirce's triadic semiotics and Dewey's philosophy of culture and nature as useful "orienting generalizations" (Wilber, 1996) for environmental communication research.

Charles Sanders Peirce: Triadic Semiotics

Charles Peirce, "the principle of pragmatism" according to William James (1907: 18), provides the philosophical groundwork for a practical theory of ecological communication, especially through his influential writings such as "Logic as Semiotic: the Theory of Signs" and "How to Make Our Ideas Clear" (Peirce, 1955). Peirce's ideas provide a practical alternative semiotic theory to that of postmodernism and poststructuralism.

In *Community Over Chaos: An Ecological Perspective on Communication Ethics* (1997), James Mackin offers a useful critique of "postmodernism's inability to produce a

theory of practical action" (35). Mackin suggests that postmodernism's problems begin with an over-emphasis on Saussure and his dyadic theory of the sign, composed of the signifier and the signified. "Postmodernism in general and poststructuralism in particular have grown out of the dyadic perspective, and they are both susceptible to the critique of being irrelevant to the real problems of our world" (37).

For Mackin, Peirce's irreducibly triadic semiotics, a theory of the sign that considers not only the signifier and the signified but also real objects and ground of signification, represents what he calls the "the pragmatic alternative" to postmodernism, an alternative that is literally grounded in the dual realities of ecology and human experience.

By Mackin's reckoning, Saussure's dyadic semiology, developed half a generation after Peirce's work, provides useful insights into the structural code-function of language (*langue*). However, this code-function understanding of languaging ought not be used as a method for understanding actual speech acts (*parole*). The free-floating signifiers and the entropic spin that result from such disconnection of the postmodernists are based on a misapplication of Saussure's dyadic semiology to the actual communicative behaviors of human creatures. "The dyadic model, if it is taken to be complete, is irrelevant to the problem of coping with the real world" (Mackin, 1997: 36).

In general, when people engage in semiotic exchanges (communication), their signs refer to existing things and are therefore grounded in some notion of the real. That is why, despite the open-endedness and ambiguity of communication in general, humans

are pretty good at coordinating meanings and behaviors in the real world. We get things done.

Signs, in Peirce's pragmatic view, are mind-instruments that humans use to cope with their dynamic environmental circumstances. Peirce's triadic semiotics—a theory of signs that takes the signifier, the signified, the object of signification, and the ground seriously—therefore provides a useful theoretical groundwork for environmental communication studies. Peirce's triadic semiotics meets Carbaugh's normative criteria by taking both words and worlds seriously and therefore could serve (and to some extent, already has served) as a useful instrument in the development of a pragmatic theory of natureculture.

Dewey: Experience, Culture, and Nature

In *Philosophy and Social Hope* (1999), Richard Rorty described Dewey as his "principal philosophical hero" because his philosophy sheds light on the hidden connections that tie living (and nonliving) networks together into a complex living matrix referred to in this dissertation as "natureculture." Dewey's pragmatic visions of natureculture characterize humans as environmentally situated co-creators of the lifeworld through communication and cultural practice. Rorty observed:

> ...for pragmatists there is no sharp break between natural science and social science, nor between social science and politics, nor between [sic] politics, philosophy, and literature. All areas of culture are part of the same endeavor to make this life better. There is no deep split between theory and practice, because on a pragmatist view all so-called 'theory' which is not wordplay is always already practice. (1999: xxv)

While best known for his human-concerned theories of psychology, education, and democracy, Dewey's work, though not often taken as such, is profoundly ecological. According to Kevin Armitage (2003):

> Dewey's fundamental philosophical presupposition is the ecological premise that an understanding of organisms demands full consideration of their constant interactions with the surrounding environment. Dewey thereby rejected dualistic formulas for ascertaining knowledge, stressing that knowledge derives from material interactions with the social and natural world, rather than idealistic speculation or dispassionate observation. Humans produce knowledge through their interactions with nature. (50)

Experience and Nature (1925) is the most comprehensive version of Dewey's integral philosophy of nature and culture. In it, he described continuities among human experience of nature through communication and cultural practice. Near the end of his life, Dewey lamented his choice of the word "experience" in the title. "Were I to write (or rewrite) *Experience and Nature* today I would entitle the book *Culture and Nature*...I would substitute the term 'culture' because with its meanings as now firmly established it can fully and freely carry my philosophy of experience" (Campbell, 1995: 68).

Dewey viewed human experience as irreducibly social negotiations with each other and with the environment. Humans exist in cultural and natural environments simultaneously. In fact, human beings themselves are the conduit that connects one to the other. The Platonic dualism that separates the material world from the ideal world represents a false dichotomy to Dewey. Humans, by virtue of their irreducibly social nature and their ecological embodiment, entangle nature and culture together through social experience of nature through communication. "In other words," wrote Dewey (1929), "the social participation affected by communication, through language and other tools, is the naturalistic link which does away with the often alleged necessity of dividing

the objects of experience into two worlds, one physical and one ideal" (xvii). Naturecultures exist because we exist in nature and culture.

Dewey, like Peirce, takes words and worlds seriously and binds them together through embodied human social experience. Moreover, like Peirce, words and language are instruments to Dewey. He called them "the tool of tools" (1929: 140). This instrumental understanding of language is significant and prompted Rorty to urge pragmatically minded philosophers to make a Gestalt shift in our perception of signs, words, and language—away from traditional representationalist modes of thought and toward the semiotic instrumentalism of Peirce and Dewey. Rorty (1999) urged us to "stop thinking of words as representations and to start thinking of them as nodes in the causal network which binds the organism together with its environment" (xxiii). We know and create the world, in part, through our semiotic exchanges. I believe this is what Robert Cox (2006) meant by describing environmental communication as the "pragmatic and constitutive vehicle for our understanding of the environment as well as our relationships to the natural world" (12).

CHAPTER IV

ETHICS, DEMOCRACY, AND ECOLOGY:

MORAL DIMENSIONS OF US ENVIRONMENTAL PROBLEM-SOLVING

This chapter sets out to identify and examine ethical aspects of environmental problem-solving in general, and within the Superfund restoration projects along the Upper Clark Fork River Basin in particular.

First, I will establish working definitions of the central concepts at the heart of this chapter: ethics and morality. Next, I will situate the integrated crises outlined in Chapter II as moral problems. Because this dissertation is firmly grounded in the pragmatic vision of nature and culture discussed in Chapter III, I will conclude this chapter by examining "democratic pragmatism" through the moral decision-making frameworks associated with both Dewey and Jurgen Habermas, arguably two of the most important thinkers in this tradition. I will conclude by examining Andrew Light's (1996, 2004, 2005) "environmental pragmatism," a critical and practical response to the overly metaethical debates that have characterized much of the environmental ethics discourse at the end of the 20th century. Light's work takes the living systems of democracy and the

environment seriously and combines them into a vision of "ecological citizenship" as a means of realizing what he refers to as "the democratic promise of restoration" (2005).

Ways to Think about Ethics and Morality

What do the words *ethics* and *morality* mean? In Greek, the word *ethikos* meant pertaining to *ethos*—character, manners, customs, and habits. The Romans translated *ethikos* into *moralis*, derived from the Latin word *mores*, which referred to the same ideas in Roman culture. For more than 2,500 years, philosophers have maintained that human beings are a peculiar kind of animal, one predisposed to deliberations about such things as goodness, right action, justice and compassion. Our ethical predisposition is one of humanity's defining characteristics. As a species, we have been demonstrably concerned with goodness and right action across cultures, through space and time.

Today, ethics is sometimes defined as a branch of philosophy generally concerned with such things as character, virtue, the good life, justice, care, right and wrong, etc. To study ethics is to study humanity's collective grasp toward what is good and right. According to the *Cambridge Dictionary of Philosophy* (1999) , "the general study of goodness and the general study of right action constitute the main business of ethics" (285).

Four Branches of Moral Philosophy

Ethics, sometimes called moral philosophy, is often further distinguished into four branches: *metaethics*, *descriptive ethics*, *normative ethics*, and *practical ethics*.

Metaethics refers to inquiry into the nature and ground of moral thought and action, the philosophical questions at the heart of ethics. According to the *Stanford Online Dictionary of Philosophy* (2007), "Metaethics is the attempt to understand the metaphysical, epistemological, semantic, and psychological presuppositions and commitments of moral thought, talk, and practice" (¶ 1). Metaethical inquiry seeks to understand the meanings and implications of the words and ideas we use in our moral deliberations and actions. Metaethics is the branch of moral philosophy concerned with answering the fundamental questions of ontology and epistemology: When considering moral things, what is real? And, if we can know moral things, how do we know them?

Descriptive ethics are sometimes called comparative ethics. This is the sub-branch of moral philosophy and inquiry concerned with describing human ethical systems as they unfold in actual human practice through space and time. Descriptive ethics are a form of anthropological inquiry charged with observing actual human behavior, inquiring into the "habitudes" (Dewey, 1927) that animate such behavior, and ultimately describing the emergent patterns of morality in individuals, communities, and across cultures.

Normative ethics are usually defined in relationship to descriptive ethics. Descriptive ethics describe ways the world is, and normative ethics prescribe ways the world should be. Normative ethics seek to uncover moral principles that ought to guide moral practice. Normative ethics seek to steer moral decision-making in certain ways based on certain philosophically defensible arguments.

Applied ethics, also called practical ethics, are concerned with real, situated, moral problem-solving. In the Western tradition, they can be traced to Aristotle's

philosophical distinction between *theoria* and *phronesis*, that is, contemplation for contemplation's sake vs. contemplation as a means of realizing practical and desirable ends. Phronesis refers to practical wisdom. Most moral philosophy has practical intentions, that is, the ideas are meant to guide one through the actual complex thicket of moral problem-solving. Applied ethics identify moral problems; this approach uses metaethics, descriptive ethics, and normative ethics as instruments for coping with, and, and one hopes, solving ethical problems.

This dissertation, then, is an attempt to: (1) understand the deep metaethical structures and ground of environmental problem-solving, (2) describe the moral dynamics of a particular community in the throes of environmental restoration, (3) work through their real moral problems, and (4) uncover and prescribe reasoned and practable actions to help meliorate these pressing problems.

Anthony Weston's Definition of Ethics

Anthony Weston (2008), a pragmatic ethical thinker focused on developing creative and systematic ways of engaging in moral decision-making that take both nature and culture seriously, has defined ethics as "a concern with the basic needs and legitimate expectations of others as well as our own" (5). This definition, as I hope to make clear, is another interesting and relevant way to apply ethical theory to the analysis of Butte's integrated crises in ecology and democracy.

Why? Because Weston emphasizes the notion of *concern* for which we might substitute interest as in, "I am interested in (concerned about) human trafficking." To have an interest in something means you have a stake in it, or you are simply curious

about and paying attention to it. Concern could also mean "care" as in, "I am concerned about (I care about) the basic well being of others." Concern, interest, and care are all morally charged ideas. Moreover, they represent a kind of prehension– a grasp. My definition of ethics—humanity's collective grasp toward the good and right—is an attempt to communicate the importance of, as Weston describes it, our "steps into ethics" (2008: 3). Moral thought is not passive consideration, it is active inquiry, it involves grasping for and stepping into a moral situation because you care about, are concerned with, or have an interest in a particular moral problem.

Weston describes ethics as a concern for "basic needs and legitimate expectations" as two categories of moral things about which we ought to be concerned (5). Basic needs are, by definition, essential and necessary to sustain life: things like food, water, and shelter. However, fulfilling basic needs—sustaining or subsisting—is not a useful guiding moral ideal. It is, in fact, the moral minimum. Therefore, meeting basic needs does not represent what we might call the highest good. It represents a basic moral requirement. The Aristotelian notion of *eudaimonia*, or flourishing, represents a transcendence of basic needs. When flourishing is used as an ideal and controlling reference, then our notion of basic needs expands, especially in the American context, to include things like health, education, and freedom, etc. These things, in addition to basic environmental needs associated with food, shelter, and water, are required to live a good life, a life of health and wellness. Weston's legitimate expectations translate to basic human rights. In the context of the 21st century, these include life, liberty, and the pursuit of happiness, as stated in our founding documents.

Weston's definition identifies the morally considerable as others and self. Thus, his definition of ethics emphasizes care for, interest in, and concern with our basic needs and legitimate expectations and those of others. This aspect of moral thought entangles moral agents—decision makers—in what I call a moral ecosystem: a dynamic system of interconnections among humans and other morally considerable parts of our environment—human and more-than-human.

In the pages to follow, I will draw and expand upon these ways of thinking about ethics. The next sections characterize the integrated crises in ecology and democracy as moral problems and then explore moral frameworks associated with the established philosophical tradition of democratic pragmatism and the emerging approach of environmental pragmatism, an integral way of applying principled democratic pragmatism to environmental problems in particular.

Integrated Crises in Ecology and Democracy as Moral Problems

In Chapter II, I defined a crisis as a crucial moment in the lifespan of dynamic systems, where systemic integrity is precariously poised between order and chaos. This is a moment that requires an immediate and measured response to ensure future integrity and viability. Crises states are those where the integrity of living systems, that is, the ability of these systems to reproduce healthy and adaptive versions of themselves and their environments, is threatened. Crises are, by definition, problematic circumstances. And, because the crises of which I speak put humans and nature in harm's way and render them vulnerable, they are also moral problems.

Let's use Weston's (2008) definition of ethics provides an instrument for understanding the moral nature of the problems the citizens of Butte, Montana, face as they attempt to cope with their profoundly injured ecological and social systems.

Weston suggested that ethics and morality is characterized by a concern for the basic needs and legitimate expectations of self and other. Basic needs, in this context, refer to the basic biological requirements of human beings, their environmental conditions: clean water, consistent food supply, shelter, etc. In essence, our most basic needs are inextricably bound to our environmental conditions and our biological needs. Put differently, the general well-being of organic bodies is determined by the general state of, in Marx's terms, our inorganic bodies. In order to live, we require environmental conditions that foster healthy biological reproduction at both organism and community levels. In fact, according to Lakoff and Johnson (1999), health and wellness are the basic biological metaphors for ethics and morality. Being healthy is a basic, biological, and moral good (292).

In Butte, a place where the environment has been hard-used and transformed from hospitable to inhospitable in a relatively short time period, the basic biological requirements of the humans that inhabit the area are threatened. It is this threat to human health in particular, and to biological health of the living communities in general, that prompted the initial investigations under the Superfund program. The ecological revolutions discussed in Chapter III created an environment hostile to life and living systems and thus created circumstances where the ability of these systems to reproduce their basic biological structures was rendered vulnerable.

Recall that autopoietic systems are systems that recreate themselves by transforming the stuff of environments into their biological structures (Maturana and Varela, 1973; Capra, 2002). They are living systems that know the world through metabolic activity. When their environments are toxic, they metabolize toxins and transform them into diseased bodies. The ability of the diseased body to reproduce a healthy and adaptable new version of itself is diminished. It exists in a state of metabolic rift and is subject to disease, and in the worst-case scenario, death. Clean and healthy environments are thus a basic biological requirement of the living systems that constitute the lifeworld. When the environment is toxic, a basic biological need is violated. When a basic need is violated, a fundamental moral problem exists.

Legitimate expectations—*rights*—are related to, but qualitatively different than, basic needs. Legitimacy is conventionally conferred, not basic. Legitimacy, as Habermas (1979) noted, is a function of social agreement about community values and interests. Legitimate expectations are therefore culturally situated. Specifically, in this discussion, I am referring to contemporary US culture, and more particularly, to Montana's expression of US environmental problem-solving culture. The democratic and environmental values that characterize this culture create the evaluative criteria by which legitimacy is determined.

The Role of Environmental Problem-solving Discourses

In the United States, environmental problem-solving occurs through a combination of cultural discourses—deliberate conversations with recognizable cultural

traits. John Dryzek (1997) has identified three primary discursive modes or cultures that affect environmental problem-solving: *economic rationalism*, *bureaucratic rationalism*, and *democratic pragmatism*.

Economic rationalism operates according to the logic of the market and can best be understood by the phrase: Let the market solve our environmental problems. Bureaucratic rationalism operates according to the logic of scientific and technical management: Let the experts decide how to solve our environmental problems. Democratic pragmatism operates according to the belief that the affected publics ought play a role: Let the people decide how to solve their problems.

While economic and bureaucratic rationalism are strong animating forces in contemporary US environmental problem-solving (arguably, the most powerful forces), democratic pragmatism provides the normative criteria by which legitimacy is measured. Environmental justice, for example is an explicit moral ideal. One aspect of environmental justice is captured in the public participation provisions in Superfund law (CERCLA, 1980). That is, our decisions are judged legitimate or not based on the extent to which affected publics are included in the decision-making process. I will speak to this in more detail in the final chapter of this dissertation.

To return to the topic at hand, Weston's emphasis on basic needs and legitimate expectations, when coupled with Dryzek's identification of powerful environmental problem-solving discourses, provides yet another way to identify and characterize the nature of the moral problems we face due to our integrated crises in ecology and democracy. The moral problems emerge from the fact that, as discussed in Chapter one,

affected publics primarily composed of the common people who live amid the toxic environments in Butte, have been largely ignored in the decision-making and problem-solving processes under Superfund law. This is a violation of the legally encoded legitimate expectations (rights) of these people to be meaningful participants in problem-solving. Here, again, we have a violation of legitimate expectations and rights, and where our rights are violated, moral problems exist.

The problems the hard-used community of Butte faces, when read in light of Weston's definition of ethics, are moral problems. Vulnerable and affected people are left out of the decision-making processes as the market and bureaucratic experts determine the general drift and direction of environmental restoration, often by steamrolling over the affected publics. Both basic needs (i.e., a clean and healthy environment) and legitimate expectations (i.e., the right to meaningful participation) have been violated in the process. These integrated crises are a kind of moral crisis as well.

The remainder of this chapter is dedicated to identifying and examining pragmatic moral decision-making traditions concerning democracy, the environment, and democratic environmental problem-solving. The practical intention of this exploration is a search for a set of philosophically defensible principles of right action for environmental decision-making. The principles identified will also serve as an evaluative measuring stick for existing environmental problem-solving systems.

Ethics and the Public Sphere:

Democratic Pragmatism as a Moral Framework

As stated above, while the discourses of bureaucratic rationalism and economic rationalism tend to determine the direction and focus of environmental problem-solving, it is the discourse of democratic pragmatism that serves as the evaluative measuring stick for legitimate decision-making. The requirement of meaningful public involvement in US environmental law, for example, explicitly states that those publics most affected by an environmental problem should influence and guide the decision-making processes in order for a decision to be legitimate, that is, consonant with the values and interests of the people (EPA, 2009).

What's more, the moral concept of environmental justice is tied to idea of meaningful public participation and involvement. The Executive Branch of the US government is committed to realizing environmental justice (Executive Order 12898, 1994). Environmental justice requires the meaningful participation of the affected publics. We can surmise that any decision that fails to include the public in a meaningful way is less than legitimate and therefore subject to public scrutiny and challenges.

Democratic pragmatism is the mode of public problem-solving that values public participation in environmental problem-solving above all. Its principal philosophers, Dewey and Habermas, while differing in significant ways, also work toward a common end: understanding and creating the requisite conditions that would facilitate intelligent decision-making by powerful agents in concert with affected publics.

John Dewey and the Communicating Community

John Dewey has been called "the philosopher of American Democracy" (Hook, 1939/1995: 226). His view of democracy is expansive, experimental, creative, pluralistic, deliberative, historicist, non-essentialist, critical, meliorative, and ultimately, hopeful.

In *The Public and Its Problems* (1927), a critical response to Walter Lippmann's trenchant critique of the possibilities of democracy and argument for expert control of public decision-making in *Public Opinion* (1927), Dewey acknowledged the validity of Lippmann's claims about the complex nature of modern public problem-solving, but offered a fundamentally different solution, one that expressed his basic faith in the capability of the everyday citizen, if provided good information and given freedom of inquiry and communication, to make intelligent choices.

Dewey's ideal community, "the Great Community," was, in his words, "a communicating community" (1927: 142). Dewey was trying to describe the environmental conditions and structural requirements necessary for his deliberative and participatory vision of American democracy: "The essential need, in other words, is the improvement of the methods and conditions of debate, discussion and persuasion" (1927: 208). These conditional changes when married with a culture of democratic participation produced the possibility of intelligent democratic problem-solving. Dewey expressed a "faith in the common man to respond with commonsense to the free play of facts and ideas which are secured by effective guarantees of free inquiry, free assembly, and free communication" (1939: ¶ 10).

Jurgen Habermas and Discourse Ethics

Discourse ethics is a tradition of normative moral philosophy primarily associated with the scholarship of Habermas. Habermas, though familiar with some of Dewey's work on philosophy and education, was influenced more by the work of Dewey's protégé, George Herbert Mead. The subjects and approaches to inquiry of Dewey and Habermas are remarkably alike in several respects. Antonio and Kellner (1992), noted:

> Both theorists attack positivism, technocracy, bureaucratic domination, and other cultural and social conditions that thwart the democratic potentialities of modern society. They also criticize the modern philosophic tradition, especially the idealist "philosophy of consciousness" and its subject/object dualism. Both call for a reconstruction of philosophy and social theory, offering intersubjective alternatives based on their respective theories of communication. In addition, they call for a unification of theory and practice, and provide systematic critiques of conservative ideologies and of speculative, quietistic, and conformist patterns of thought...Following in the footsteps of Dewey, Habermas stresses the importance of uncoerced communication for strengthening the progressive features of liberal social and political institutions. (277-278)

Habermas's main contribution to democratic communication ethics come through his theory of communicative action; his moral reference point theory of the ideal speech act; and his normative prescriptions for what he calls discourse ethics. His theory of communicative action is less important to this inquiry and beyond the scope of the chapter. Here, I will discuss Habermas's ideal speech act and discourse ethics.

Like Dewey, Habermas focused on human communicative behavior and the conditions within which that behavior unfolded. His explorations led him to develop a controlling reference point—a communicative ideal—associated with his theory of the ideal speech act, which he took to be both a goal for democratic communication and a critical standard for evaluating democratic discourse.

Habermas believed that each speech act, each utterance meant to be heard by another, makes a statement about the world and invokes a relationship between the speaker and the hearer. The implicit goal of speaking to one another is to reach common understanding through semiotic exchange.

Habermas also believed in what he called "communicative rationality," that is, the emergence of reason through discourse provided certain conditions are met. In this view, reason is not some *a priori* phenomenon or Platonic ideal—it is an emergent property of inquiry and discourse. Reason happens through free and open inquiry and dialogue, the unforced force of critical deliberation. Habermas offers a Peircean definition of reason as an emergent property of a critical community of inquirers. Here, Habermas also echoes Dewey by emphasizing the conditions and the processes of critical discourse.

Habermas (1989) laid out several explicit rules for creating the conditions of intelligent communication. These were the conditions required to realize the ideal speech act.

The first rule, *the rule of participation,* states that any one with an interest in a conversation who is capable of participating in the conversation should be allowed to engage in discourse.

The second rule, *the rule of equality of communicative opportunity*, has three components: a) all proposals can be questioned, b) new proposals can be introduced, and c) attitudes, sincere beliefs, wishes, and needs can be expressed in any deliberation.

The final rule, *the rule against compulsion*, prohibits any behavior that is coercive in any deliberation.

Habermas's discourse ethics also lays out some evaluative criteria by which validity and legitimacy are determined through practically minded discourse.

The first of these general principles is: "Only those norms may claim to be valid that could meet with the consent of all concerned, in their role as participants in practical discourse." Second, "For a norm to be valid, the consequences and side effects of its general observances for the satisfaction of each person's particular interests must be freely accepted by all" (1989: 40).

Dewey and Habermas provide a set of philosophically defensible principles for the evaluation of moral actions concerning democratic forms of problem-solving. Their normative reference points can help orient future discussions about the moral dimensions of environmental problem-solving. Next, I will transition to a critical discussion of the other moral tradition of relevance to this inquiry, environmental ethics and the emerging moral framework of environmental pragmatism.

Ethics and the Ecosphere:
Environmental Pragmatism as a Moral Framework

The environment is the context of culture. It provides the limits and potentials of culture. The environment is culture's media and milieu. All cultures emerge partly because of the way they respond to their environments together. Through space and time, different groups of people developed different ways of knowing and ultimately valuing the environment. A central argument of this thesis relies on understanding that the environment is valuable to human beings in a very basic way, without appeals to notions of the intrinsic value of nature. As such, my approach dovetails with the work of Andrew

Light, one of the articulators of what he calls "environmental pragmatism" (Light and Katz, 1996).

Andrew Light and the Democratic Promise of Restoration

Light's environmental pragmatism has been developed primarily within the professional conversations taking place in the field of environmental ethics, though the implications of his work have been realized and successfully applied in actual environmental restoration projects in the United States. Environmental pragmatism is a critical response to what Light considers to be the overly metaethical debates within the field since its florescence in the 1970s.

According to Light, for many years the general subject of conversation in environmental ethics has concerned questions about how human beings value nature, and whether or not nature has value apart from the value humans assign to it, what Leopold called "intrinsic value" (1949). Following Varner (1998), Light refers to the early approaches to environmental ethics as its two dogmas: the critique of anthropocentrism and the exploration of intrinsic value. Light believes that questions such as, "Are human environmental problems exacerbated by hard anthropocentrism?" or "Does nature have intrinsic value?", are non-starters. They may be philosophically interesting, but they are practically irrelevant.

Instead of endlessly debating the deep structures and meta-ethical aspects of the human relationship to the environment, Light suggests a more pragmatic project, one that involves exploration of the relationships and values people already demonstrate in relation to their cultural and natural environments. Instead of speculating about the nature

of the wild things and places, we ought to be working to identify, extend, and strengthen the values we already express with regard to the wild.

Light (2005) has developed a vision of environmental democracy that draws on aspects of democratic pragmatism and his own formulation of environmental pragmatism, a practical approach to the cultivation of "ecological citizenship" by realizing what he calls "the democratic promise of restoration."

Light sees our environmental problems as opportunities to teach active democratic participation while engaging in restorative actions in hard-used places. In this way, Light's work is an attempt, not to talk about the nature of our values, but to put our values into practice and in so doing extend and develop them while actively engaging in environmental restoration projects. This produces a two-fold good: active democratic participation and environmental restoration. This vision entangles nature to culture in a way that creates a mutual benefit for both. It helps to cultivate two living systems—democratic systems and ecosystems. In this vision, the public sphere sparks and facilitates meaningful changes in the ecosphere.

Light's vision focuses more on what I've been calling hard-used places: Superfund sites, urban parks, etc. Instead of focusing on frequently spoken-for landscapes like wilderness areas or national parks, Light suggests we engage the world immediately surrounding us, our home landscapes, and work to restore their ecological health and well-being. In the process of doing this both democracy and ecology develop in healthier ways. In this way, both our basic need for a clean and healthful environment, and our

socially agreed upon legitimate expectation of public participation in problem-solving, are realized.

Of course, for all of the reasons addressed in the first chapter, sparking civic participation in a languishing democratic culture—our diminished democracy—is easier said than done. Over the years, Butte has served as a prime example of the apathetic public. Trying to spark democracy in a hard-used place is often even more difficult because these people, like their landscapes, have been hard-used. The spiral of despair tends to spin steadily downward. This is the reason for the integrated crises in the first place (see Curran, 1996).

For Light (2005), not surprisingly, these are fundamental moral questions. He wrote, "There is also an important moral dimension to a good restoration, namely the degree of public participation involved in such projects" (8). Here, again, a vibrant and deliberative democratic culture is required for the restoration of environmental justice to hard-used places. In the process, the public sphere ought to translate to active participation in the restoration of the ecosphere. This is an important moral prescription. Moreover, it is an evaluative tool that helps us measure the legitimacy of a decision.

My intentions for this chapter were to come to some working definition of ethics and morality, to situate the integrated crises in democracy and ecology as moral problems, and to explore two significant and pragmatic ways of examining these integrated crises in general, and Butte's experience in particular. Now that the moral dimensions of the crises at hand have been drawn-out (in broad strokes, to be sure), I will move to a systematic analysis of the problems in democracy and the environment as they

have unfolded in Butte, Montana, under Superfund through the last quarter century. The analysis is the next necessary step in deriving normative guidelines for environmental democracy, the ultimate aim of this dissertation.

CHAPTER V

SYSTEMATIC MORAL ANALYSIS

Introduction

Intelligent moral problem-solving requires informed decision-making. It requires deep description and critical analysis before moral decisions are enacted. It is a general principle of moral reasoning that one should describe and diagnose before one prescribes and responds to a moral problem. Before we suggest how things ought to be changed, we must first critically examine a problem in some depth and detail, and through a variety of perspectives and interpretive frameworks. Moreover, there should be some philosophically defensible logic of inquiry at work. This is especially true when we are talking about weighty moral judgments such as those about our very real and pressing integrated crises in ecology and democracy. The general well-being of the human and more-than-human communities in places like Butte are at stake, as are some of our most valued moral ideals, like democracy and justice. Chapter V is my attempt to systematically analyze the moral problems at the heart of this inquiry.

Systematic Moral Analysis

By systematic moral analysis I mean the imposition of some philosophically defensible logic of moral inquiry into the moral deliberation process. Systematic moral analysis is an attempt to be logical, thoughtful, careful, and humane throughout the process of moral decision-making. According to Deni Elliott (2006):

> *Systematic Moral Analysis* (SMA)is the process of dissecting a case…in a step-by-step way to insure that no ethical aspect is ignored. A good analysis is *systematic* in two ways. First, it provides a general system, or process, to be followed in any case analysis. It is also systematic in that it is based on theoretical foundation that provides conceptual support for each step taken in the analysis. (88)

Elliott (2009: vii) suggested that SMA's are useful for three reasons. First, they help the moral agent *clarify* their decision-making process. Second, employing a SMA helps the moral agent make *consistent* decisions. Finally, according to Elliott, SMA's also help people make *complete* decisions.[1]

Clarity, consistency, and completeness are worthwhile virtues, and to a point, make worthy moral ends. But, they do not represent the highest good in moral decision-making. It is possible to imagine a systematic moral analysis that is clear, consistent, complete, and blatantly wrong. The highest good requires more than clarity, consistency, and completeness—it requires that our decisions are intelligent, wise, sagacious. Our moral actions will be judged wise if they are born of virtuous intentions and good will, if they are informed by critical description and analysis, if they contribute to the overall health and well-being of the community, and if they facilitate learning and growth.

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[1] By complete, Elliott seems to mean thorough within the system, and not necessarily comprehensive.

The goal of this chapter and the next is to systematically examine the ethical problems at the heart of this work in a philosophically defensible way, a way that might lead to intelligent normative guidance for future US environmental problem-solving endeavors.

Toward Intelligent Moral Problem-solving

Nearly each and every significant and influential moral thinker attempted to contribute a system of moral decision-making to their cultures. Aristotle suggested we focus on virtue and character as he provided systematic ways of understanding virtue and vice through mind-instruments like the golden mean. Bentham, Mill, and Kant described their own systems, each placing different value and emphases on different ideas and methods in decision-making. Happiness, utility, consequence, cost-benefit analyses, and the greatest good for the greatest number were emphasized by Bentham and Mill. For Kant, duty, will, human dignity, the universal law, and reason were emphasized through systematic moral analysis.

The purpose and function of moral decision-making systems is facilitate intelligent moral problem-solving. There are many step-by-step systems (Day, 2000; Bivins, 2004; Elliott, 2009). Each offers a unique set of principled suggestions for systematically engaging in moral deliberations.

Day (2000) boils his system of moral decision-making down to three steps he calls the SAD process: (1) situation definition, (2) analysis of the situation, and (3) decision.

Elliott (2009) suggested a four-step process:

(1) define the problem in terms of violation of moral rules, (2) determine the role-related responsibilities of the moral agents, (3) explore plausible justifications for causing moral harm, and (4) identify what actions are ethically prohibited, required, permitted, and ideal. The ultimate goal in Elliott's system of applied ethics is to make a decision and put it into action.

Bivins (2004) provided a seven-step checklist for moral decision-making: (1) define the moral problem; (2) describe the problem in terms of relevant facts; (3) identify moral claimants and any obligations the moral agent has to them; (4) list alternative actions and consider best and worst-case scenarios, harm, and moral rules; (5) consider ethical guidelines; (6) determine a course of action; and (7) defend your decision to your most adamant detractor.

No two systems are exactly alike. However, there does appear to be a common tie that binds them structurally. Each system includes, sometimes implicitly and sometimes explicitly, five phases of systematic moral analysis: *recognition*, *diagnosis*, *analysis*, *evaluation,* and *action.*

These phases are not completely differentiated from one another. In the process of recognition, for example, diagnosis happens. And as we diagnose, we analyze. Still, the phases of moral problem-solving serve as a useful framework for the organization of a step-by-step, systematic process.

Overview of My Approach to SMA

The method I have developed to systematically cope with the problems at the heart of this moral inquiry is based upon the underlying meta-structure outlined above. It

is further organized in to two parts. *Part I: Recognition, Diagnosis, and Analysis*, is a *descriptive/analytical* mode of inquiry. *Part II: Evaluation and Action*, is an *evaluative/practical* mode. Before I conduct the SMA, I will define each phase and say a few words about the specific moral reasoning behind my approach.

Phase 1: Recognition

In order to solve problems, we must first recognize them and communicate about them. If we do not, or can not, as Diamond (2005) has demonstrated, the problems can metastasize and lead to disease or death in living communities. Failure to adequately cope with pressing problems threatens the integrity of living systems; it threatens the ability of those systems to recreate healthy, adaptive versions of themselves and their environments. Diamond (2005) listed failure to recognize problems as a key factor in the collapse of several of the pre-modern societies he chronicled in *Collapse.*

Etymologically, to *re-cognize* means "to know again." When we recognize something, we identify it in relationship to the flux of our worldly experiences. The thing becomes a figure against the ground of our operational cognitive maps of the living world. We make a thing significant. We attribute meaning to it. We signify it.

In *Ecological Communication* (1989), Niklas Luhmann noted that we must first collectively recognize and encode a problem in our language and communication before we can intelligently cope with the problem. This point is an important one, especially within this inquiry, because it takes worlds and words, both nature and culture, seriously.

Charles Sanders Peirce (1877/1955) described the process of problem recognition as the "irritation of doubt" that occurs when we encounter dissonance or incongruence

between the way we think the world is and the way the world actually is. At a basic perceptual level, this is an expression of the irritation that comes when we encounter meaningful gaps between the way things are and the way we think they ought to be. This irritation of doubt initiates the process of resolving the inconsistencies through inquiry, according to Peirce. Of the four methods of restoring belief from doubt,[2] Peirce identified critical scientific inquiry as the most intelligent way to cope with newly recognized problems. It is the surest way to, again in Peirce's words, make our ideas clear.

Recognition is the process of knowing a problematic situation and signifying it. Recognition involves some kind of symbolic encoding of the problem, some sort of semiotic bringing forth of the problem by and through discourse. Recognition involves introducing the problem into the deliberate problem-solving conversations of the group. In this dissertation, Chapter one described the recognition of the problems at the heart of this inquiry, the integrated crises in ecology and democracy in Butte, Montana.

Phase 2: Diagnosis

After we have introduced the problem into our deliberate conversations about environmental problem-solving, the diagnostic phase begins. *Diagnosis* is defined as "the identification of the nature of a problem…by examination of the symptoms" and as the "characterization of a phenomenon in precise terms" (NOAED, 2007). It is an attempt to transform data and information, signs and symptoms, into real and useful knowledge. Thick, purposeful, and critical description undertaken with a scientific diagnostic attitude is an intelligent way to understand a moral problem. Factual and sober descriptions are

[2] Tenacity, authority, *a priori*, and science.

most likely to lead to useful diagnoses of a problem's sources and contributing factors. For ethicists and physicians alike, careful and accurate diagnosis sets one on a path more likely to lead to intelligent moral action. Conversely, careless and inaccurate diagnosis sets one on a path of probable failure.

Diagnosis requires sober description of the problem and its symptoms. It involves clear articulation of the nature of a moral problem through precise scientific description. Diagnosis is a method of pinpointing the causes of moral problems and is the necessary precursory step to conducting moral analysis. In this dissertation, Chapters two, three, and four serve as diagnostic descriptions of relevant aspects of the integrated problems and their contributing factors.

Phase 3: Moral Analysis

Once the problem has been recognized and diagnosed, most moral problem-solving systems suggest some form of moral analysis. ***Analysis*** is "the detailed examination of the elements or the structure of something, typically as a basis for interpretation or discussion" (NOAED, 2007).

My framework for systematic moral analysis involves three sub-steps:

- identification of the morally considerable;
- articulation of basic needs, rights, and obligations;
- application of relevant moral theories as analytical instruments.

The first sub-step requires the identification of those who are affected by the decision. These are the morally considerable. They include all moral agents (the decision-makers) and moral claimants or stakeholders (the affected). The purpose of this step is to

describe the actual network of beings whose lives and experiences will likely be affected by moral problem-solving efforts. This network of the morally considerable composes a moral ecosystem and is characterized by an ecology of moral relationships.

The second sub-step requires the clear articulation of these moral relationships through consideration of basic needs, rights, and duties. Each moral subject makes basic moral claims on each other subject in the moral network. In addition to claiming basic needs and rights, each subject bears certain basic moral duties and obligations to the other inhabitants of the moral network. In this way, each subject in the moral ecosystem is related to each other subject to varying degrees, resulting in differential ethical pull on one another (Steiner and Okrusch, 2006). Thus, the moral ecosystem is a dynamic network of moral beings pushing and pulling upon one another through their basic struggles among their basic needs, human rights, values, interests, habitudes, notions of good and bad, right and wrong, etc.

The final sub-step, application of moral theory, requires the pragmatic use of relevant moral theories as analytical instruments in the moral inquiry. Within this step, the precisely diagnosed moral problem is considered through a variety of philosophical concepts and interpretive frameworks. This step requires consideration of the living moral theories that guide community problem-solving as well as consideration of relevant alternatives to these guiding moral frameworks. For example, when considering the integrated crises in ecology and democracy, the traditional ethical philosophies of virtue ethics, deontology, and utilitarianism should be used in the analytical process because they tend to guide community decision-making. In addition, because the problems at the

heart of this inquiry concern the ideas associated with ecological integrity, environmental justice, and deliberative democracy, contemporary moral frameworks derived from environmental and democratic ethics should be considered as analytical instruments. In this case, given the pragmatic orientation from which I approach the problems, I work through democratic and environmental pragmatisms.

This step is not intended to be an exhaustive exposition on the total implications of each moral framework. The purpose of this step is to run the problem through a gauntlet of potentially useful moral theory in order to get a variety of ethical perspectives on the problem from which to derive an informed evaluation that leads to intelligent moral action.

Phase 4: Strong Evaluation

Theories of practical ethics eventually require the exercise of moral judgment or evaluation. Judgment refers to the ability to reach sensible conclusions. Evaluation involves assessing or determining the worth or value of one's options. While judgment and evaluation involve making choices, they should not be reduced to mere choosing.

Charles Taylor (1989) made a distinction between two forms of evaluation, weak and strong. Weak evaluation can be equated to mere choosing. Should I eat an apple or an orange for lunch? This kind of choice is not necessarily a moral decision. It is an expression of preference.

Strong evaluation, however, is qualitatively different. Peggy Bowers (2002) noted that Taylor's concept of strong evaluation demands "a certain type of vocabulary" and taps into "the sorts of abstractions we associate with worth and the meaning of living a

life in which our humanity in all its potential for both good and evil are expressed…" (39). Strong evaluation involves choosing between good and evil, competing goods, competing evils, etc. Strong evaluation, in short, has deeper moral implications. It is moral through and through. Should I eat the orange that was grown in an orchard that I know exploits its labor force? Or, should I eat the apple that I know came from an organic farm that pays its laborers a living wage? In this light, the same choice—apple or orange—becomes a judgment call, an exercise in strong evaluation. It cannot be reduced to mere preference. The stakes are higher and morally charged because our decisions have consequences that affect others. Strong evaluation requires reasoned deliberation and the exercise of good judgment based on morally defensible evaluative criteria. If intelligent action is the goal, a reasoned judgment and evaluation is the logical precondition of moral action.

Phase 5: Moral Action

The final step in this SMA process—moral action—requires that one puts one's strong evaluations into real and meaningful practice. The overall intention of the SMA process is to cultivate the practical wisdom necessary to cope with our most pressing problems. In order to accomplish this, we must, every now and again, put our experimental solutions to work to see if they are good and useful. All moral deliberations that do not end in moral action can be classified as intellectual busy-work or philosophical game-play. A pragmatic moral attitude, however, requires action in the world. This final step ensures that our carefully derived judgments might become actual solutions to our most pressing problems.

In the next and last section of Chapter IV, I put my SMA system into practice by analyzing key aspects of democratic environmental decision-making in Butte, Montana, over the last 25 years of Superfund Restoration.

SMA Part I:

Recognition, Diagnosis, and Moral Analysis

This section initiates the execution of the SMA as a critical mode of ethical inquiry into the problems at hand. Much of the heavy-lifting occurred in Chapters I through IV. When necessary, I refer to and summarize key insights from these previous chapters and discuss the role they play in the overall inquiry.

So far, Chapter V has introduced and explained my method of SMA as an instrument for deriving informed and critical moral responses. From this point on, I engage in Part I, the descriptive/analytical mode of the SMA, which consists of problem recognition, problem diagnosis, and moral analysis. This descriptive/analytical mode of inquiry provides a solid foundation for the normative/evaluative mode to come.

Recognition

This dissertation does not focus on democratic crises or environmental crises in isolation, but rather, on the moral dimensions of the integrated crises we face in democracy and ecology. Our real and pressing problems in the public sphere, our cultural realm, contribute to our failure to adequately cope with our real and pressing problems in the ecosphere, our natural realm. In this sense we are in double-trouble because our

cultural problem-solving systems fail to cope with our serious ecological problems. Our problem is problem-solving.

Recall, problem recognition occurs as we collectively begin to respond to the irritation of doubt that exists when we engage the living world and find it lacking in some important way. In this case, citizens in the Upper Clark Fork River Basin recognize that something was wrong, that the world is not how it should be with regard to the health and well-being of their natural environment and our democratic culture.

For example, in the democratic realm at a national level, many careful observers have recognized that local democratic problem-solving systems are neither democratic nor do they help us solve our problems. In Chapter II, I noted that if the common people are powerless, if our participation is functionally meaningless, if we fail to solve problems, and if our democratic culture is languishing, we have a democracy in name only.

In the ecological realm, we recognized that the integrity of the natural systems humans depend upon for survival is threatened thus rendering the ecosystems we need vulnerable, in harm's way. Integrity refers to the ability of a living system to reproduce healthy, adaptive versions of itself and its environmental circumstances. As ecologically dependent creatures, this puts us in harm's way. In Butte and other hard-used places, this is well-documented and universally understood. Diseased environments lead to diseased communities because those communities recreate themselves by transforming their environments into the human bodies that together compose the community.

In Butte, Montana, local activists such as Professor John Ray and Fritz Daly have served as harbingers of our integrated crises in democracy and ecology by introducing them into the problem-solving conversations of the group through newspaper editorials, comments at public meetings, and through various other methods of public outcry (Curran, 1996). They have recognized that the problems are connected, and that without addressing our problematic democratic problem-solving systems, we cannot hope to address our ecological problems intelligently.

Chapter II identified the integrated crises as the primary problem to contend with in this dissertation. This recognition is the necessary first step to intelligent moral decision-making. The next step requires diagnosing the deeper nature of the problems under study.

Diagnosis

Diagnosis requires the identification of the nature of a problem through precise characterization of the problem's signs and symptoms. Chapter III diagnosed semantic problems and suggested practical semantic solutions via the adoption of a Pragmatic vision of nature and culture as found in Peirce and Dewey. Chapter IV diagnosed moral dimensions of our integrated crises in ecology and democracy.

Chapter III diagnosed semantic dimensions of the problem through precise definition of some of the basic terms and subjects in this dissertation: nature, environment, culture, and communication. It took words seriously. I argued that our deeply seated and problematic cultural understanding of nature and culture and their relationships are significant contributing factors to our integrated crises in ecology and

democracy. Our problems in democracy are treated as distinct from, even oppositional to, our problems in the environment. They occur in separate realms. We tend to treat them as distinct and disconnected and thereby miss an opportunity to cope with them as an integrated complex of problems.

Semantic distinctions constitute what we believe about the world and thus guide our behaviors. Our actions are born of our beliefs and habitudes. Any clarification of terms creates an increased likelihood that we will render informed decisions. Chapter III was meant to rectify our basic category errors by healing our problematic ontological laceration of nature from culture and communication from environment. I tried to demonstrate that culture is not separate from nature, it is an expression of nature. Culture is the way nature works through communication. Humans simultaneously inhabit nature and culture. Therefore nature and culture are connected through human experience.

Diagnosing these philosophical problems puts us on a path more likely to lead to intelligent environmental decision-making because when we make these important semantic distinctions, our mind-tools become valid and useful in ways they previously were not. Moreover, as Dewey and Peirce would have appreciated, they are more precise and informed by contemporary scientific insights and are thus an expression of the way we think the world works at present.

Chapter IV diagnosed ethical aspects of the problems under study. In it, I precisely defined ethics and morality and explored several ways that Butte's integrated crises can be considered moral problems. First, by Weston's (2008) definition, there have been violations of both basic needs (i.e., our basic human right to live in a clean and

healthful environment) and our socially agreed upon legitimate expectations (i.e., our explicitly guaranteed rights to meaningful participation in environmental decision-making). Violations of either or both result in moral problems, according to Weston.

The moral problems within the democratic realm---ethics and the public sphere - were analyzed through Dewey and Habermas and their unique forms of democratic pragmatism. Each placed emphasis upon the structures and processes of democratic decision-making and they outlined normative ideals for deliberative democracy in practice. These ideals serve as the goals for communication as well as the evaluative criteria for judging the democratic nature of actual problem-solving discourses. In this light, the ethical issues arising in the public sphere within this inquiry can be identified and evaluated based on their congruence with the moral ideals associated with Dewey's notion of the Great Community as a communicating community, or against Habermasian reference points such as the ideal speech act, discourse ethics, or communicative rationality.

The nature of the moral problems in the ecological realm—ethics and the ecosphere—were considered through the lens of Light's (1996, 2004, 2005) notion of environmental pragmatism. Light suggested that the overly meta-ethical debates characterizing much of the environmental ethics discourse were philosophically interesting but practically irrelevant. Light's (2005) notion of "ecological citizenship" is realized through the "democratic promise of restoration." In Light, we find a pragmatic approach to our integrated crises. He provides an evaluative framework that considers democracies and ecosystems as living systems. Moreover, he suggests that the best way

to restore hard-used environments is to cultivate the integrity of the democratic cultures that inhabit them.

By locating factors contributing to the crises at hand, the diagnostic phase produced a valid and useful understanding of the basic moral problems in this thesis. The next phase is an attempt to extend this descriptive understanding through the process of moral analysis.

Moral Analysis

The moral analysis phase requires three sub-steps. The first of these involves the identification of the morally considerable members of the moral community, the stakeholders. The second requires the identification and articulation of basic needs, rights, and duties of each of the stakeholders. These comprise the moral forces, the pushes and pulls we exert upon one another, which in turn constitute the dynamics of the moral ecosystem. The final sub-step involves interrogation of the moral problems through living and relevant moral theory.

Identifying Stakeholders: Moral Agents and Claimants

I define the *moral ecosystem* as a dynamic internetwork of communities of beings (human and more-than-human) connected through the basic moral claims we make upon one another, along with the moral duties we have to one another. This moral network comprises *stakeholders*—interested parties who influence and are influenced by the actions of the other members of the network. Stakeholders are either moral agents or moral claimants.

Moral Agents

Moral agents make decisions that affect others. Moral agents shape the world we inhabit together through their actions. They are powerful actors. Because of this, communities place make certain moral demands on them. To whom much is given, much is required.

Power is defined as the ability to realize one's visions, even in spite of resistance. Power is the ability to do work. It is the ability to deliberately marshal resources. It is the ability to bend space around you and alter the dynamics of the unfolding lifeworld to realize one's ideas.

Power is the ability to coordinate meanings and behaviors, which is also a definition of communication. Power, then, can be measured through communicative capacity, that is, the capacity of a moral agent has to coordinate meanings and actions toward the ends of realizing their will and intentions. Moral agents are situated at the center of the moral ecosystem because their moral actions guide and influence the world we inhabit together. They produce and reproduce the biophysical and semiotic boundaries of our common experiences. That is why I have focused on the discursive aspects of our integrated crises. Our environmental problems are entangled with our democratic problems.

Within the Superfund environmental decision-making system, a complex network of moral agents are consulted in the environmental problem-solving process. Each of them engaging in environmental problem-solving through a different set of discursive ideals and constraints. These are the decision-makers, the environmental problem-solvers.

The network of moral agents within this inquiry is composed of the following people and groups:

- the common people—the public
- federal bureaucrats from the United States Environmental Protection Agency (US EPA)
- the Governor of the State of Montana who serves as a trustee of Montana's peoples and lands
- the legally defined principal responsible parties as determined by *CERCLA* and Montana's *CECRA* laws (i.e., British Petroleum-ARCO, Montana Resources Incorporated, etc.)
- state bureaucrats from the Montana Department of Environmental Quality (MDEQ), including a powerful subset of lawyers and scientists within Montana's Natural Resources Damages Program (NRDP)
- local governmental agencies from each of the affected communities along the UCFRB complex of Superfund sites (Butte-Silver Bow, Anaconda-Deer Lodge, etc.)

Moral agents do not exercise power equally. For example, those people who make final decisions (i.e., the Governor of the State of Montana and the EPA Superfund Project Manager) are more powerful than those who merely contribute to deliberations regarding environmental problem-solving. The public at-large, for example, is listed as an agent because of the legal requirements outlined in US environmental law and the Montana State Constitution (1972). The public is supposed to be a "meaningful participant" in environmental decision-making in order for such decision-making to be considered legitimate. However, as Depoe and Delicath (2004) noted, the public rarely act as a powerful force in environmental decision-making, especially within projects the scale and scope of the UCFRB complex of Superfund projects. This is problematic because the normative principles guiding environmental law are legitimate to the extent the affected publics, especially the working classes who tend to inhabit the hardest-used places, are

included in the problem-solving deliberations. The moral measuring stick is based on the principles of democratic pragmatism.

Moral Claimants

Claimants are subject to the will and intentions of moral agents. They are affected by agents' decisions. They live in a world that agents' influence and guide. Moral ecosystems are dynamic because of the differential ethical pulls that claimants exert on moral agents.

The three categories of moral claimants in this model are *immediate*, *proximate*, and *distant*. Immediate claimants are directly affected by the decisions of the moral agents; they tend to exert the strongest ethical pull on moral agents. Proximate claimants are affected, but to a lesser degree than immediate claimants. Distant claimants are affected, but still further removed from any immediate affect by the decisions of the moral agents. Proximate and distant claimants, though further removed than immediate claimants, may still factor heavily in the decision-making of moral agents despite their apparent distance.

The immediate claimants in this case are those humans (and more-than-humans) who inhabit this toxic landscape—the community members of the UCFRB. Agreeing with Leopold (1949) that moral consideration ought to be extended to the environments we inhabit, in this SMA the land itself is considered a part of the community as well. The land is the context of and the media by and through which the community reproduces itself. A community's ecosystem is its inorganic body.

The health of a living thing depends on the health of its immediate environment. That is a basic and fundamental moral claim and primary metaphor for the good: health and well-being (Lakoff and Johnson, 1999).

Any being that metabolizes water from the injured river system, or transpires air contaminated with dust from the Berkeley Pit's wind-blown waste piles or those of the Opportunity Ponds, is an immediate claimant. Any person or animal that eats a trout caught from the Clark Fork River is biologically affected and therefore makes a basic moral claim on the decision-making agents responsible for creating the next version of the hard-used places in the UCFRB. Any living community within the bounds of the Upper Clark Fork River Basin is an immediate claimant in environmental problem-solving because these community-members metabolize the toxic world into their individual and collective blood, bones, and flesh. Health and wellbeing are basic goods for living systems.

The proximate claimants in this case are humans (and more-than-humans) one step removed from the toxic ecosystems. These community members also hold a stake in the health and well-being of the people and places in this case. The lands and peoples of the State of Montana, along with the lands and peoples of the Columbia River watershed, are interested parties because what happens in the UCFRB potentially affects what happens to them if put in a similar situation. Future generations who will come to inhabit the next version of the UCFRB are proximate claimants, removed from the toxic landscape in time only.

The distant claimants include hard-used peoples and places in the United States, and ultimately, any hard-used lands and peoples on planet Earth. In *Water Wars: Privatization, Pollution, and Profit* (2002), Vandana Shiva refers to the powerful role "cowboy economics" is playing in environmental law and policy in India. The "prior-appropriation doctrine" that initially emerged as common law in mining frontiers of the American West, now guides water law on the Indian subcontinent. The citizens of the world make a claim because they are still sometimes subject to the consequences of such decisions by virtue of Western influence and political economic hegemony. Others from across the globe, in as much as they are influenced by our policies, make moral claims, even if these are limited from a distance.

Needs, Rights, and Duties

In this section I will articulate the basic needs, rights, and duties operating within the moral ecosystem. The purpose, once again, is to describe the ethical dynamics at work in this case by outlining essential requirements (basic needs), legitimate expectations (rights), and obligations (duties). Again, these are the forces that factor into moral deliberation. They create the pushes and pulls of the dynamic moral ecosystem in this model.

First, I will consider basic needs apart from rights and duties. Next, I will consider the concomitant relationship between rights and duties. Finally, I will delineate specifically enumerated rights and duties of distant, proximate, and immediate claimants.

Basic Needs as Fundamental Moral Goods

Basic needs are requirements for life and living systems. As such, I contend, they are prior to and more basic than negotiated rights. Basic needs are the necessary preconditions for existence and are thus basic goods. When I speak about basic needs in moral terms, it is not based on some philosophical appeal to metaphysics. Rather, this conversation is based on an embodied and embedded understanding of human experience. Each of the stakeholders share a set of fundamental, biological basic needs: food, water, shelter. These needs are environmental— they constitute the inorganic body of embodied "live creatures" (see Dewey, 1934). They are necessities of life and thus basic goods.

"Morality is about human well-being" according to Lakoff and Johnson (1999). Morality is about health and wellness at a basic level, one that does not require external appeals to *a priori* Platonic ideals such as justice or virtue. Lakoff and Johnson's research indicates that basic human metaphors we use to communicate about morality are experientially grounded and tied to our basic needs. They emerged from our embodied and embedded experiences.

> These metaphors are grounded in the nature of our bodies and social interactions, and they are thus anything but arbitrary and unconstrained. They all appear to be grounded in our various experiences of well-being, especially physical well-being. In other words, we have found that the source domains of our metaphors for morality are typically based on what people over history and across cultures have seen as contributing to their well-being. For example, it is better to be *healthy*, rather than sick. It is better if the food you eat, the water you drink, and the air you breathe are *pure*, rather than contaminated. It is better to be *strong*, rather than weak...And it is better to be *upright* and *balanced*, than to be off balance or unable to stand. (290-91)

Each of the stakeholder domains I refer to share common basic requirements for life. These needs are incontrovertible. If basic needs are not met, health and well-being are impossible. If health and well-being are impossible, so too is the possibility of the good life. Each stakeholder, then, holds in common a set of basic biological needs. These needs are fundamental and permeate the entire moral ecosystem. I claim that these needs are inviolable and that any violation of them results in a basic moral problem.

Rights and Concomitant Duties

By *rights*, I mean moral or legal entitlements and protections that, in Weston's words, "allow people to become what they are" (2008: 141). Rights are legitimate expectations. They are the basic moral claims humans make upon one another that command respect. By making such a command, in a Kantian sense, one has a concomitant duty to respect the rights of others. By *duty* I mean moral or legal obligations—binding ethical requirements. Rights and duties often arise in relationship to one another.

The rights and duties I identify in this phase of moral analysis are explicitly prescribed in constitutional documents, laws, and policies. I refer specifically to the Montana State Constitution, to the US Constitution, to relevant US laws and policies, and to the United Nation's *Universal Declaration of Human Rights* (1948).

My intentions are not to validate subjective and arbitrary rights-claims, but rather to use the concepts of needs, rights, and duties as analytical instruments in the process of systematic moral analysis. When explicitly drawn out in constitutions, laws, policies, and

international declarations, the claims to rights become legitimate to the extent they represent the norms of the people laying claim to them: signatories to the U.N. Charter, the US Constitution, or the Montana Constitution, for example. The UN's *Universal Declaration of Human Rights* (1948) is significant in as much as it is applied in international law and policy, though in the United States it holds less sway than our state and national constitutions, laws, and policies.

My statements of rights and duties do not represent any final statement philosophically. They do represent useful analytical instruments. The rights and duties I discuss are constituted—they are officially and explicitly granted powers and functions of the body politic as enumerated in constitutions, laws, and policies.

In the analysis to follow, I will move from the distant claimants, to the proximate, then to the immediate claimants.

Basic Needs, Rights, and Duties of Distant Claimants

The distant claimants in this model are the hard-used people and places of the world and the United States. According the UN's *Universal Declaration of Human Rights* (1948), each and every citizen of the world claims certain universal human rights by virtue of one's personhood. Among these are the rights to "life, liberty, and security of person" (Article 3); the right to "equality before the law" and "equal protection under the law" (Article 7). The charter also claims every person has the "right to public participation in government affairs" (Article 21)—which comes with the concomitant "duty to participate fully" (Article 29). No specifically enumerated international

environmental rights exist, as such, but there has been much discussion recently of amending the declaration to include specific language articulating environmental rights.

In addition to the human rights declared above, US citizens claim certain rights with regard to their role in environmental problem-solving. These rights, according to Cox (2006), have evolved as a partial response to the deliberative turn in public problem-solving in the US during the last 35 years. US environmental law from this period is characterized by an attitude that requires public agencies to "make diligent efforts to include the public" in environmental problem solving (*National Environmental Policy Act*, 1969: 1506.6[a]).

Cox specifically enumerates three basic rights, each of which is authorized by US law. Each of the rights engenders a certain mode of democratic participation and works toward the realization of key democratic principles.

According to Cox (2008: 83-116), the first of these, *the right to know*, creates the mechanisms allowing the public to access critical information about the complex environmental problems that affect them. This right enacts the democratic principle of transparency. These rights are authorized by the *Freedom of Information Act* (1966), the *Emergency Planning and Community Right to Know Act* (1986), and other legislation that generally falls under the category of "Sunshine" laws. This right, when viewed in light of democracy's normative requirement of an active and informed citizenry, creates a civic duty to know about those issues that have consequences for their communities. Here again, the right comes with a concomitant duty.

The second right Cox identifies is *the right to comment*. This right, which is granted in the *National Environmental Policy Act* (1969) and included as part of the public participation provisions in *CERCLA* (1980), enacts the democratic principle of direct democratic participation. It grants citizens the right to give testimony at public hearings, to participate in advisory committees, and to provide written commentary on pressing environmental problems. The right to comment and act as a meaningful participant also requires an active citizenry and thus results in the duty to comment.

The third right Cox identifies is *the right of standing*. This grants citizens and organizations the right to legal standing in courts by allowing them to act as plaintiffs in law suits regarding environmental decision-making. This right enacts the democratic principle of accountability and is granted authority from environmental legislation such as the *Clean Water Act* (1977) and Supreme Court Rulings such as *Sierra Club v. Morton* (1972). This right led to *Montana vs. ARCO* (1983) under *CERCLA* (1980).

Basic Needs, Rights, and Duties of Proximate Claimants

The proximate claimants in this case are the people and places in the state of Montana and within greater Columbia River watershed ecosystem. Here, I have also listed future UCFRB generations because they are removed from living immediately in the UCFRB complex of Superfund sites in time only.

The people and places of the Columbia River watershed can generally claim each of the rights already given by virtue of their US and world citizenship. In this section, I pay more attention to the rights of Montana citizens as enumerated in the Montana

Constitution of 1972. This document is remarkable in many ways and extends certain US rights while it also grants rights to Montana citizens that are not explicitly enumerated in either US or international law and policy.

The Montana Constitution was re-written in 1972, a time of emerging environmental awareness in the United States and the world. The Constitution's provisions are sovereign within the state and are subject only to limits imposed by the US Constitution and federal laws.

Article II of the Montana Constitution (1972) outlines the state's "Declaration of Rights" which include claims to states rights such as popular sovereignty (section 1), self-government (section 2), individual dignity and equal protection under the law (section 4), the administration of justice (section 16), and the right to due process of the law (section 17). These are familiar and already granted under the US Constitution.

The Constitutional Convention of 1972 also resulted in some innovative and far-reaching rights in the newly conceived document. In Montana, the right to participation (section 8) and the right to know (section 9) are explicitly granted in the 1972 Constitution. The revised Montana Constitution reinforces these rights, already granted by and through federal law and policy, as such, they are doubly guaranteed within the state.

Perhaps the most far-sighted, progressive, and artfully constructed section of the Montana Constitution concerns the inalienable rights of every Montanan as outlined in Article II, section 3:

> All persons are born free and have certain inalienable rights. They include the right to a clean and healthful environment and the rights of pursuing life's basic necessities, enjoying and defending their lives and liberties, acquiring, possessing and protecting property, and seeking their safety, health and happiness in all lawful ways. In enjoying these rights, all persons recognize corresponding responsibilities.

Three things are particularly interesting here. First, the explicit reference to the inalienable (unable to be taken away from) right "to a clean and healthful environment and the rights of pursuing life's basic necessities...." The state of Montana here recognizes and constitutes the basic biological and ecological conditions of life as a granted right. Neither the US Constitution, nor the UN's *Universal Declaration of Human Rights* (1948) goes so far as does Montana's revised Constitution.

The second noteworthy aspect of section 3 is its emphasis on health. Montanans are granted the right to the basic conditions of health and well-being—a clean and healthful environment—in addition to the right to seek health in all lawful ways.

The third interesting aspect of section 3, from the perspective of moral philosophy, is the explicit enjoining of the state's citizens with "corresponding responsibilities" that come with the rights granted. In Montana, the notion of rights and concomitant duties is clearly drawn-out in the language of the Constitution of 1972. In Montana, the pushes and pulls, the dynamics of the moral ecosystem, are precisely defined.

Basic Needs, Rights, and Duties of Immediate Claimants

The immediate claimants in this case are the hard-used people and places of the Upper Clark Fork River Basin. These immediate stakeholders claim all of the rights thus far described; however, they make these claims with an urgency that the proximate and

distant claimants do not experience. They, too, are duty-bound to participate in the environmental problem-solving taking place in their name.

When the US EPA included the UCFRB complex of Superfund projects on the National Priorities list in 1982, it acknowledged and validated the potential harms to the people and places within the UCFRB experience as inhabitants of a toxic landscape. The basic, inviolable rights of UCFRB citizens were violated, thus setting the stage for the restoration of environmental justice to the sacrificed watershed and its communities.

Relevant Moral Theory

The final step in Part I, the descriptive/analytic phase of this SMA, requires a critical interrogation of the moral issues through relevant moral philosophy. Here, I will think through the conceptual instruments outlined in the living traditional moral philosophies of Aristotelian ethics and deontological ethics. These approaches to moral thought are inextricably woven into the fabric US culture. By using them as mind-tools (sometimes in ways that the originators of these ideas may not have intended), I acknowledge the importance of these inherited wisdom traditions.

The pragmatic temper of this thesis also requires that we acknowledge the limitations of inherited wisdom by seeking alternative explanations and moral philosophies. To this end, I consider the problems through Leopold's (1949) Land Ethic, as well as democratic and environmental pragmatisms. In running the problems through this gauntlet of moral theory, I do not intend to give a comprehensive exposition on the implications of each of the moral frameworks to follow, but rather, to give a useful accounting of the insights each philosophy yields with regard to our integrated crises in

ecology and democracy. This step is a means to the end of making a philosophically defensible evaluation of the situation as a basis for intelligent moral action.

Aristotle and Eudaimonic Ethics

Aristotle grounded his moral and political philosophy in a natural vision of human experience in which he "situates the human being in the larger context of nature" (Johnstone in Audi, 2002: 29). As such, it is consonant with the pragmatic visions of nature and culture guiding this dissertation.

For Aristotle, humans are moral and political animals in nature trying to make choices that lead to "energetic self-fulfillment" (Feinberg and West, 1977: 9), flourishing, happiness, *eudaimonia. Eudaimonia* is a state of vital health and well-being, the highest good in Aristotle's moral philosophy. Eudaimonia is that state to which all living things strive. The purpose of human experience is not to merely get by, but rather, to live well. Humans, individually and collectively, strive for this state of vital health, well-being, and flourishing. In order to live well, people and groups must cultivate the ability to make wise practical decisions, decisions that create the circumstances that allow them to flourish. Aristotle called this *phronesis*, or practical wisdom.

We become good through the exercise of good judgment. We learn to make good judgments through the thoughtful exercise of our passions tempered by reason. Making good decisions, doing the right things in the right ways, leads to *Eudaimonia.*

Aristotle's notion of the highest good makes sense. Living well, flourishing, and intelligent decision-making constitute the highest human good. Moreover, Aristotle's

ethics makes flourishing and happiness the highest good for both individuals and groups. According to the *Cambridge Dictionary of Philosophy*, "the state...also has *eudaimonia* as its goal" (Aristotle, 51). It provides principled reference point, in Aristotle's words, "a mark to aim at" (*the Ethics,* Book I: 63), a guiding reference point for moral action.

Aristotle suggested a way to cultivate practical wisdom by developing good character, a deeply entrenched predisposition to make wise decisions. Character development occurs by living a balanced life, which for Aristotle, is synonymous with living virtuously. Virtues are habituated character traits worthy of emulation. Virtues exist somewhere between the vicious states of excess and deficiency. Virtues are not absolute and universal for Aristotle; they context-dependent and natural. Individuals and groups are capable of acting either virtuously or viciously.

If moral excellence (*arête*) and the highest good for people, communities, and nature is a state of healthy vitality, and people, communities, and nature are currently in states of disease, basic moral problems exist in an Aristotelian framework. The current state of disease in both our diminished democracy and our injured environment indicates basic moral problems based on a failure to realize the highest good in each living system. We have not cultivated the virtues and character required to enact practical wisdom. Wise decisions lead to vital health; unwise decisions lead to disease and failure to thrive in dynamic natural and cultural systems. Our diminished democracies and injured ecosystems can thus be viewed as a sign of our failure to choose wisely within the moral framework of Aristotelian Eudaimonic ethics.

Kantian Deontology

Immanuel Kant's moral theory rests on his belief that, given the commitments of his transcendental metaphysics, through rational inquiry humans can understand universal moral principles. As Isaac Newton and others determined the laws of motion through logic and rational inquiry, so too can humans come to understand the universal laws of ethics and morality through logic and rational inquiry. The moral law, in Kantian terms, is constituted by certain moral requirements and duties which he referred to as *the categorical imperative.*[3] A Kantian categorical imperative is "a basic obligation that applies to us regardless of our goals or situation" (Weston, 2008: 138). Here, I rely on Kant's two primary formulations of the categorical imperative.

Kant's transcendental metaphysics lead him to the following formulation of the categorical imperative which concerns the universal law:

> Act only according to that maxim whereby you can at the same time will that it should become a universal law. (Kant, 2004)

In a moral world in which everybody acts justly and according to the highest principles of reasoned deliberation before making moral choices, Kant believed that we should do what reason tells us everybody should do in a similar situation. Our choices should be made according our reasoned understanding of an *a priori* universal moral law. Always and everywhere we are duty-bound to follow these laws, according to Kant.

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[3] "Kant's remarks about categorical imperatives can be confusing because although he explicitly says there can only be one categorical imperative he repeatedly writes as though there are many" (Hill, Jr., 2000: 235).

The implications for environmental decision making are interesting. By Kant's reasoning, any choices the moral agents make ought to be universally applied in similar situations across the earth.

Kant's ethics of universal duties was a method of realizing his ideal "universal kingdom of ends," a hypothetical state composed of rational beings making choices in accord with the universal law. In order to realize this perfect moral community, Kant formulated this version of the categorical imperative:

> Act in such a way that you treat humanity, whether in your own person or in the person of any other, always at the same time as an end and never merely as a means to an end. (Kant, 2004)

Because humans are rational creatures, they have inherent dignity and should not be used as means to ends; they ought to be treated as ends-in-themselves. This applies universally to all humans, according to Kant.

What are the implications of Kant's universal duty ethics to the integrated crises in ecology and democracy in the UCFRB? First, whatever decisions made ought to be in accord with the Universal law and universally applied in similar situations. Second, the human dignity of every affected member of the community ought to be respected and each moral claimant ought to be regarded "always and at the same time as an end and never merely as a means to an end" (Kant, 2004).

The Land Ethic

Aldo Leopold's influential essay, "The Land Ethic" (1949), describes moral philosophy in ecological terms:

> This extension of ethics, so far studied only by philosophers, is actually a process in ecological evolution. Its sequences may be described in ecological as well as philosophical terms. An ethic, ecologically, is a limitation on freedom of action in the struggle for existence. An ethic, philosophically, is a differentiation of social from anti-social conduct. These are two definitions of one thing. The thing has its origin in the tendency of interdependent individuals to evolve modes of co-operation. The ecologist calls these symbioses. Politics and economics are advanced symbioses in which the original free-for-all comptetition has been replaced, in part, by co-operative mechanisms with an ethical content. (202)

His presentation of ethics as ecologically embedded and enacted inspired my model of the moral ecosystem and community. Leopold's ethics relies on his evolutionary extension of our idea of the community. He called ethics "a kind of community instinct in-the-making" (1949: 203). He wrote:

> All ethics so far evolved rest upon a single premise: that the individual is a member of a community of interdependent parts. His instincts prompt him to compete for his place in the community, but his ethics prompt him also to co-operate...The land ethic simply enlarges the boundaries of the community to include soils, waters, plants, and animals, or collectively: the land. (203-204)

Leopold's most succinct formulation of his ecological moral philosophy is: "A thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community. It is wrong with it tends otherwise" (1949: 224-225). Leopold's highest goods—the integrity, stability, and beauty of the biotic community—are reminiscent of the Aristotelian notion of eudaimonia as energetic self-fulfillment. The highest good is the health and well-being of the land and the communities that constitute the living members of the biotic community.

What are the implications for Leopoldian ethics as a moral guide for environmental problem-solving in Butte? His standard for the good, the right, and the beautiful is based on a healthy biotic community. A healthy biotic community is a community with stability and integrity. Integrity is the ability of a living system

(individual, collective, human, and more-than-human) to recreate healthy, adaptive versions of themselves and their environmental conditions. All decisions made with this in mind value basic ecological health as a basic requirement, the highest good, and the necessary goal of environmental problem-solving.

Pragmatisms

The democratic pragmatism of Dewey and Habermas, along with Andrew Light's version of environmental pragmatism mark the last moral challenge in the moral analysis gauntlet. By taking the systemic dynamics of nature and culture seriously, these moral decision-making frameworks provide a useful integrative model with which to guide and evaluate environmental problem-solving along the Upper Clark Fork River.

For Light (2005), instead of debating metaphysical questions about the limits of hard anthropocentrism or the ontological reality of concepts like the intrinsic value of nature, we should work together to restore hard-used places together as a means of realizing "the democratic promise of restoration." In Light's normative moral philosophy, democratic participation is the means by which we should realize the restoration of hard-used places. According to Light (2005):

> To achieve these moral values, a good restoration should maximize the degree of hands-on public participation appropriate for a project, taking into consideration its scale and complexity. Volunteers should ideally be engaged in all aspects of a project, including planning, clearing, planting, maintenance and so on. This does not mean that expertise should be abandoned in restorations; it just means that whenever possible, restorations are better when experts help to guide voluntary restorationists. Based on such arguments I have claimed that the practice of restoration ecology is as much about restoring the human relationship with nature as it is about restoring natural processes themselves. Not to attempt to achieve both of these ends in restorations is to lose the potential moral benefits of restoration. (8)

Light's vision requires the restoration of living democratic participation as the best way to restore ecological integrity to hard-used places.

Habermas and Dewey have outlined what democratic participation should look like. Dewey (1927) emphasized freedom of critical inquiry and non-coercive communication as the means to the end of creating his "Great Community" which he described as a "communicating community" in *The Public and Its Problems*.

The democratic pragmatism of Habermas also emphasizes freedom and equality of participation. He also requires non-coercive discourse in the democratic problem-solving process. He further suggests that decisions are only valid if freely accepted by those who will be affected by decisions.

In the democratic and environmental pragmatisms of Dewey, Habermas, and Light, an invigorated public sphere, if certain conditions exist, becomes means by and through which the injured ecosphere is to be restored. Pragmatic moral agents value the free, fair, open, non-coercive, pluralistic, honest structures and processes associated with the democratic environmental problem-solving processes. As Light (2005) suggested above, this does not require giving the whole of the process over to the public, but does require taking public opinion seriously by making "diligent efforts to include the public" (NEPA, 1969). The pragmatic approach requires that the commitment to "meaningful participation" be facilitated and enacted by the decision-making agents. By involving the public in a meaningful way, the legitimacy of the restoration is ensured. Anything less than meaningful participation is less than legitimate.

Part I was a critical descriptive/analytical mode of analysis in three phases: recognition, diagnosis, and analysis. Part II picks up where Part I leaves off and draws the inquiry to a close by engaging in the evaluative/practical mode in two phases: evaluation and action.

SMA Part II:

Strong Evaluation and Moral Action

Strong Evaluation

Charles Taylor (1989) believed that moral decision making required strong evaluation, that is,

> ...discriminations of right or wrong, better or worse, higher or lower, which are not rendered valid by our own desires, inclinations, or choices, but rather stand independent of these and offer standards by which they can be judged. (4)

Taylor's notion of strong evaluation required critical reference to moral standards. The previous discussion presented several standards by which to judge the diminished democracy and injured environment of the UCFRB. I included a discussion of basic needs, constituted rights, and concomitant duties; of relevant laws and policies; and of the salient aspects of the moral theories of Aristotle and Kant. I chose each of these independent standards because they comprise influential living moral discourses. That is, these laws, policies, and philosophies guide and influence our actions and behaviors here and now. They are deeply entrenched moral instruments on which we frequently rely within contemporary US environmental problem-solving.

Because I share a common pragmatic and ecological attitude and perspective with the moral theories of Dewey, Habermas, Leopold, and Light, I included their philosophies as alternative frameworks with which to evaluate environmental problem-solving in and around Butte, Montana. The assertions I make are warranted against my understanding of the nature of the problems under study. At this point, judgment and evaluation are required.

My Deweyan Moral Perspective

By this point in the thesis, my inescapably Deweyan perspective is evident. The entire dissertation is peppered with references to Dewey's embodied and embedded theory of human experience, culture, and nature. Because I evaluate the strength of moral arguments partly against my Deweyan perspective, it is necessary to outline pertinent aspects of this moral approach before engaging in a strong evaluation of the moral problems in this case.

Dewey's project to reconstruct moral thinking and action is based on several commitments that, when viewed together, result in a pragmatic perspective, attitude, and orientation. Dewey's pragmatism is born of his understanding of human experience as biologically embodied, ecologically embedded, historically situated, contingent and precarious, evolutionary, irreducibly social, and educative. It requires critical engagement of the material and ideal worlds as we find them, always with an eye toward deep understanding of problems as a means to coping with them effectively. Like Aristotle, Dewey emphasizes the cultivation of practical wisdom through the constant development of one's method of inquiry and decision-making.

Deweyan pragmatism is melioristic, that is, it rests on a belief that the world can be improved through our collective critical inquiries if we inquire intelligently. It is possible, and we should, solve (or at least mitigate) the pressing problems we confront together. He holds out hope, despite the complexities of the crises we face, that we can mindfully come to some understanding of the causes and conditions of our problems and adjust our beliefs, attitudes, and behaviors in ways that lead to learning and growth, the highest moral goods in Deweyan moral thought.

Jan Garrett (2001) has identified several key characteristics of Deweyan moral philosophy. First, moral inquiry requires deep historical situation. Each problem must be understood in its historical context. Moral problems are born of their circumstances, and each problem is shaped by the unique situational factors contributing to the problem. To engage in an ahistorical moral problem-solving effort makes no sense in a Deweyan moral framework. Dewey's historical emphasis results in what Garrett refers to as the "primacy of the concrete and situational" in his approach to moral problem-solving.

Second, scientific inquiry ought to serve as a model for moral problem-solving. For Dewey this meant: (1) ideas are instruments for solving problems; (2) problems arise in concrete situations; (3) inquiry and discovery require systematic environmental engagement and observation; and (4) any insights gained are not final, but rather, become hypothetical understandings leading to further inquiry (Garrett, 2001).

Dewey's notion of science is more than *scientism*. Dewey's notion of science refers to a attitudes and methods of critical, systematic, and rational collective inquiry. Moral problems ought not be decided by intuition, feelings, or emotions alone—though

these should factor into the scientific investigation of a problem. Moral problem-solving ought to be engaged with a scientific attitude and the answers one comes up with ought to be considered, once again, as "hypothetical and tentative until the anticipated or supposed consequences which led to its adoption have been squared with actual consequences" (Dewey, 1920: 173).

Regarding Dewey's scientific moral attitude, Garrett (2001) wrote:

> In Dewey's approach, the sciences of fact become part of the apparatus of moral inquiry. Isolated and by itself, discussion of moral values often seems shrill or nagging or pedantic. But when natural sciences can be combined with ethical concerns, the combination loses these off-putting qualities and is much harder to ignore. It is to the benefit of both scientific and ethical practice when science is pursued for its social relevance and its vital importance to life. (¶ 53)

Third, Deweyan ethics rejects the "brood and nest of dualisms" the Western tradition has inherited in philosophical thought. Nature and culture, means and ends, material and ideal, arise in relation to one another and not as ontologically distinct phenomena for Dewey. This logical dismantling of dualistic thinking is especially important for this inquiry because one of the primary tasks here has been to engender a non-dualist understanding of the relationship between nature and culture, ecology and democracy, environment and community. Dewey, once again, provided the model.

These pragmatic insights, combined with the others I have sketched throughout this dissertation provide the evaluative framework by and through which I exercise moral judgment in the pages to follow. To be clear, as I evaluate the moral arguments to follow and categorize them as either *stronger* or *weaker*, I am not referring to the logical strength or consistency of the arguments. Kant, Bentham, and Mill were surely more

systematic thinkers than I am. I am evaluating these arguments in relationship with the pragmatic worldview I have adopted.

The Weaker Moral Argument

Kantian Ethics

The moral philosophy of Immanuel Kant leads to conclusions and prescriptions for moral action that are potentially useful in moral deliberations. The notion of inherent human dignity, for example is beautiful and rings true in the moral philosophies of many wisdom traditions. The problem with Kantian Universal Duty ethics is not the conclusions it draws, but the means by which those conclusions were determined. According to Johnston (2006):

> A central criticism of Kant is that he lacks a proper *psychology* of experience. This lack, noted by Hegel and his successors, concerns the ontological and transcendental underpinnings of Kant's concepts of experience; the pure, transcendental, a priori nature of his categories. As Kant does not draw these from experience, Dewey criticizes him as producing a rift between the existentially real world and the perceiving knower. Dewey feels that Kant, in searching for a solution as to how to bring the two realms together, strikes upon the idea of a transcendental self. This self brings itself to bear upon sense-material through the categories of understanding. These categories are pure, a priori logical rules for the ordering of sensory material (intuitions). An experience is created when the two realms are conjoined. The ideal realm of the categories is parasitic upon the real realm of sensory material. (518-519)

Moreover, Kant's insistence upon the absolute and universal nature of the categorical imperatives is problematic from a pragmatic perspective. Dewey insists on radical particularism, or, the primacy of the concrete and situational, as opposed to the universal moral imperatives. Absolutes lead to the end of inquiry and prevent the possibility of adaptive learning and growth, Dewey's highest goods.

Kant's conclusions are not necessarily problematic, for there are many paths to similar conclusions. In fact, it is easy to see the moral value of Kant's emphasis on good will and intention, or on the inherent dignity of the human being. The problem, according to Dewey, comes from the idealistic transcendental logic born of Kant's inadequate psychology of human experience.

The Stronger Moral Arguments

Aristotelian Eudaimonic Ethics

From an embodied and embedded perspective, health and vitality, energetic self-fulfillment, flourishing, eudaimonia, make a sensible highest good. In fact, as Lakoff and Johnson (1999) demonstrated in *Philosophy in the Flesh: The Embodied Mind and Its Challenges to Western Thought*, health and well-being is the basis for our fundamental metaphorical understanding of morality and the good life. The idea is to live well, not to merely subsist or get by. Living systems—whether they be organisms, communities, ecosystems, or democracies—are at their best when healthy and thriving. The good life is synonymous with a flourishing life. Aristotle's Eudaimonic ethics thus provide a sensible moral goal: health and vitality in living systems.

Aristotle further suggested that the cultivation of good and virtuous character by living a balanced life would lead to the development of practical wisdom. Practical wisdom is the ability to make intelligent decisions when confronted with problematic choices. Here again, Aristotle provides sensible moral goals as well as methods for realizing those goals. To live well we must develop strong character, that is, we must

cultivate the habitual predispositions that lead to intelligent decision-making. Flourishing is born of practical wisdom and moral excellence. Our ability to solve problems reflects the state of our character. From an Aristotelian perspective, diminished democracies and injured environments indicate weak character and a lack of practical wisdom. Such systems are vicious, deficient, and lacking in important ways.

Leopoldian Ethics of Ecological Integrity

From and embodied and embedded orientation, Leopold's (1949) conclusions are consistent with Aristotle's in important ways. A decision is right when it promotes the stability, integrity, and beauty of the biotic system for Leopold. Stability, integrity, and beauty are consonant with vital health, well-being, and flourishing. A decision is wrong when it leads to instability, disintegration, and ugliness. It is wrong if it leads to disease and languishing. When evaluated against Leopold's notion of the highest good, the current state of our diminished democracy and injured environments constitute serious moral problems.

Leopoldian ethics also provide a sensible justification for the extension of moral considerability to our inorganic body—the ecological systems we inhabit—the land. His emphasis on the extension of the concept of community to refer to our greater ecological community requires us to take environmental health and well-being seriously in a way that narrow anthropocentric ethics has not. Whether or not nature has intrinsic value, as Light (2005) pointed out, is less important than the fact that it is an act of enlightened

self-interest to cultivate environmental conditions that lead to our own integrity, stability, health, and well-being.

In a Leopoldian moral system, one must take the integrity of living systems seriously. Integrity refers to the capacity of a living system to reproduce healthy and adaptive versions of itself and its environment. It is a basic characteristic of life and living systems. Autopoiesis means self-creation. If life cannot reproduce itself, it eventually ceases. Disrupting integrity is harmful at a basic level because it leads to disintegration and death in living systems. As such, making decisions that promote integrity and resilience is a basic moral good within the moral decision-making framework I propose.

Environmental Pragmatism

Andrew Light's (1996, 2004, 2005) environmental pragmatism enlists the participation born of a commitment to democratic pragmatism as the surest means to the end of legitimate environmental restoration of hard-used places. Citizen participation in environmental restoration leads to the two-fold good of a dynamic and invigorated public sphere and increased vitality and well-being in the ecosphere. Dewey and Habermas provide the normative criteria for the democratic dimensions of public participation in environmental decision-making, and Light articulates the mutual beneficence among living democracies and living environments.

In *Community Over Chaos: An Ecological Perspective on Communication Ethics* (1997), James Mackin offered a pragmatic and ecological grounding for moral decision-

making based on a simple principle: nourish the systems that nourish you. He wrote, "The basic principle of my theory of communication ethics is that the individual should support the communicative ecosystem that supports the individual" (33-34). Mackin's prime moral directive is consistent with Aristotle, Dewey, Leopold, Habermas, and Light. By nourishing the systems that nourish us, we work toward the realization of what Light refers to as "ecological citizenship" as a means to the end of realizing the "democratic promise of restoration" (1995). Our environmental problem-solving systems and processes ought to facilitate this reinvigoration of the public sphere as a means to the restoration of the ecosphere. As we cope with our real and pressing environmental problems, we ought to act in ways that contribute to the health and well-being of both our democracy and our environment.

Moral Action

The final step draws the SMA to a close through a discussion of moral action. I will outline my plan for moral action through three ideas: *prescription*, *education*, and *participation*.

Prescription

The first moral action is to outline the big-picture guiding norms and moral prescriptions derived from the overall inquiry. Prescriptions are informed guidelines for solving current problems and preventing future problems. Below I have outlined four normative guidelines for US environmental problem-solvers. These moral prescriptions are not meant to totally replace the current forces guiding environmental problem-

solving, namely, administrative and economic rationalism. Rather, they are meant to displace and de-center these ethically weaker forms of environmental problem-solving. My intention is to make the goals of democratic and environmental pragmatism the evaluative criteria for judging the morality of our environmental problem-solving efforts in 21st century environmental problem-solving. Our diminished democracies and injured environments are symptoms of unwise decision-making. These prescriptions are my answer to the question: How can we recreate healthy versions of our hard-used places?

First and foremost, we must care about hard-used and vulnerable people and places. If morality is a concern for the basic needs and legitimate expectations of self and others as Weston (2008) suggested, then the first rule of moral deliberation is to *care about the needs and rights of the people and places affected by one's decisions*. We ought to value (regard as worthy and important) the needs and rights of the people who depend on us and the places on which we all depend. The moral prescription is to care about hard-used people and places as a means towards realizing environmental justice.

Second, when making decisions that will affect people and places, *value the vital health and systemic integrity of communities and their environment*. Integrity is an essential property of living systems. Integrity refers to the ability of living systems to integrate their environmental conditions into their life-structures and processes. Integrity is the ability of a living system to recreate healthy and adaptive versions of self and environment. Systemic integrity is a basic need; without it, disintegration leads to death in living systems. Aim for vital health and well-being—eudaimonia—in the public sphere and the ecosphere.

Third, cultivate authentic meaningful participation by creating conditions, processes, and structures conducive to deliberative democracy. The guiding normative principle of environmental justice requires deliberative democracy. There can be no environmental justice without authentic deliberative democracy. Public meetings and written comments do not constitute meaningful participation. Meaningful participation requires that the freely expressed concerns and ideas of the public somehow guide and influence the decision-making process. Current methods for including the public in decision-making create the appearance of dialogue but rarely result in meaningful adjustments to the predetermined bureaucratic solutions. The current mode of environmental decision-making is often referred to as decide-announce-defend. Bureaucratic inertia, backroom politics, and market dynamics become the most powerful forces. Still, however, the decisions are presented as emerging from a deliberative process that included "meaningful participation" by the public. They are called democratic but are democratic in name only. Dewey and Habermas provide useful normative guidelines with regard to the conditional requirements for deliberative democracy. Environmental problem-solvers must take authentic meaningful participation seriously.

Fourth, evaluate success or failure of democratic environmental problem-solving against the vitality of the democratic processes in combination with the health of the restored ecosystems. If the democracy remains diminished and the ecosystem remains injured, the decisions were not intelligent.

These normative prescriptions are not exhaustive, but their adoption by the network of moral agents in environmental decision-making would lead to more legitimate, and one would hope, more effective environmental restoration projects.

If decision-makers acknowledge their moral obligations to (1) care about the basic needs and rights of affected people and places, (2) make the vital health and well-being of the living democratic and environmental systems primary goals, (3) cultivate and ensure real and meaningful public participation, and (4) evaluate success and failure against the vitality of the democratic process and the health of the injured people and places, the likelihood of rendering decisions that are both legitimate and intelligent increases.

Education

According to John Dewey, education through deliberate and purposeful communication is a requirement for the survival of communities. The ultimate aim, however, is not survival, but learning and growth. Education intends to help us get better at preventing and solving problems. In *Democracy and Education* (1916), Dewey wrote:

> Society exists through a process of transmission quite as much as biological life. This transmission occurs by means of communication of habits of doing, thinking, and feeling from the older to the younger. Without this communication of ideals, hopes, expectations, standards, opinions, from those members of society who are passing out of the group life to those who are coming into it, social life could not survive…it is a work of necessity. (3)

After articulating moral prescriptions, my plan for moral action requires teaching and education. In partnership with the *Clark Fork Watershed Education Program* (CFWEP), I have already initiated efforts to integrate moral dimensions of US environmental problem-solving into CFWEP's curriculum. The CFWEP mission is to foster environmental stewardship through place-based inquiry into the UCFRB. Students

learn about environmental history and science by studying the injured ecosystems they inhabit. CFWEP's emphasis on stewardship, however, requires that the scientific information students' uncover be used to foster intelligent environmental decision-making. Historical and scientific understanding is purposeful; that is, it is a means to the end of stewardship and wise use.

Participation

Finally, my pragmatic orientation requires active civic participation in environmental decision-making. In December 2009, Butte's Chief Executive, Paul Babb, named me to the newly created Butte Natural Resource Damages Board. Along with eight other community members, I will be responsible for determining how to spend $28.3 million dollars on the remaining environmental clean-up projects within the Butte Priority Soils Operating Unit (BPSOU).

The reality of the complexities of environmental decision-making is crystal clear for this board. Some have estimated that we have $300 million dollars worth of worthy projects and less than a tenth of that to spend (Vincent, 2010). Intelligent decision-making is necessary in order to maximize social and environmental goods with limited resources. I intend to integrate knowledge gained from this inquiry into the processes of environmental decision-making for this board. My goals are to persuade my committee members to take both democracy and ecology seriously as a way to insure that our complex decisions are made in a legitimate and environmentally just manner. I intend to test my conclusions in the real world to see if they lead to increased democratic and

ecological vitality in my hard-used home, and to adjust and adapt practices when necessary.

CHAPTER VI

A SHORT ENVIRONMENTAL HISTORY OF BUTTE, MONTANA, 1864-2009

This chapter describes the conditions and guiding forces that worked in concert to shape Butte's injured ecological systems from a critical materialist perspective. In this chapter, I take worlds seriously. Butte's ecological problems were not natural, nor were they inevitable. They were the result of a perfect storm of animating forces including the logic of capitalism, technological innovation, and human labor.

Butte is the site of an ecological revolution that resulted in a metabolic rift. In short, the rate of ecological transformation outpaced the community's ability to cope with the environmental consequences of such large-scale mining and smelting operations. The onset of hard-rock mining in Butte led to the profoundly injured environment, a world turned inside-out and upside-down, and a river ran through it dispersing waste throughout the floodplain of the Upper Clark Fork River Basin. This chapter is a history of environmental problems in Butte, 1864-present.

In the first section I define environmental history. In the next, I use its methods to tell the story of the ecological revolutions above and below the Butte hill which resulted in the area's profound environmental injuries. Today, Butte is the point-source of the mining pollution that prompted the creation of the largest contiguous complex of Superfund projects in the United States. This chapter takes worlds seriously.

Environmental History:
An Earth's-Eye View of the Past

According to environmental historian Carolyn Merchant, "Environmental history offers an earth's-eye view of the past" (2002: 1). It is a way to re-conceive the history of the earth by imagining the passage of time from the perspective of an embodied mother Earth, *Gaia* in the Greek tradition, *Terra Mater* in the Roman pantheon. Philosophers and scientists have offered a number of narrative metaphors as ways of thinking about earth time. Vandana Shiva's (2005) narrative of the 46-year-old earth mother provides the most interesting and useful perspective of an earth's-eye view of the past.

Contemporary geologists often generalize the rough age of the planet earth at about 4.6 billion years. When conceiving the earth's history from an earth's-eye perspective, it helps to humanize this time span by considering the earth's life in the context of a human lifespan. In Shiva's thought experiment, the 4.6 billion year old earth is conceived of as a 46 year woman. One year in Gaia's life is roughly equal to 100 million years in the life of the planet earth. With this perspective in mind, it is often enlightening to consider when several major events in the history of the earth occurred.

The Rocky Mountains, for example, seem ancient from a human perspective at 65-80 million years old. But from the perspective of 46-year-old Gaia, they did not form until about 7 or 8 months ago. *Homo sapiens* did not appear on the scene until about 4 days ago. Agriculture and civilization developed about one hour ago. Jesus was born a little over ten minutes ago. The United States of America have been around for a bit over a minute. According to environmental historians and the vast majority of the world's scientific community, within the last 15 or 20 seconds human beings have changed the dynamics of life and living systems on earth to such an extent that the future viability of life as we know it is vulnerable.

Environmental history involves the extension of our historical imagination to thoughtfully consider the roles and relationships between humans and their environments through various spatial and temporal scales. Environmental history's methodologies and philosophies of history were put into practice long before they were formally articulated. They were prefigured by ancient historians and also the historians of the Annales School. They were called for by thinkers from Dewey (1916) to Leopold (1949). But because of Western society's tendency toward dualistic thought we have developed a deeply habituated set of cultural blinders to the real interconnections and continuities among organisms and their environments as they exist. In the retelling of human history, the environment was usually, and to some extent still is, perceived as a passive backdrop, a stage upon which the human drama unfolded, as opposed to an active and consequential force in human history. Nature's role in human history, therefore, was downplayed or

lightly considered until the development and institutionalization of environmental history in the 1970s.

Environmental history has been described as a transcendent form of history, even as the culmination of historical thought (see O'Connor, 1999) because it takes both nature and culture seriously. Environmental history involves the systematic interrogation of a diversely constituted historical record and the subsequent interpretation of that record to look for interesting relationships between human beings and their immediate environments through space and time. It is the story of the mutual influence of people and places, and as Carolyn Merchant has suggested, tends to focus on historical moments of radical change, or, in her words, "ecological revolutions" (1989).

Like environmental communication and environmental ethics, environmental history is a critical mode of interdisciplinary inquiry that takes both worlds and words seriously. As Donald Worster (1993) noted, "Wherever these two spheres, the natural and the cultural, confront or interact with one another, environmental history finds its essential themes" (3). Environmental history was born during the cultural shifts in American society and the academy during the 1960s and 1970s and was associated with the emergence of US environmental consciousness—that is, our growing collective awareness of the relationships among humans and the environment. This consciousness development was hastened by the developing awareness of real and pressing ecological problems that confronted humanity of planet earth: questions about carrying capacity of the biosphere, the effects of newly developed synthetic chemicals on life and living systems, and emerging threats posed by the creation and storage of toxic waste. It was

further hastened by mass media portrayals of mediagenic environmental tragedies like the Santa Barbara oil spill in 1968 and Love Canal in the 1970s.

Ecological Revolutions

In 1993, Merchant edited a book titled, *Major Problems in Environmental History*. In it, she and three other prominent environmental historians answered the question: What is environmental history? In so doing, several interesting contested terrains emerged among the contributors, especially among Merchant, Donald Worster and William Cronon. These contestations revolved around two topics: (1) whether to place primary emphasis on the material forces or the cultural forces in environmental history, and (2) how best to explain radical environmental changes in environmental history?

Worster suggested that environmental history falls into three identifiable categories: natural history, human productive history, and cultural history. His book *Rivers of Empire* (1985), for example, while nodding to the other forms, emphasizes Marxian ideas such as modes of production and a materialist conceptualization of history. For Worster, the processes and structures associated with certain modes of production are what we ought to study. Worster's scholarship emphasizes social structures, orderings and re-orderings, material transformations of the earth, and the power relationships characteristic of certain places and periods.

Cronon, another contributor to the volume, acknowledged Worster's materialist approach, noted its dignities, but questioned what he referred to as Worster's "excessive materialism" (1993: 10). Cronon's more humanistic, culturally based approach is based

on the belief that too much is lost in rigidly materialist environmental histories. Cronon's work represents environmental history's cultural turn and chooses to take cultural networks of meaning and behavior as the most important aspects of environmental history. In a sense, given the dynamic and open-ended nature of human culture, Cronon's approach adds another level of complexity to Worster's story of material transformations and modes of production: the world of communication and culture, which, as discussed in Chapter II, can best be thought of as nature in another form. Culture is the way humans know the world together and as such, is another mode of cognition or way of knowing.

Cronon and Worster both acknowledge that nature and culture are mutually constituted intersystems, partially connected, structurally coupled. Naturecultures exist in materiosemiotic networks. Where Worster takes his initial step in the materialist direction, Cronon takes his into the cultural realm. Each, because it places more emphasis in one area than the other, sheds light on one interesting and relevant part of the story of human/environmental relationships, but, in so doing, casts the other realm into near silence and darkness.

Merchant (1993) suggested that a hybridized approach is called for, one that emphasizes the continuities and dynamic interplay between natural and cultural ways of knowing. Merchant examined two of the most influential models of understanding revolutionary change in the past 200 years: Karl Marx's historical materialism and Thomas Kuhn's cultural model as outlined in *The Structure of Scientific Revolutions* (1962). Worster's work represents the Marxian approach, while Cronon's tends toward a Kuhnian presentation of historical change.

Merchant suggested that Kuhn's cultural approach is useful but flawed (Kuhn later admitted as much). Merchant believed that Kuhn overemphasized the internal dynamics of cultural signification in revolutionary change and leaves the material, structural forces and influences under-considered. Likewise, Marx's materialistic description of revolutionary historical transformation overemphasizes the material and leaves cultural networks of meaning under-considered, according to Merchant.

Merchant suggested that we transform our dualistic way of thinking about nature and culture into a dialectical mode of considering their relationship. Nature—the ecological world—is the material and energetic base, the limit and potential of culture. And culture, another form of nature and a different way of knowing and experiencing the living world, is engaged in constant and mutually defining transactions with the base. These cultural transactions are mediated by modes of natural production and reproduction. Centripetal and centrifugal forces are simultaneously at play. They mutually constitute natureculture and are in constant dynamic action within a materiosemiotic network.

Merchant, having turned the nature/culture dualism into a dialectical understanding of natureculture, next turned her attention to the concept of revolutionary change. She suggested the conceptual instrument of ecological revolutions as a useful tool for environmental historians. She wrote:

> My thesis is that ecological revolutions are major transformations in human relations to non-human nature. They arise from changes, tensions, and contradictions that develop between a society's modes of production and its ecology, and between its modes of production and reproduction. Those dynamics in turn support the acceptance of new forms of consciousness, ideas, images, and world-views. (Merchant, 1993: 23)

For Merchant, the ecosphere and the noosphere are connected through human experience understood in a Deweyan sense as organism/environment transactions. This is consonant with Dewey's ecological worldview and understanding of the relationships between nature and culture, and with Carbaugh's (2007) normative suggestion that environmental communication researchers ought to carefully consider both words and worlds. Her model, makes a useful theoretical instrument, especially when combined with Marx's notion of "metabolic rift" (1844).

Undoubtedly, Worster and Cronon would both acknowledge the mutuality and interconnections of nature and culture. In their scholarship, however, each tends to emphasize one over the other. Merchant's great contribution to environmental history lies in her antidualist and dynamic intersystemic conceptualization of the relationships between nature and culture, and in her suggestion that we focus on moments of radical change in these relationships—the ecological revolutions.

The transformations above and below the Butte hill from 1864-present represent a remarkable confluence of animating forces, both natural and cultural. Here, again using Merchant's model, the natural base, itself the product of geologic revolutions, was engaged via certain historical modes of human production and reproduction, which in turn were informed and influenced by particular cultural networks of power and meaning. Here, as O'Connor (1999) put it, nature and culture operate as the context and content for each other. A dynamic materiosemiotic intersystem was at work on the Butte hill, transforming it from lightly used mountain landscape to the Berkeley and Continental pits.

Metabolic Rift

In addition to applying Merchant's model of revolutionary ecological change, this history relies on the Marxian materialistic historical methods of Foster, especially as modeled in *The Vulnerable Planet* (1999). Foster's "short economic history of the environment" utilizes the *I=PAT* formula as a means of understanding ecological impact from a materialist perspective. Environmental impact (I) is a function of population (P) affluence (A) and technology (T). Environmental impact—the biophysical transformations of living systems due to human activities—is a product of the interaction of human population dynamics, political economy, and technology.

An ecological revolution above and below the Butte hill led to what Foster (2001), drawing on Karl Marx, would label "metabolic rift." Marx described this kind of ecological alienation as "an irreparable rift in the interdependent process of the social metabolism, a metabolism prescribed by the natural laws of life itself" (Marx, 1981: 949). In his 2009 book, *The Ecological Revolution*, Foster described metabolic rift as one of Marx's three primary critiques of capitalist political economy. By Marx's reckoning, the metabolic rift critique "suggests that the logic of capital accumulation inexorably creates a rift in the metabolism between society and nature, severing basic processes of natural reproduction" (49). When a rift is created, the fundamental ability of organisms (or communities of organisms) to reproduce themselves and the conditions of their existence (their environment) is lost. Integrated systems disintegrate.

From a Gaian perspective, the Butte hill was transformed from a lightly used high mountain landscape, perhaps with a few small-scale diggings of nomadic Amerindian

peoples, into the point source of hard rock mining pollution and epicenter of the nation's largest contiguous complex of environmental restoration projects under Superfund law. This dramatic transformation happened in the space of about one minute in Gaia's 46 year life. This transformation is an exemplary ecological revolution that resulted in an obvious metabolic rift because of the speed, intensity, and scale of the transformation. The integrity of the living systems is precariously hanging in the balance. They are vulnerable.

My intentions in the next section are to describe the dynamic interplay among natural and cultural systems that resulted in the injured landscapes within the Upper Clark Fork River watershed, originating with mining in Silver Bow Creek. This is a complex story in the sense that it requires the identifying and weaving together several dynamic systems in the representation of history.[4] Specifically, after defining each, I will focus on describing: (1) political economic factors, (2) technological and energy regimes, and (3) population dynamics in this place during the period of ecological revolution. I will also document the revolution through what I call "metabolic indicators," material indeces of a change in metabolic intensity, such as mine-depth or pounds of copper or tons of waste rock produced.

By "political economy" I mean the classical consideration of "the study of the social relations, particularly the power relations, that mutually constitute the production, distribution, and consumption of resources" (Mosco, 1996: 25). And, I am also referring to Vincent Mosco's "more general and ambitious definition" of political economy as "the

[4] The etymological origins of the word *complex*, according to Capra (2002), are derived from *complecti* (to weave) and *complexus* (network).

study of control and survival in social life" (26). Mosco's more expansive view draws on Foster (2001) to give "political economy the breadth to encompass at least all of human activity and, arguably, all living processes" (2). Mosco's approach is also useful because he maintains political economy's classical consideration of history, the social totality, praxis, and moral philosophy. Specifically, I will be looking at political economic actions that affect the modes of production (and reproduction), distribution, and consumption of metals mined from the Butte hill.

By "technological and energy regimes," I am referring to what Lewis Mumford (1934) called technological or power complexes, that is, networks of technology that served as the media of production, consumption, and distribution of matter and energy within a social system. Mining, for example, has moved through several revolutionary changes in technological production throughout history. According to Prain (1975), the earliest known copper mining activities (ca. 4000 BCE) operated on a small scale using human energy combined with stone and bone implements. The next significant technological and energy regime involved what Mumford called the *eotechnic* phase, or a wind, water and wood complex. Next appeared what Mumford called the *paleotechnic* phase, or "coal and iron complex" (in Foster, 1999: 18). The modern era relies on dynamite, petroleum, electricity, and steel for mining and processing operations. Gradually, through technological innovations, the scale and intensity of mining operations has led to an ever-increasing "metabolic footprint" (see McNeill, 2000: 287).

By "human population dynamics," I mean global shifts in world population, such as the significant impact of Ireland's overpopulation due to the mid-19th-century potato

famine, which led to unprecedented global immigration patterns, especially a one-way flow toward the United States and mining centers like Butte. Here, the human population is also considered as labor in the political economic equation. Historian David M. Emmons (1989: 13) described the Irish as a "fountain of emigrants" who provided the unskilled labor for rapidly industrializing societies like the United States in the post-war Reconstruction and nation-building era during the last half of the 19th century.

A Short Environmental History of Butte, Montana

In his thoughtful dissertation concerning the history of Butte and southwest Montana, Kent Curtis Alexander (2001) wrote: "The history of Western mining…is fundamentally an environmental history" (6). The history of Butte, like all mining centers, was shaped by its geology and geography. In *Sixty Million Years of History: The Formation of Butte Copper* (1984), geologist Henry McClernan wrote:

> The study of history implies a record of the past activities of man. But, in the case of Butte, its history would not be as exciting as it is, perhaps there would not have even been a city there, if particular geologic processes had not taken place nearly 100 million years before homo sapiens set foot in the Silver Bow Valley. Butte's history is inextricably tied to that part of the earth's crust lying below its surface and containing a world-class mineral deposit; a deposit that formed only because a number of very delicate geologic parameters were attained. (16)

One hundred million years is relatively insignificant in terms of deep- or earth-time (equal to one year of Gaia's 46-year life), but according to McClernan, it nonetheless marks an interesting transitional moment in the history of Butte—the formation of the "Butte granite" (quartz monzonite) of the Boulder Batholith. This formation served as the geological container rock for the area's valuable metal-laden veins and porphyry ores.

Geologists disagree about where the granite of the Boulder Batholith originated, but it is thought to have been a "molten liquid mass that formed deep in the earth's crust and rose within a few miles of the surface" (McClernan, 1984: 17). The granitic mass cooled beneath the surface, forming its crystalline structures; this contributed to the mass's tendency to fracture when subjected to seismic activity and other geologic forces. Mineralized solutions of copper and molybdenum were injected into the fractures first. Over several million years, many of these fractures became thousands of feet long and deep. "Into these fractures mineralizing solutions deposited copper, silver, gold, lead, zinc, manganese and other metals" (18-19). The rich copper veins were sometimes traced more than 1 mile below the surface of the earth.

The first documented mention of the mineralogical peculiarities of the Butte hill, according to Michael P. Malone (1981), is in the diary of Caleb E. Irvine in 1856 (7). According to Malone, Irvine and a small trading party camped on the hill enroute to trading posts. Irvine noted a small hand-dug "trench" and nearby, an elk-antler that was apparently used as a pick or digging stick. Malone placed Irvine somewhere near the Original lode on the Butte hill in Town Gulch (now Dublin Gulch), directly atop Butte's world-class mineral deposit. Irvine guessed that native peoples were digging at the exposed metals on the hillside. His explanation is plausible according to archaeological evidence in Europe and America (see Prain, 1975).

While Irvine camped along the southern flank of the Boulder Batholith miners were working the placer diggings around the American West with great fervor and intensity. But gold wouldn't be discovered in the Butte area for another eight years.

In 1862-3, prospectors in the region searching for the next California explored the mountainous regions of present-day Montana. They discovered massive amounts of gold in Bannack (1862), Alder Gulch (1863), nearby Virginia City (1863), and in Last Chance Gulch (1864). Prospectors from Alder Gulch discovered traces of "color" in the creek they named Silver Bow in 1864. Silver Bow Creek is the northeasternmost tributary to the Columbia River, a gigantic cyborgean system that Richard White (1995) has called "the organic machine." These rootless miners noted the tell-tale signs of metal-rich crust as they meandered the gulches and gullies surrounding the solitary conical butte that would later provide the mining camp its name. The Summit Valley mining district was formed on the hill in 1864. Butte's gold years were significant—but only marginally so when compared to gold camps of the time and area.

The Pre-mining Environment

The ecological world that Butte's first prospectors found as they entered the Summit Valley via Silver Bow Creek was very different than the one that would result in the nation's largest complex of Superfund sites nearly 120 years later. James Cook, one of Butte's pioneers and a former jailer, recalled green grasses so tall in the valley that cattle could scarcely be seen. Another chronicler of the early landscape wrote of the evergreens covering the "gently undulating foothills" surrounding the town. In the valley, strawberry and alder bushes grew along with a variety of wildflowers, grasses, willows and shrubs (Hortsmann, 1984: 14).

Trappers and Ranchers described the Deer Lodge Valley, connected to the Summit Valley via Silver Bow Creek, as a beautiful and productive landscape as early as

the 1830s. Warren Ferris, a trapper in the American Fur Company, described the valley this way in 1831.

> All the streams by which it is intersected are decorated with groves and thickets of aspen birch and willow, and the occasional clusters of currant and gooseberry bushes. The bottoms are rich and verdant and are resorted to by great numbers of deer and elk. (Hortsman, 1984: 15-16)

Butte was never a rich and diverse Garden of Eden, however. The high altitude, lack of water, and brutal winters limit the fecundity of the soil and the length of the growing season. The land is hard like the granitic soils of the Boulder Batholith. Here, rainwater running over much of sulfide-rich landscape becomes acid mine drainage. The soils on the hill are naturally hostile to many forms of life.

Still, the ecosystem the prospectors found was functional and had operated relatively undisturbed since the last ice age. Though only seasonally inhabited, the watershed was home to an enduring and integral living ecosystem fed first by small headwater streams of Silver Bow Creek: Blacktail, Little Basin and Yankee Doodle Creeks.

19th-Century Placer Mining and Its Environmental Problems

Gold miners in Idaho and Montana Territories were explorers and prospectors, nomadic by nature, wandering the foothills in search of the yellow dust. Many were veterans of the California diggings. Still others were greenhorns, pushed and pulled into the West in search of a better life. The miners were mostly men and a high percentage were foreign born in comparison with the rest of the United States. They comprised Civil War veterans and deserters from the Confederate and Union armies, immigrants from

England, Ireland, Germany, Central Europe, Turkey, and China. The boom and bust cycles of gold camps kept miners moving, always searching for the next California. Primarily through the Idaho diggings, gold miners found their way into present-day Montana.

The population in the Butte area went from the occasional seasonal inhabitants on or before 1863 and peaked as a gold camp around 1867 with nearly 5,000 people in the general area of Butte. By 1870, as the relatively meager placer gold played out, 241 people remained. The 98 Chinese, who often entered a gold camp near the end of its productive period to re-work (often successfully) already-mined areas, signaled the end of the easy gold in Butte. According to Malone (1981), the Butte area was dwindling into another ghost town.

Gold mining technology had developed very little in hundreds of years. The pick and shovel, the gold pan, the rocker ("long tom"), and the sluice box composed a gold miners toolkit. Initially, placer deposits were concentrated in streambeds. Erosion, water, and gravity worked in concert to wash gold dust into the streambed. All a miner needed was a pick, shovel, and gold pan. Later, after initial deposits played out, the introduction of a sluice-box or rocker was added to the process to move more earth and water through the miner's hands.

In Butte, at its peak, nearly every workable foot of Silver Bow Creek and the surrounding creeks were claimed and worked with a human labor, wood, water, and iron energy complex. The sound of clanking picks, moving water, rock, and wood, was briefly joined by the heavy staccato sounds of two early attempts to develop crude ore crushers

with the tools on hand between 1866-7 (Shovers, et al., 1991). No major developments in placer mining technology were implemented on the Butte hill. However, as the digging played out, the scale and scope of their work increased. By 1869-1870, the gold miners on the hill had developed larger sluice-boxes and rockers to perform the same function over larger areas for diminishing returns. While the technologies were relatively crude, the combination of human labor and the increasing scale and scope of the tools created a significantly changed landscape. According to Alexander (2001), the gold miners "etched thousands of miles of ditches into the mountains" (68) of gold country in south west Montana.

Environmental problems were largely localized phenomena during the gold camp days, in part due to the crude implements and methods these early miners employed. The streams were hardest-used and most affected. The bottoms were turned over in search of gold dust. The resulting sedimentation prevented primary photosynthetic production, which led to a loss of plants, the bugs that fed on them, and the fish species that fed on the bugs. The gulches, gullies, and streambeds around Butte were etched with the gold-miners footprints.

Still, by 1869, as the camp existed precariously close to becoming the next of hundreds of ghost towns across the American West, one reporter from the *New North-West* of Deer Lodge described Butte as a "pleasant town, sunny, lying away up the hill, fair in the eye of the sun, broad-streeted, well-built, overlooking a beautiful circular valley, and yet central to the vast extent of placer mines" (Alexander, 2001: 69-70). While gold mining altered the dynamics of the living systems in the watershed, the scale,

scope, and intensity of placer mining's effects were relatively insignificant compared to the Butte's quartz mining periods.

19th-Century Quartz Mining and Its Environmental Problems

In 1870, Butte was a far-off hinterland, disconnected from the railroad tracks and telegraph wires that were beginning to connect the eastern US to the West, and the USA to Europe and the rest of the planet. No census was taken in Butte. A steady few, however, stuck around the hill and continued to try to develop the strange and metal-rich ores found there. Early in Butte's gold-camp history, several significant silver and copper discoveries were noted. In 1865, for example, a 6-7-ft-wide, high-grade copper vein was found in the Parrot lode (Shovers, et al, 1991: 4).

Hard rock mining, also called "quartz" or "lode" mining, is a radically different venture than surface placer mining for gold. It requires tremendous capital investment in labor and infrastructure, and it also requires scientific and managerial expertise. Moreover, during this period, recovered ore had to be shipped by horse-drawn cart to Utah and then to Swansea, Wales, for processing. Butte was simply too far removed from the rest of the world to take full advantage of its obvious mineral wealth. For a variety of reasons, including expensive recovery, shipping, and processing costs, hard rock mining was not a viable venture until 1875.

Butte's population continued to dwindle. By 1874, 50 people inhabited the area, serviced by one tavern (Shoebotham, 1956). William Farlin, a veteran hard-rock miner from Pennsylvania who came to Butte through the Idaho and then the Virginia City gold fields, tried in vain for several years to work the intriguing black quartz reefs of his

Asteroid claim. In 1874, Farlin, too, abandoned Butte, but he had some ore samples from the claim assayed in Idaho. They proved to be rich in silver and copper. He returned to Butte and re-staked his claim as the Travona under the General Mining Law of 1872 on December 31, 1874. Farlin convinced W.A. Clark, a bank-owner and fierce mining entrepreneur from Deer Lodge by way of the Colorado gold fields, to finance the 10-stamp Dexter Mill. Farlin's operation was promising and "galvanized the camp into a frenzied activity" (Malone, 1981: 16). Clark began to acquire old claims, including the Travona. He sent the copper-rich ore to Corinne, UT, and on to Wales for smelting. Within a year, Butte's population again swelled to nearly 1,000 people. In the centennial year of 1876, Butte City was officially constituted and a street plan developed. Two years later, the United States Congress would pass the *Silver Purchase Act*, which made silver coins legal tender in the United States and increased American demand for silver. Within the next four years, the population of Butte, now a bustling silver town, would more than triple.

Unlike gold mining, hard rock endeavors advanced at a rapid pace during this era because of a convergence of factors, including the professionalization of mining engineering, technological innovation, and increased global capital investment. In 1908, a professor at the Columbia School of Mines in New York noted, "...undoubtedly greater progress was made in mining in all its departments during the period of 30 years beginning with 1860 than had been made during the preceding 500 years" (in Wyman, 1979: 86). Much of the innovation had been developed at the Comstock mines in Virginia City, Nevada. By 1860, steam-hoist machinery had been installed at the Ophir mine.

Within a year, miners had tunneled their way 160 feet below the earth's surface. In 1866, Alfred Nobel invented dynamite and the increasing intensity of earth moving activity advanced even more rapidly in hard rock mining districts across the world. By 1868, they had reached a depth of 1,000-ft.

By 1870, 5,802 miners worked the Comstock: 2,155 of them were Irish. The Comstock served as a direct conduit of labor, technology, and managerial expertise for the hard rock mines of Butte, Montana.

Marcus Daly (1841-1900), one of Butte's Copper Kings, embodied the animating forces of his time better than most. In Daly, we see the convergence of global population dynamics and migration patterns, political economic forces, scientific and managerial expertise, and technological innovation. Malone (1981) described him as "one of the greatest practical miners and mine developers who ever lived" (18). He was born in Ireland to poor Catholic parents and grew up during the potato famine years. At 15 and on his own, he joined the hundreds of thousands of

Irish who migrated to the United States by way of New York. He worked as a longshoreman and telegraph operator before moving to the American West via ship to, and then over, the Isthmus of Panama. He landed in San Francisco, and by 1862 made his way to Western hard rock mining frontier at the Comstock Lode. He learned the trade, befriended the well-known and powerful (including Mark Twain and George Hearst), and rose to the position of mine foreman at the Comstock, a job he held for six years. Intelligent but without formal education, Daly's rough edges endeared him to his mostly Irish miners. To them, he represented the possibility of a poor Irishman making it big.

Eventually, Daly was hired by the Walker Brothers, a well-known banking family in Utah, to run their Alta mine.

In 1875, as the quiet gold camp transformed into an incipient silver town, two prospectors, McEnry and Packard staked the Acquisition claim and sent ore to the Walker Brothers for assaying. It proved rich in silver, and the Walkers sent Daly to Butte to investigate in August of 1876. Butte was still isolated from most of the world at that time. In order to get there, Daly took a train from Utah to its terminus in Franklin, Idaho, and from there rode the rest of the dusty way in a horse-drawn coach. What he found so impressed him that he brought two of the Walker Brothers and a mine appraiser with him in September. They acquired several mines, including the Alice, near the top of the hill. Today, the hamlet of Walkerville bears their name. Daly and his family moved to Butte to run the Walker acquisitions. He ordered the dismantling of their 20-stamp mill at Ophir, Utah and had it shipped it to Butte. By October 1876, Daly had the mine up and running with a small, mostly Irish, workforce. One year later, Daly's miners had reached a mine depth of 200-ft (Shovers, et al., 1991: 18).

The Alice, under Daly's management, quickly proved to be an incredibly profitable silver mine, attracting the attention of outside investors to Butte. *The Butte Daily Miner*, W.A. Clark's newspaper, described The Alice's development under Daly as "the first gun to awaken Eastern capitalists to the extent and permanence of our resources" (Malone, 1981: 20). The Alice was incorporated in 1880 at a value of $10,000,000 and had sixty stamps crushing silver ore. The mineral wealth of the Butte hill attracted massive amounts of outside global investment.

In December of 1881, the first of several railroads arrived in Butte, easing transportation costs and serving as a conduit for labor from the far reaches of earth. Global capital investment continued. That same year, the Lexington Mining Company, a French corporation, built a 50-stamp mill in Walkerville. A London-based company built a 90-stamp mill in 1886 to service the Bluebird Mine. Butte boasted more than 300 stamps crushing silver ore by 1887 (Shovers, et al., 1991: 6). In 1889, Montana became a state. It is nicknamed, partly based on the fantastic mineral production of Butte, the Treasure State. The state motto is *oro y plata*, which is Spanish for "gold and silver." Silver production continued apace in Butte until the repeal of the *Sherman Silver Purchase Act* in 1893, effectively cancelling the purchase of silver for the coinage of money and devastating silver mines.

By this time, however, Butte had already become the most productive copper camp in the world, surpassing Michigan's Keweenaw Penninsula in 1887 with more than 78 million pounds of copper produced.

Copper was in high demand for several reasons, especially the electrification of the United States and the world through technologies like the telegraph and Thomas Edison's incandescent light bulb. It is during this same period that Butte's first major environmental problems were noted.

In 1875, Michael Hickey, a Civil War veteran of the Union army staked the Anaconda claim because of the obvious copper carbonate outcroppings on the hill. He named the claim after a newspaper description of his commander's strategy to enfold the Confederate forces like an Anaconda snake. He was a small-time miner and was

primarily in search of gold and silver. The copper-laden ores proved too tough to reduce, and in 1880, Hickey and his partner, Charles Larabie, sold their interests in the mine to Marcus Daly. Daly, convinced that "there [was] a mine in the Anaconda," had recently sold his interests in the Alice mine and invested in several Butte properties (Malone, 1981: 25).

Daly next sought financial support from his friends in San Francisco: "Honest" George Hearst, James Ben Ali Haggin, and Lloyd Tevis. Together, they formed a syndicate that funded and decided the direction of future endeavors of the company until 1895.

Early in Daly's operation of the Anaconda, his miners found a "new material" at the 300-foot level. When Daly descended to inspect the mine, he quickly realized he had hit what was to become "the largest deposit of copper sulfide the world had ever seen" (Marcosson, 1957: 32). Daly, in a shrewd move, immediately shut down all mining operations and moved in to purchase the claims adjacent to the deposit.

By 1883, the Anaconda mine was 600-feet deep. By 1885, the *West Shore* magazine out of the Pacific Northwest wrote that "the largest, busiest and richest mining camp in the world to-day is Butte, Montana" (Malone, 1981: 30).

The tink-tink sounds of the busy gold camp gave way to the heavy crushing thrum of the hard rock mining town of Butte. More people were using more effective instruments moving more earth ever faster. The metabolic footprint of the company increased apace. The metal-laden crust was turned inside out in the search for valuable ore deposits within the Richest Hill on Earth.

Eventually, the productive camp attracted investors from San Francisco, New York, and finally London, the center of the financial world during this period. The prevailing trends in large-scale industry at the time were toward concentration of ownership and vertical integration of production. More was concentrated into the hands of fewer. Familiar names like Hearst, Rockefeller, and Rothschild all held a significant interest in various corporate formations of the Anaconda Company during the first decade of its corporate existence.

This industrial period was also characterized by a transition toward scientific management of the production processes. Daly, a self-educated Irish immigrant, had seen the profits technological innovation could create at the Comstock. He brought that appreciation to Butte and applied it to the mines under his management. Daly, for example, installed electric lights in his mines as early as 1880, merely two years after Edison invented them. W.A. Clark's paper wrote that it was a "difficult matter for the boys to tell whether they are on day or night shift" (Shoebotham, 1956: 154). With electric lights, 24-hour mining entered the picture and nearly doubled the metabolic rate of Butte's geomorphic transformations.

It is during this period that the nature of the area's environmental problems intensified. Several early attempts at smelting and reducing Butte's complex ores via the process of "heap roasting" led to open social protests by many of Butte's citizens as early as the 1880s. Butte, once "fair in the eye of the sun," had become barren and hostile to life because of the smoke and pollution created by so many crude and destructive hard

rock mining endeavors on the hill during this incredible period of increased metal mining activity. According to MacMillan (2000):

> By 1890 practically all the vegetation in Butte and on the surrounding hillsides had disappeared. For the four trees that survived in the city, there was, one newspaper reported, 'general commiseration.' (30)

20th-Century Hard Rock Mining and Its Environmental Problems

As the old guard passed on and the Anaconda Company was enfolded into larger corporate networks and webs, scientifically trained mining engineers, lawyers, and bankers transformed the company through technological innovation, streamlining of production processes, vertical integration of nearly every phase of copper production: "from mine to consumer" (Marcosson, 1957: 167).

Daly, early on, led the way. The Anaconda Company developed the world's most technologically advanced smelters and reduction works to locally process a variety of precious and base metals and created the smelter town of Anaconda in 1883. It also ventured into logging and milling to satisfy its vast need for fuel for steam machinery and for mining timbers. In the process it established the logging town of Hamilton in 1890. In 1907, Anaconda created the Montana Power Company to feed its always increasing energy requirements. It expanded its global mine holdings and diversified into the production of other valuable elements such as phosphorus for fertilizer production. It created copper and brass works to add value to their metals for direct sale to the copper-hungry global markets of rapidly industrializing countries. Anaconda provided copper for the war effort in World War I. It weathered the economic contractions of the post war economy and the Great Depression. It again ramped-up production during World War II

and in the post-war American period of economic exuberance and expansion. Anaconda's footprint was global. The Anaconda Company was a vast metabolic and cultural force, transforming people and places from Butte to Chuquicamata Chile (see Finn, 1998).

Anaconda continued to expand during the 1950s. In Butte, the Greater Butte Project and the Berkeley Pit introduced new technologies and methods for the mining of the low-quality ore bodies that remained below the hill. The Kelley Mine could haul 52 tons of ore at a time and penetrated the earth to a depth of one mile below the surface. Some 2,500 miners still worked underground during this time period.

Underground mining continued until ARCO purchased The Anaconda Company in 1977. Mining continued in the Berkeley Pit until 1982. When the pit was shut down, the water pumps which diverted groundwater that naturally flowed toward the pit like a giant sink were turned off. The Berkeley Pit and the underground workings of the hill's more than 10,000 miles of tunnels began filling with highly acidic water and they continue to fill to this day. The critical water level for community safety and health will be reached in 2023 (Pitwatch, 2010).

Enough copper was mined from the Berkeley Pit to pave a four-inch-thick interstate highway the approximately 360-miles from Butte to Salt Lake City, Utah. (Pitwatch.org). For every pound of copper produced, tons of waste rock (overburden) resulted. The overburden was piled in the man-made foothills to the Continental Divide that surround the city. Heavy metals that could not be rescued from the highly efficient reduction processes still leach from the waste rock during rain storms and as snow melts. This is one major source of pollution in the community.

In 1986, ARCO sold Anaconda's Butte mining operations to Montana Resources Incorporated, a subsidiary corporation to Washington Corporation owned by Dennis Washington, Butte's current copper King (Munday, 2008). MRI has successfully operated The Continental Pit, an open-pit copper and molybdenum mine that employs roughly 300 workers. The scale and intensity of the operation is awesome. Today, giant haul trucks move 300-tons of rock at a time, 24-hours a day, 365 days a year. The Continental Pit is nearly as deep as the Berkeley Pit today. The mine projects another 20 productive mining years in Butte.

Shortly after ARCO ceased operations in the Berkeley Pit, a lawsuit under *CERCLA* (1980) was filed on behalf of the people of Montana, especially those most affected by the environmental problems originating in the Company's mining and smelting operations around Butte and Anaconda. This initiated the environmental clean-up and restoration projects in the area. The projects have been underway for more than 25 years and will likely carry on for another quarter century. Over $1 billion has been spent to date in the process.

21st-Century Environmental Problems

The scale and scope of the environmental injuries from Butte to Milltown, approximately 110 river miles, are staggering. Four National Priorities List Superfund sites interlock around the stream channel of the Upper Clark Fork River to form one of the largest environmental restoration projects on earth. The state of Montana identified and described ecological injuries to nine geographic areas from Butte to Milltown along the Upper Clark Fork Watershed. They are as follows: Butte hill groundwater resources,

Butte Area One ground and surface water resources, Silver Bow Creek aquatic and riparian resources, Montana Pole groundwater and soil resources, Rocker groundwater and soil resources, Smelter Hill area upland resources, Anaconda and Opportunity Ponds and other Anaconda area resources, Upper

Clark Fork River aquatic and riparian resources, Milltown groundwater resources. Damages to these resources were "caused by the release of hazardous substances as a result of mining and mineral processing operations of ARCO and its predecessors" (NRDP, 2001: 8).

The following descriptions of the ecological injuries in question come from a 2001 report prepared by the Montana Natural Resource Damage Program (NRDP).

The Butte Hill Groundwater Resources

The Butte Hill groundwater resources are contaminated by high concentrations of metals and other chemicals "grossly in excess of drinking water standards" (11). The groundwater on the Butte hill is contaminated by the leaching of mineralized materials in the overburden piles and in underground workings. The product is acid mine drainage. According to the report:

> Presently, the total volume of injured groundwater in the Butte Hill alluvial aquifer is estimated to be 4,860 acre-feet. The aerial extent of the injured groundwater in the bedrock aquifer is about 4,133 acres (6.5 square miles) and in the alluvial aquifer, about 505 acres. When the [Berkeley Pit's] critical water level is reached, the volume of contaminated water in the Pit is expected to increase to 196,000 acre-feet; at that time, the volume of the contaminated groundwater in the bedrock aquifer will have increased to about 131,000 acre-feet (12).

Butte Area One Ground and Surface Water Resources

This area of town operated as an industrial sewer for mine wastes and has resulted in profoundly injured ground and surface water resources.

> Since the late 1800s, disposal practices from mining and milling operations in Butte have resulted in the presence of tailings and other mining-related wastes along the Metro Storm Drain, Silver Bow Creek, and throughout the city of Butte…In addition to these waste sources, dispersed surface and buried tailings, mine and mill sites, dumps, and contaminated fill areas are located throughout Butte. These sources…contribute to the surface and groundwater contamination. (13)

Silver Bow Creek Aquatic and Riparian Resources

Silver Bow Creek and its small tributary streams are the Columbia River's easternmost headwater streams. Like the Columbia River, this fluvial network has operated as a kind of "organic machine" for most of the last century and a half. The first five-mile reach of the stream has been reclaimed, and an additional 18 miles is in the process. According to the NRDP report:

> From the late 1800s until the 1980s, tailings and other mining wastes containing hazardous substances (including arsenic, admium, copper, lead, and zinc) were discharged into Silver Bow Creek. (15)

This activity resulted in toxic surface water resources; streambed sediments with high concentrations of hazardous materials; elimination of river life including benthic macroinvertebrates and nearly all fish species; a polluted flood-plain; the elimination of most other river life including otter, mink, and raccoons; and reduced populations of birds and other wildlife along the riparian areas.

Montana Pole Groundwater and Soil Resources

The Montana Pole plant was used to cut and prepare mining timbers. The primary contaminant in this area is pentachlorophenol (PCP) which was released directly to the ground surface and contaminated underlying groundwater resources. "An estimated 1.1 million pounds of PCP contaminated the site" (17-18). Other hazardous contaminants include: benzene, toluene, ethyl benzene, and dioxins and furans. This area also contributed to the contamination of Silver Bow Creek.

Rocker Groundwater and Soil Resources

Rocker, a small town site located along Silver Bow Creek about six miles west of Butte, was also home to a timber framing and treatment plant. "While arsenic is the contaminant of most concern, contaminants in the groundwater include cadmium, copper, lead, zink, iron, manganese, sulfate and polynuclear aromatic hydrocarbons" (19). The acrial extent of the damages is about 26 acres.

Smelter Hill Area Upland Resources

The Anaconda Smelter, built in part to remedy Butte's air pollution at the turn of the 20th century, resulted in 11,366 acres (17.8 square miles) of injured upland landscape. The smelter, the largest of its kind in the world, released tons of contaminants that settled and deposited onto the land and denuded it of vegetation. This resulted in loss of topsoil. The soils became toxic to plants and proved devastating to entire upland ecosystems. This area is characterized by elevated levels of arsenic, cadmium, copper, lead and zinc.

Anaconda and Opportunity Ponds and other Anaconda Area Resources

Five areas in and around the smelter city of Anaconda were injured by large and ongoing "disposal, releases, and spills of solid mining wastes, milling debris, smelting by-products, and process fluids…have caused injury to the area's groundwater, riparian vegetation, and wildlife resources" (20). The total volume of injured groundwater in the Anaconda area is estimated to be 440,000 acre-feet extending over 40 square miles. In the Opportunity Ponds, one of five subareas within this site, the complete absence of vegetation has completely eliminated wildlife across 3,400 acres.

Upper Clark Fork River Aquatic and Riparian Resources

The Upper Clark Fork of the Columbia served as a receptacle for all of the toxics moved by its headwater streams from Butte and Anaconda. Repeated flood events common to the region dispersed upstream toxics across the entirety of the river's floodplain. Tailings piles, sometimes 15-feet deep, form "slickens" along the stream bank and leach contaminants into the river system. Animals, from insects to humans, metabolize these toxins into flesh. The integrity of the river system is precariously situated due to the environmental damages.

Milltown Groundwater Resources

Until 2008, at the confluence of the Upper Clark Fork and Blackfoot Rivers, Milltown dam trapped most downstream flowing contaminants. They settled into the streambed and leached into local groundwater supplies of the people in the communities

of Milltown and Bonner. Although the dam was recently removed as part of the cleanup efforts, the groundwater contamination problems still exist.

Summary

Despite the triumphal rhetoric in corporate environmental histories like Marcosson's *Anaconda* (1957), copper mining in Butte, Montana was not a necessary, inevitable, and natural expression of American progress. The hard rock mining that emerged upon the Butte hill was created at the confluence of several obvious animating forces: the logic of capitalism, global population dynamics, post-Civil War nation building, and technological innovation. In short, the dramatic increase in the scale and intensity of Butte's geomorphic agency resulted in an ecological revolution. The change in ecological dynamics was so intense that a metabolic rift opened between the communities inhabiting the hill and the ecosystem that supported them. Mining turned the world inside out, and a river ran through it, dispersing contaminants from Butte to Missoula.

CHAPTER VII

CONCLUSION

The final chapter identifies key insights, notes significant limitations, and examines scholarly contributions of this dissertation research. This chapter concludes with a consideration of the value of this inquiry into the democratic and moral problems of the community of Butte, Montana, and an expression of my hope for the future of this hard-used community.

Key Insights

As stated in the first chapter, this work is atypical in form, content, and methodology. I am thankful to have been given the academic freedom to explore these subjects in novel ways. The inquiry has yielded some interesting and, one would hope, useful insights.

Key insights within this dissertation include: (1) identification of the complex and integrated nature of US environmental and democratic problems; (2) clarification of the relationships among nature, environment, culture, and communication from a pragmatic perspective and based on insights from contemporary scientific investigations in

ecological and cognitive science; (3) articulation of the role pragmatic environmental communication theory can and should play in broadening and deepening our understanding of the areas where nature and culture overlap and merge; (4) clarification and articulation of the moral dimensions of our integrated crises in democracy and ecology in the US from a pragmatic perspective; (5) articulation of an underlying metastructure in practical and systematic moral reasoning frameworks (i.e., recognition, diagnosis, analysis, evaluation, and action); (6) articulation of the components and dynamics of what I call *the moral ecosystem*; (7) reinterpretation of Butte history from a critical and materialist perspective through the concepts of ecological revolutions and metabolic rift; and, (8) suggestion of principled and pragmatic normative criteria to guide future US environmental problem-solving in hard-used places such as Butte, Montana based on a systematic moral analysis.

Limitations

This work is not without limitations, however. Perhaps the most obvious is my attempt to explore a variety of subjects in a variety of ways. The inquiry may have been spread too thin at times, though I would argue that the center holds. Any time one tries to describe the particular and the general through a variety of methods and across a number of disciplines one risks overreaching. Mixed methodologies and trans-disciplinary inquiry often risks slipping into dilettantism—the delight in subjects about which one knows little. That said, I believe the work avoids this peril because, as a student and professor of ethics, communication, and environmental history, I have developed depth knowledge in each of these areas. Were I to begin this project tomorrow, however, I would write less

about the details of Butte's environmental history (though I still believe it is an integral part of the story) and more about the particular community struggles for justice that have so greatly contributed to the community's collective character through the last 150 years.

Another obvious limitation of this work is the deeply entrenched perspective I bring to the table. I am part of the community I write about. And, I love this place and these people. I have made no claims to objectivity, but have tried to maintain a certain distance from the ongoing public participation in Superfund decision-making in the Upper Clark Fork River Basin. For example, I have never actively participated in public meetings, or contributed comments to the EPA regarding the many problematic aspects of the Superfund cleanup projects under way. Still, I side with the frustrated citizens of the UCFRB. I have made no attempt to cloak this research in a false notion of objectivity. But, always, I have been critical of my own ideas, have been responsive to the critical insights of others, and have made diligent efforts to be open-minded and fair in my representation of the stories I have been writing about for the last five years.

Another substantial limitation of this work concerns a neglect of the emotional and pre-rational aspects of moral decision-making. In these pages, I have focused on systematic and rational moral analysis, but have neglected the intuitive and emotional origins of our ethical impulses. In many ways, for example, this dissertation research is born of my emotional responses to the pain and suffering of the most vulnerable members of my community. Were I to rewrite this dissertation, I would weave the insights of Dimasio (2003), Gladwell (2005), and Williams and Newton (2007) into my discussion of the moral dimensions of our integrated crises in democracy and ecology. Morality is

informed by both reason and intuition, and my consideration of the emotional and intuitive origins is too light.

Though there are certainly several other limitations of this work, the final and most glaring one as I look back on the work from the perspective of the final chapter is the neglect of Habermas's (1979) relevant and useful notion of a *legitimacy crisis.* According to Habermas, "Legitimacy means a political order's worthiness to be recognized" (1979: 178). In a democracy the negotiated and collective values and will of the common people are to be expressed by institutions that represent them. Legitimacy is, in part, measured by the degree to which governing institutions represent the values and will of the people. A legitimate institution is fit to exercise power in an effort to realize community values. Institutions that ignore the common good they say they are working to create and protect are *illegitimate*—unfit to exercise power in the name of the people. Decisions made in the name of the public that fail to meaningfully involve the public are suspect, that is, their legitimacy can rightly be called into question. Such decisions ought to be challenged. My future reworking of this aspect of my research will surely pay more attention to Habermas's critical notion of legitimacy crisis.

Contributions

With several of the important limitations of this research acknowledged, I wish to turn my focus upon some of the most interesting contributions I hope this inquiry has made to the lively academic conversations I am attempting to participate in.

First, in the inaugural volume of *Environmental Communication: A Journal of Nature and Culture* (2007), Cox posed a provocative first question to the members of the

environmental communication discourse community in the opening essay: "Does environmental communication have an ethical duty?" (5). In many ways this entire project has been an affirmative answer to Cox's interesting first. My answer seems to echo the work of Peterson, Peterson, and Peterson's (2007) contribution to the same volume. Peterson, Peterson, and Peterson suggest that the answer is, without question, yes. They state that, as a "crisis discipline," environmental communication "should facilitate environmental democracy" (74). Scholars who study the problematic aspects of public participation in environmental decision-making, for example, should actively work to translate their knowledge into practical wisdom and action in the public sphere precisely because our democratic and environmental systems are in crisis states that require immediate intelligent action in order to avert impending disasters. My work contributes to this conversation, affirms this response, and provides a framework for future environmental problem-solving efforts.

Second, this dissertation contributes to the development of an authentic Deweyan voice for environmental communication research and environmental ethics. Though not often considered as a significant voice in either discourse community, Deweyan pragmatism, as I have tried to demonstrate, offers many useful ideas in this arena. This dissertation, from beginning to end, has been an attempt to resuscitate Dewey's lost voice because it is both useful and relevant in so many ways. Moreover, Dewey's philosophy is an elegant vision that entangles nature, culture, community, communication, democracy, environment, and ethics together in a coherent philosophical framework. His critical and scientific attitude is expansive and not easily translated. But, with work, it is

comprehendible and useful. I intend to continue translating Dewey into 21st century English. I intend to continue exploring the practical implications of his important work.

Finally, This work contributes to the development of a sophisticated and philosophically defensible pragmatic moral orientation that may be able to guide and alter future environmental problem-solving efforts in places like Butte, Montana. The normative guidelines that emerged in Chapter V can and will be used as talking points in future environmental problem-solving deliberations in Butte, Montana. As a member of a newly formed citizens advisory board appointed by the Governor of the State of Montana, I can now work to ensure that the voices of the most vulnerable are heard through the rumble of the bureaucratic and corporate decision-making machinery. This research will lead to, at the very least, actual attempts to persuade decision-makers that the best decisions will result in both a vital democracy and a healthy environment.

Closing Thoughts

Mary MacLane, a clever and controversial young Butte socialite from a well-to-do family living in the raucous wide open town of Butte at the turn of the 20th century, wrote about her experience living on "The Richest Hill on Earth" in her nationally renowned book, *The Story of Mary MacLane* (1902). Early in the book she noted that:

> Butte and its immediate vicinity present as ugly an outlook as one could wish to see. It is so ugly indeed that it is near the perfection of ugliness. And anything perfect, or nearly so, is not to be despised. I have reached some astonishing subtleties of conception as I have walked for miles over the sand and barrenness among the little hills and gulches. (7)

Three aspects of this passage are striking when read through contemporary eyes.

First, had Ms. MacLane been walking through "the sand" in the 21st-century she would have known that she was most likely walking through mine tailings containing significant levels of toxic heavy metals like lead, arsenic, cadmium, and copper. This would explain "the barrenness among the little hills and gulches" that she observed. This point emphasizes the importance of problem recognition in the problem-solving process. Though she obviously was not trying to cope with Butte's turn of the century environmental problems, had she recognized them as such, she may have altered the route of her daily walks. Before we can cope with our problems we must first recognize them as such.

Second, young Mary MacLane was able to reach "some astonishing subtleties of conception" (7) as she walked through the mine waste. Hard-used places tend to cause a certain dissonance, not unlike Peirce's "irritation of doubt" (1955: 10), which leads to further inquiry into these places. That is what environmental historian Mark Fiege (1999) meant in the opening quote of this dissertation. Remember that he urged historians to explore the "hard-used landscapes" in an effort to "directly confront the reality of our deeply tangled and problematic relationship to the natural world that we inhabit" (10). This entire dissertation was an attempt to inquire into the hard-used place I call home in hopes of reaching some real and useful understanding of what has happened, what is happening, and what ought to happen in Butte. My deepest hope is that any subtleties of conception reached through this inquiry might lead to a better way of coping with my home community's serious environmental problems. I hope they might lead to both a vital democracy and a healthy environment.

Finally, and perhaps most importantly, Mary MacLane saw something valuable in what was then a putrid and smoke-filled toxic landscape. Butte was nearly perfectly ugly. She reminded her readers that "anything perfect, or nearly so, is not be despised" (7). Like the old dog that made its home on the borders of the Berkeley Pit for years before succumbing to his toxic environs, Butte hangs on, even if only precariously so (Vincent, 2008). Such a clinging to our most basic gift—life—in the face of hardship and despair is worthy of our respect.

The story of Butte is important and valuable, in part, because it has continued to exist against all odds. Butte's story is a story of struggle, of survival in the face of impending doom. In the words of Edwin Dobb (2002), a contributing editor to *Harpers* magazine who was born and raised in Butte, "Like Concord, Gettysburg, and Wounded Knee, Butte is one of the places America came from" (310). With a little luck and some hard work, the citizens of Butte will continue fighting the good fight. It is my deepest desire to see our mere survival transform into flourishing as our injured democracy and environment return to a vital state of health and wellbeing.

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