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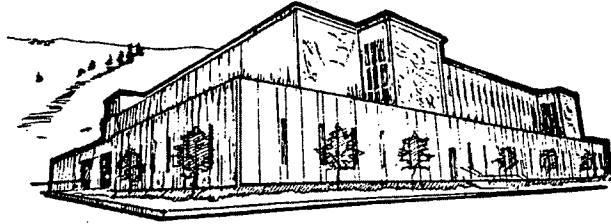
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PARADIGMS AND THE POLITICS OF WILDERNESS PRESERVATION

by

Patrick Joseph McGovern

B. A., University of Oregon, 1989

Presented in partial fulfillment of the requirements

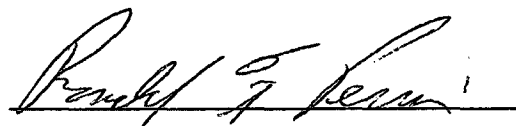
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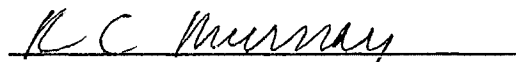
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Paradigms and the Politics of Wilderness Preservation
(123 pp.)Director: Ronald F. Perrin 

Prior to the late nineteenth century, little was done to preserve American wilderness, although its appreciation as both a natural and spiritual resource grew. With the approach of the twentieth century, protection of wilderness and forests areas began to occur. There developed, however, two very different arguments for protection. There were arguments for landscape conservation which considered forests as a natural, market resource. Others favored preservation of wilderness for more aesthetic and spiritual reasons. The tension between these two positions, still manifest in American wilderness politics, can be understood through the use of paradigms and subsequently presented as a reflection of the tension between the two competing paradigms.

Much of a political society's behavior is conditioned by its dominant social paradigm, which constitutes a society's beliefs, values, and ideals. American society's dominant paradigm -- Modernism -- developed out of historical elements including the Reformation, the Enlightenment, and the democratic, industrial, and scientific revolutions. These in turn effected the conversion of wilderness into a mechanism or object of scientific inquiry and a material resource for a market economy. Modernism, however, was not without its challengers.

Throughout its development, Modernism remained in tension with its literary, philosophical, and scientific counterreactions. The literary alternative appreciated an immediate, personal, and effective relationship with nature rather than it as a mere mechanism. The philosophical and scientific alternatives recognized humankind as a part of nature, while the classical science of Modernism placed humans outside of and above it. Both these positions, Modernism and its challengers, came to be manifest in the attitudes regarding American wilderness.

An examination of the literature regarding paradigms and the development of wilderness protection suggests that the tension between Modernism and its counterreactions is reflected in the development of American perceptions of wilderness. Those arguing for use of forests as a natural, market resource represented the dominant paradigm of modernism. Those arguing for preservation of wilderness for spiritual reasons represented a competing paradigm. These two arguments remain in the present arguments for wilderness protection.

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INTRODUCTION

This paper explores the concept of paradigms and their implications to the politics of wilderness preservation in America. In order to demonstrate the impact of paradigms with regard to American wilderness, this paper traces the history of the American preservation and landscape conservation movements from the late nineteenth through the mid-twentieth century to examine the tension between the competing paradigms of Modernism and its challengers. The purpose, then, of this paper is to explore paradigms and their influence on societal values and worldviews, and to suggest how paradigmatic tension is manifested in the history and politics of American wilderness.

In order to discuss paradigms and their role in understanding American attitudes toward wilderness, it is necessary to first define and delimit paradigms. As discussed in Chapter 1, much of a society's view of its place and relationship to the world is conditioned by its dominant social paradigm, which constitutes the beliefs, values, and ideals that influence members' thinking about their society, government, and individual responsibilities. When a paradigm fails to deal adequately with anomalies or

crisis within their methods of perception, the paradigm shifts to one that will adequately account for the crisis and incorporates it into its methodology. It is important to note that scientific and societal paradigms address these anomalies very much in the same manner. The overall dominant social paradigm may be challenged over a very long period of time if its values and worldview do not adequately provide a constant and consistent interpretive framework for society and its members.

The chapters following the discussion of paradigms address the development of the dominant social paradigm of "Modernism," its views towards nature, and how it came to shape American attitudes towards nature so profoundly. Modernism and its roots run deep into the history of Western science and philosophy. Many of the perceptions and attitudes toward the natural world in which humankind found itself in nineteenth and early twentieth century were conditioned by this dominant paradigm and its institutions and still linger today: laissez faire economics, the power of scientific thought and positivism, nature as a mechanism, and faith in technology are but a few examples. There were, however, competing paradigms to Modernism.

The counterreactions discussed in this paper are limited to those which accepted many of Modernism's goals, especially the goals of liberty, prosperity and individual development, but viewed Modernism's scientific and

technological methodologies as either failing to provide a viable means of achieving or preventing the attainment of such ends. In each of these paradigms, however, Modernism and its counterreactions, the central concern remains the same -- humankind. The alternative conceptual frameworks of Modernism manifested themselves in not only literary counterreactions, but philosophical and scientific counterreactions as well.

Literary and philosophical counterreactions against Modernism and its treatment of nature, the subject of Chapters 3 and 4, can be seen in the work and thought of such thinkers as Rousseau, Kant, and Spinoza. Their legacy of challenging Modernism was taken up in America by the Transcendentalists and found articulation in the work of Ralph Waldo Emerson. Transcendentalism in turn shaped the thought of such a pivotal figure in wilderness preservation as Henry Thoreau. Wilderness, in the literary and philosophical counterreaction to Modernism, was imbued with an aesthetic, spiritual quality denied by Modernism's mechanistic science. These qualities ascribed to nature by Romantic thinkers would remain a central theme of, and help define, preservationism.

Yet, the philosophical and literary counterreactions provided only part of the challenge to Modernism. There was a scientific challenge as well, discussed in Chapter 5. With the advent of the thought of scientists such as

Galileo, Descartes, Bacon, and Newton, nature in the Modernist worldview took on a quality of a mechanism. Nature became the object of scientific study and was reduced to inanimate matter, to be understood solely in rational, mathematical, quantifiable terms. But, opposing this interpretation of nature were physico-theologists and arcadian scientists who attempted to treat nature as something more than a mere mechanism. Their view of nature held that it was an organic whole -- something more than the sum of its parts -- and that it ultimately was the result of the handiwork of God. Although the notion that nature revealed the designs of a creator figure eventually proved to be untenable, the notion of nature as a unified whole, and that humankind was part of that whole, led directly to the thought of Charles Darwin, whose influence is still felt today.

The literary, philosophical, and scientific counterreactions to Modernism were all manifested in the emerging views of preservation and landscape conservation (identified in the remainder of this thesis simply as "conservation") in the mid-to-late nineteenth century in America -- the subject of Chapter 6. Conservation and preservation can be seen as representative of the tension between the competing paradigms of Modernism and its challengers. Preservationists utilized literary and philosophical counterreactions to Modernism to argue for the

preservation of wilderness for spiritual ends. Conservationists, although utilizing the scientific counterreactions, valued managed forest areas, not wilderness, for economic ends, rather than aesthetic ones. This economic utilitarianism of the conservationists, while challenging inefficient management and waste of natural resources, came to represent the dominant paradigm of Modernism.

The epilogue discusses the paradigmatic implications of preservation and conservation upon American attitudes towards wilderness. It discusses as well the possibility of a shift to a new, more mature view of technology. While this technology would remain committed to its initial promise of enhancing and liberating humankind, it could do so while preserving wilderness for those same ends as well. With this more "advanced" technology, the liberation of nature would be made inseparable from the liberation of humankind.

CHAPTER 1

PARADIGMS

Introduction

Much of this thesis' concern lies with the perceptions of wilderness as conditioned by the dominant social paradigm of Modernism and the impact of Modernism upon the politics of wilderness preservation. This chapter introduces the idea of paradigms, their functions, and their political implications. Central to this discussion of paradigms are the views that societal paradigms behave in patterns similar to scientific paradigms, that paradigms have and do experience "anomalies," and that dominant social paradigms are in constant tension with their alternate or "counterreactive" paradigms.

The Dominant Social Paradigm

Much of a society's view of its place and relationship with the world is conditioned by its dominant social paradigm. A paradigm represents a typical conditioned response, example, or pattern. According to Zachary Smith:

The dominant social paradigm [in the U.S.] constitutes those clusters of beliefs, values, and ideals that influence our thinking about society, government, and individual

responsibilities. The DSP [dominant social paradigm] can be defined in various ways, but it includes acceptance of laissez-faire capitalism, individualism, growth, and progress, and a faith in science and technology. Our DSP has influenced the history of environmental policy, public attitudes toward the environment, and environmental regulations (Smith 1992, 7).

As society shapes and is shaped by its dominant paradigm, so too are science and worldviews shaped by models and patterns. These patterns, however, cannot address all the possible shortcomings of their particular conceptual framework and are not immune from change.

Anomalies and Change

Thomas Kuhn, in his work The Structure of Scientific Revolutions, provides an example of how anomalies and change manifest themselves within scientific paradigms. The manner in which change occurs within scientific paradigms may also be employed to describe change within political society itself. Science or "normal science," as treated in Kuhn's volume, refers mainly to research based upon one or more past scientific achievements which some particular scientific community acknowledges for a time as supplying the foundation for its further practice (Kuhn 1970, 10). Kuhn sees these views and achievements as being advanced through their use in textbooks.

"Textbooks," according to Kuhn, "expound the body of accepted theory, illustrate many or all of its successful

applications, and compare these applications with exemplary observations and experiments" (Kuhn, 10). Prior to the use of textbooks, well-known classics of science performed a similar function. Kuhn lists such works as Aristotle's Physica, Newton's Principia, Franklin's Electricity, and Lyell's Principles of Geology as serving to define the legitimate problems and methods of a research field for its community of practitioners. This in turn would come to influence the conceptual scheme or worldview of the society in which those practitioners operated. Such theories were able to do so for essentially two reasons. According to Kuhn:

Their achievement was sufficiently unprecedented to attract an enduring group of adherents away from competing modes of scientific activity. Simultaneously, it was sufficiently open-ended to leave all sorts of problems for the redefined group of practitioners to resolve (Kuhn, 10).

Through his analysis of paradigms, Kuhn contends that some accepted examples of actual scientific study provide models or patterns from which spring particular identifiable traditions of scientific research. Examples would include "Ptolemaic astronomy" or "Newtonian dynamics." According to Kuhn, the study of paradigms prepares the student for membership in the particular scientific community with which he will practice later (Kuhn, 11). Having been committed to learning the bases for their science from the same model or pattern, scientists of each particular field tend to accept

the same fundamentals with little disagreement. Commitment to these bases and the apparent consensus it produces are prerequisites for the genesis and continuation of a particular research tradition (Kuhn, 11). As long as the paradigm addresses and account for facts, both old and new, scientists can get on with their jobs, which consists of solving the puzzles presented by the natural world (Hall 1963, 701).

Kuhn argues that the paradigm itself is not identifiable with any specific body of theory. The paradigm represents "the source of the methods, problem field, and standards of solution accepted by any mature scientific community at any given time," permitting selection, evaluation, and criticism (Kuhn, 102). Normal science and its particular worldview consists of working within the constraints of one paradigm, making it more explicit and precise, and actualizing its original goal by extending the knowledge of those facts that the paradigm displays as particularly revealing (Shapere 1971, 706).

As articulation of the paradigm takes place, anomalies arise, representing facts which cannot be accounted for or cannot be fashioned to fit within the paradigm -- a sort of failed theoretical Procrustean bed. These anomalies give rise to what Kuhn describes as revolutionary science ("non-normal science"):

Confronted with an anomaly or with crisis,
scientists take a different attitude toward

existing paradigms, and the nature of their research changes accordingly. The proliferation of competing articulations, the willingness to try anything, the expression of discontent, the recourse to philosophy and to debate over fundamentals, all these are symptoms of a transition from normal to extraordinary research (Kuhn, 90).

Scientific, and consequently, worldview revolutions are inaugurated by a growing sense that an existing paradigm has ceased to function adequately in the exploration of an aspect of nature to which that paradigm itself had previously pioneered. Kuhn's emphasis is that in such revolutions the older paradigm is replaced in whole or in part by a new paradigm (Shapere, 706).

The success of a new or revolutionary paradigm necessitates a partial or full relinquishment of one set of paradigmatic institutions in favor of another. In describing the change from a Newtonian to Einsteinian world view, Kuhn argues that:

This need to change the meaning of established and familiar concepts is central to the revolutionary impact of Einstein's theory. Though subtler than the changes from geocentrism to heliocentrism...or from corpuscles to waves, the resulting conceptual transformation is no less decisively destructive of a previously established paradigm. We may even come to see it as a prototype for revolutionary reorientations in the sciences (Kuhn, 102).

Revolutions need not introduce new objects of study or even concepts; rather, they consist of major displacements of the

conceptual network through which the scientist and ultimately members of society view the world.

The idea of major conceptual displacements as a result of paradigmatic shifts is not without its detractors. Two main types of objections to Kuhn's work have been raised. The first position questions the definition and use of paradigms. According to Dudley Shapere:

[The] term [paradigm is, at its outset] applied to a set of recurrent and quasi-standard illustrations of various theories which are revealed in...textbooks, lectures, and laboratory exercises, [and] ultimately appears as...anything and everything that allows the scientist to do anything...the term is so vague that...it is difficult to identify what is supposed to be the paradigm (Shapere, 706).

The second major type of objection against Kuhn's view relates to the relativism suggested by his theory. With the determinative nature of the paradigm, Kuhn appears to deny the objectivity of facts and the choice, on objective grounds, between paradigms. He writes: "The competition between paradigms is not the sort of battle that can be resolved by proofs...[but is more like] a conversion experience...[it is] simply a change demanded by the adoption of a new paradigm" (Kuhn, 140). Objectivity and progress, traditional interpretations of science, are abandoned by Kuhn to the point of holding that if the same terms continue to be used after a scientific revolution, those terms have different meanings (Shapere, 707).

Paradigms and Political Society

Despite these objections to paradigms, Kuhn's work offers a useful tool not only in the discussion of scientific paradigms but societal paradigms as well, and their impact upon society and its models and patterns of perception. In her work Ecological Revolutions, Carolyn Merchant makes use of Kuhn's thought regarding scientific revolutions in a most convincing manner. According to Merchant:

Thomas Kuhn [in The Structure of Scientific Revolutions] approached major transformations in scientific consciousness from a perspective internal to the workings of science and the community of scientists. Scientific paradigms are structures of thought shared by groups of scientists within which problems are solved. When a sufficient amount of anomalies challenge a scientific theory, scientists construct new paradigms, thus initiating new scientific revolutions (Merchant 1989, 3).

Merchant sees the strength of Kuhn's theory in its recognition of stable worldviews in science and philosophy that exist over relatively long periods of time but that can experience rapid change during periods of stress and crisis.

Paradigms are not limited, however, to stable worldviews in science. Sheldon Wolin, in his article "Paradigms and Political Theory," proposes that:

We conceive of political society itself as a paradigm. From this viewpoint society would be envisaged as a coherent whole in the sense of its customary political practices, institutions, laws, structure of authority and citizenship, and operative beliefs being organized and interrelated. A politically organized society contains definite

institutional arrangements, certain widely shared understandings regarding the location and use of political power, certain expectations about how authority ought to treat the members of society and about the claims that organized society can rightfully make upon its members...This ensemble of practices and beliefs may be said to form a paradigm in the sense that the society tries to carry on its political life in accordance with them. Further, in its agencies of enforcement and in its systems of rules, a political society possesses the basic instrumentalities present in Kuhn's scientific community and employs them in analogous ways. Society, too, enforces certain types of conduct and discourages others; it, too, defines what sort of experiments -- in the form of individual or group actions -- will be encouraged, tolerated, or suppressed; by its complex organization of politics through legislatures, political parties, and the media of opinion, society also determines what shall count in determining future decisions (Wolin 1968, 149).

Furthermore, as a paradigm, political society is apt to experience paradigmatic anomalies and counterreactions for reasons similar to those experienced in the scientific community.

Conclusion

The first step to understanding humankind is the creation of a model or models that come to dominate and penetrate its thought and action. According to Isaiah Berlin:

The history of thought and culture is, as Hegel showed with great brilliance, a changing pattern of great liberating ideas which inevitably turn into suffocating straightjacket, and so stimulate their own destruction by new emancipating, and at the

same time, enslaving conceptions. The first step to understanding of men is the bringing to consciousness of the model or models that dominate and penetrate their thought and action (Berlin, quoted by Bernstein 1976, 57).

A useful tool in this step is the notion of paradigms. Paradigms help to identify those clusters of beliefs, values, and ideals that influence how individuals and societies think about themselves, their government, and their responsibilities. Furthermore, paradigms provide for a society or community a set of instruments that allow the promotion or repression of certain ideas or practices. There are, however, additional elements regarding paradigms that this focuses upon.

As noted by Hegel, perhaps most important is that patterns of thought once viewed as liberating inevitably turn into stifling constraints and in turn provide the seeds of their own destruction. There is in any paradigmatic scheme an ever-present tension between what has become the dominant paradigm and the underlying counterreaction to it. A paradigm cannot manage successfully the entire array of anomalies discovered within its purview. The counterreaction or alternate to this paradigm seeks to answer these anomalies within its own framework of thought. When the dominant paradigm finally reaches a point where it can no longer successfully manage the anomalies presented to it, and maintain its theoretical and practical validity at the same time, the counterreaction will succeed the former

paradigm as the dominant paradigm and a paradigmatic revolution will have taken place.

Paradigmatic revolutions at the societal level, however, are not necessarily as rapid as those that might be experienced in the scientific realm. The following chapters will show that what has come to be the dominant social paradigm of the Western world -- Modernism -- has, for more than the past three centuries, been constantly in a state of tension with literary, philosophic, and scientific counterreactions. Moreover, these chapters will show that this tension between the dominant social paradigm and its counterreactions manifests itself in conservation and preservation movements that developed in America in the mid-to-late nineteenth and early twentieth centuries.

CHAPTER 2

OLD WORLD ROOTS OF THOUGHT ABOUT WILDERNESS

Introduction

As noted in the previous chapter, the dominant social paradigm -- a society's values and beliefs cluster or worldview -- does much to influence societal behavior. In a discussion of the present values and worldviews that help form today's dominant social paradigm and its subsequent impact upon American views towards wilderness, it is necessary first to look briefly at America's Old-World antecedents and their influence on American perception and thought.

Wilderness and America

In his volume Wilderness and the American Mind, Roderick Nash argues that wilderness is a basic ingredient of American civilization. According to Nash:

From the raw materials of the physical wilderness Americans built a civilization, with the idea or symbol of wilderness they sought to give that civilization identity and meaning...Wilderness currently enjoys widespread and growing popularity...From the perspective of intellectual history, this appreciation of wilderness is nothing less than revolutionary. Ancient biases against the wild are deeply rooted in human psychology

and in the human compulsion to understand, order and transform the environment in the interest of survival, and later, of success. Wilderness was the unknown, the disordered, and [the] uncontrolled. A large portion of the energies of early civilizations was directed at defeating the wilderness nature controlling it in human nature. America knew these imperatives first hand: the European colonists reexperienced in America their old, insecure relationships to wilderness (Nash 1982, xi).

Thus the American attitude toward wilderness is far older, more complex than normally assumed.

Before continuing the discussion of the old-world roots of American attitudes toward wilderness, the term wilderness must be defined. A useful tool in this case is Nash's employment of a spectrum in which the notion of wilderness may be understood. At one end of the spectrum is an environment without any human activity or impact, while at the other end of the spectrum civilization can be found. This spectrum allows for nuances in the perception of wilderness. According to Nash:

Wilderness and civilization become antipodal influences which combine in varying proportions to determine the character of an area. In the middle portions of the spectrum is the rural or pastoral environment (the ploughed) that represents a balance of the forces of nature and man. As one moves toward the wilderness pole from this midpoint, the human influence appears less frequently...On the other side of the rural range, the degree to which man affects nature increases. Finally, close to the pole of civilization, the natural setting that the wild and rural conditions share gives way to the purely synthetic condition that exists in a metropolis (Nash, 6).

Vast, unmodified regions free of human influence are found closest to the wilderness pole. Areas, such as those forests envisioned by conservationists, managed by humans as reservoirs of natural resources, are moved by management activities away from the wilderness pole toward civilization. Such forest were not the goal of preservationists.

The origins of European and American thought about nature and wilderness can be traced back to Greek philosophers, as well as to the principles provided by the Judeo-Christian tradition, that came to dominate Europe. The principle theme of Western thought, expressed by this paper, is its placing humans apart from and above the world in which they reside.

The conceptual separation of humankind from the natural world received much attention in classical Greek philosophy and came to provide an important influence upon the development of European wilderness values. A major contribution of Greek philosophy to European thought was the use of reason. According to Max Oelschlaeger:

Whatever [the Greeks] borrowed from either the ancients or their contemporaries they transformed through their commitment to reason. No serious student of Western civilization underestimates the importance of the rise of Greek rationalism on our own life, for 'Reason' lurks always beneath its surface. Greek rationalism is often presented as a unique vantage point from which to view the evolution of the European mind towards civilization. The historical documents that survive show clearly a breaking away from

primitive attitudes into progress and elementary science, from myths into disciplined acquisition of knowledge about the universe (Oelschlaeger 1991, 54).

Oelschlaeger points out, however, that there is within the Greek tradition a tension between the Dionysian and Apollonian worldviews. Although the lasting impression upon the European mind was toward rational, reasoned thought, the tension between the Apollonian rational and Dionysian aesthetic remained, as will be discussed throughout the following chapters.

Socrates, who served as the epitome of Greek rational thought, contributed to Western philosophy the notion of a homocentric universe. In Oelschlaeger's view, "What is revolutionary is the Socratic conception of the good life as essentially a reflective attending to and nurturing of the soul" (Oelschlaeger, 56). The result shows humankind turning its attention inward, away from the world that surrounds it, and towards self-conscious reason. Although human life was lived among an ever-changing and mutable material world, Socrates identified this as a problem for the soul to overcome. Knowledge, or a rational understanding of a wise course of action, depended on forms from outside of nature. According to Oelschlaeger:

In this attitude lurks the germ of a pervasive dualism and logocentrism, sometimes called Eurocentrism, that since the Greeks, has infected virtually all Western philosophy, science, and religion. Its effects on Western

civilization have been far-reaching and long-lasting (Oelschlaeger, 57).

Socrates ultimately argued that everything for mankind seemed preordained and that nature was provided by the gods for humanity's use.

Plato, primarily through his work Timaeus, continued in the Socratic tradition in viewing nature as something that could be acted upon by humans and maintained that humans could improve upon nature. Clarence Glacken believes that in a period that lacked precision measurements and instruments, high skill was achieved in carving, metal work, and the construction of complex monuments and buildings. Plato's "respect for artisanship," according to Glacken, "...lead[s] to [the] general idea [of] man as a being who can create order and beauty out of brute material, or more broadly, who can control natural phenomenon with a combination of intelligence and skill" (Glacken 1990, 46).

Aristotle refined the Socratic conception of nature as ordered for man's use in his Politics. Here, Aristotle expresses the idea of purpose in nature, including the relation of plants and animals to the need of man.

According to Aristotle:

In like manner we may infer that, after the birth of animals, plants exist for their sake, and that the other animals exist for the sake of man, the tame for use and food, the wild, if not all, at least the greater part of them, for food, and for the provision of clothing and various instruments. Now if nature makes nothing incomplete, and nothing in vain, the

inference must be made that she has made all animals and plants for the sake of man (Aristotle 1920, 40).

In this anthropocentric conception of interrelationships in nature, the distribution of plants and animals is directly related to the needs and uses of man (Glacken, 48).

Aristotle's notion of the material world's subservience to humankind is amplified by his acceptance of the Platonic division of the soul from the material. Spirit or soul not only existed apart from the body, but was superior to earthly materials and the body.

The fusion of Greek rationalism with Judaic and early Christian thought provided the genesis of the idea of wilderness that has come to rule Western civilization for the past two millennia. According to Oelschlaeger:

Christianity culminates earlier Mediterranean [e.g. Jewish, Greek, Roman] ideas of the earth as designed for human kind and is therefore the conceptual apotheosis of the Neolithic revolution. This assertion underscore the idea that the roots of environmental crises are buried far deeper than we usually think. Indeed, we are compelled to recognize that Christianity is no one thing but a combination of historical determinants, including human nature and the agricultural revolution, which together introduced a historically unprecedented direction to human relations with wild nature: the natural world came to be conceived as valueless until humanized (Oelschlaeger, 62).

With the Socratic-Platonic doctrine of the soul incorporated into Christianity, Western civilization was set inexorably on an anthropocentric course. In this framework, humanity

remained at the center of all things, and Western culture and society became alienated from the natural world. Judeo-Christian faith claimed nothing from nature, for God alone was important, and human attention shifted from the intuitive, mystical, and physical to the supranatural and transcendental (Oelschlaeger, 65).

Early Christian thinkers readily accepted this worldview that desacrilized nature and placed humankind above nature without hesitation. What was important to these thinkers was humankind's relationship with God and not with the physical world which surrounded it. The work of Thomas Aquinas provides an example of the Greco/Judeo-Christian synthesis. In his Summa Theologica, Aquinas writes:

For his disobedience to God, man was punished by the disobedience of those creatures which should be subject to him...Now all animals are naturally subject to man. This can be proved in three ways. First, from the order observed by nature; for just as in the generation of things we perceive a certain order of procession of the perfect from the imperfect...so also is there order in the use of natural things; thus the imperfect are for the use of the perfect; as the plants make use of the earth for their nourishment, and animals make use of plants, and man makes use of both plants and animals. Therefore it is in keeping with the order of nature, that man should be master over animals....Secondly, this is proved from the order of Divine Providence which always governs inferior things by the superior. Wherefore, as man, being made in the image of God, is above other animals, these are rightly subject to his government. Thirdly, this is proved from a property of man and of other animals. for we seen in the latter a certain participated prudence of natural instinct, in

regard to certain particular acts; whereas man possesses a universal prudence as regards all practical matters. Now whatever is participated is subject to what is essential and universal. Therefore the subjection of other animals to man is proved to be natural (Aquinas 1913, 327).

Aquinas placed humans at the top of creation, arguing that humans had been created in the image of their maker and endowed with reason. Reason, in turn, gave man domain over all other nature.

Modernism and Wilderness

A discussion of wilderness and American traditions toward wilderness would be incomplete without discussing the impact of the paradigmatic shift to Modernism. Modernism refers to the historical movement beginning with the Renaissance, and continuing through the present, in which the peoples of Western Europe utilized those Western traditions discussed above with science and technology in an attempt to transform wilderness into industrialized civilizations in an attempt to secure liberty and prosperity. According to William Connolly:

In modernity, the insistence upon taking charge of the world comes into its own. Nature becomes a set of laws susceptible to human knowledge, a deposit of resources for potential use... While [this] orientation jostles with...others for priority, [it does] place nature at the disposal of humanity. Human and non-human nature become material to work on. The world loses its earlier property as a text upon which the will of God is inscribed and through which humans can come to a more

profound understanding of their proper place in the order of things (Connolly 1988, 2).

Modernism, as a paradigm, therefore consists of a set of perceptions regarding science, rationality, and nature that have been established over a long period of time and continues to reinforce humankind's ongoing attempts to dominate nature in the pursuit of Modernism's aims.

Modernism is comprised of a number of historical elements that were intertwined and interrelated in a complex manner. Among these processes were the Renaissance, the Reformation, the Enlightenment, and the democratic, industrial, and scientific revolutions. Each tended to reinforce the other as seen in the case of industrial technology and capitalism. The point here is not to determine causation, but rather to explore the interrelatedness of these historical, societal, and political phenomena.

The key to understanding this era of the Western experience is that these social, political, and historical forces together challenged the power of the Catholic Church, elevated reason over faith, and legitimated the pursuit of worldly gain. The industrial revolution, with its rising material demands placed upon wilderness and reinforced in its later phases by scientific technology, provided a means to satisfy the economic aspirations of market oriented,

capitalistic societies. Modernism also effected an ideological conversion of the wilderness into material nature, both as an object of scientific inquiry and as the means to fuel economic progress. Modernism thus institutionalized a profound homocentrism, still dominant in the world, which may be characterized by a radical change in humankind's sense of its own relative significance. "Unlike Paleolithic and Neolithic people, and unlike the Greeks and early Christians," writes Oelschlaeger, "modern human beings think of themselves as existing without natural limits" (Oelschlaeger, 69).

One of Modernism's most important contributions to the Western traditional view of wilderness is the scientific perspective. According to Merchant:

Since the scientific revolution of the seventeenth century, the West has seen nature primarily through the spectacles of mechanistic science. Matter is dead and inert, remaining at rest or moving with uniform velocity in a straight line unless acted upon by external forces. Change comes from outside as in the operation of a machine. The world itself is a clock, adjustable by human clock-makers. Nature is passive and manipulable (Merchant, 7).

Those thinkers who figured predominantly in providing the foundation of the scientific revolution were Galileo, Francis Bacon, Rene Descartes, and Isaac Newton. Considered together, these thinkers represented a paradigm shift so radical that the very meaning of the word of nature, and

wilderness's place in it, changed. "This conceptual change," according to Oelschlaeger:

reflected in such twentieth-century usages as 'wild nature' as distinct from 'nature' simpliciter. Nature is now believed to be the object of scientific study, and nothing remains in it of anything as identifiably wilderness...the idea of nature as animate and living, where species seek to realize their natural ends, has been displaced by the idea of a cold and lifeless mechanical nature. In explanatory terms, the Aristotelian syllogism has been replaced by the causal explanation; thus, natural motions were understood no longer as the consequence of biological entelechy but rather as the consequence of external forces acting upon a body. As Newton argued, summarizing the modernist view of motion, every action is the consequence of some other distant action. The modern mind has come to view nature as nothing more than matter-in-motion, whether planets, projectiles, or even animals (Oelschlaeger, 77).

The mechanical worldview offered a strategy wherein the empirical investigation of nature could proceed unimpeded by the church. God was interpreted as the clock-maker, the universe as his clock, and science merely as a means to disclose the underlying patterns of the mechanism.

Galileo led the way for the scientific age through his conceptualization of the world as explicitly apart from the world of concrete experience. For Galileo the size and shape of a physical body were real or objective -- that is, attributes of a physical world presumed to exist independently of human cognition (Oelschlaeger, 78). Real qualities become those that can be measured and subjected to arithmetical manipulation. The ideological offshoot of

Modernism, scientism, views nature as an objective, mechanical process and denies validity to either nonreductionist or intuitive modes of consciousness as legitimate avenues of knowledge and understanding. Moreover, Galileo's proposal of the use of induction, deduction, observation, and especially mathematics helped to undermine Medieval worldviews. Mathematical analysis provided the revolution with its essential rigor of scientific inquiry (Coppleston 1953, 20).

Francis Bacon represents the feeling of optimism in man's capabilities over nature that was growing throughout the seventeenth and eighteenth centuries (Glacken, 471). Bacon is seen as having formulated the concept of human mastery over nature much more clearly than had been done previously and to assign it a prominent place among humankind's concerns. According to William Leiss:

[The domination of nature] was wedded once again to the predominant cultural force of that time, namely, Christianity. The idea was made 'respectable.' Of course the notion of man's dominion over the earth had always been a part of the Judeo-Christian heritage...but in the context of the emerging constellation of historical factors at that time -- the economic, social, political, scientific, and technological changes which capitalism fused together into a system of expanding productivity -- this notion took on a whole new significance. The precise way in which Bacon reformulated it was crucial, for Christianity's hold on the European consciousness remained strong even as the traditional social basis of organized religion was being eroded away by capitalism (Leiss 1972, 49).

In Bacon's view religion and science were both instrumental in an effort to reclaim that which had been lost with the expulsion of humankind from Eden. So expressed, Bacon provided the formula whereby the idea of the mastery over nature became widely acceptable. Through the use of science, humans could rescue themselves from the fall from Paradise by the economic development and exploitation of nature in building the "New Jerusalem."

Rene Descartes defined for the scientific revolution and Modernism the idea of nature itself. Descartes proposed that the mind is distinct from the matter it might perceive and that the natural world is a machine that can be broken down into its component parts for analysis. Like Bacon, Descartes believed in the power of natural reason and that such power could transform and modify nature itself. Descartes' most profound contribution may be seen in his conceiving of the material world as a complex mechanism and his insistence that an absolute understanding of that world is possible. Animals are considered mere machines, incapable of feelings such as pain, and like machines, they have use value only. Descartes, along with Bacon, believed that man might redeem himself from the fall by creation of a heaven on earth through the use of science.

Isaac Newton represents a clear transition from the Medieval to modernity by bringing the intellectual ferment of the scientific revolution to its theoretical culmination

(Oelschlaeger, 89). Newton's physics was a culmination of the long-held desire for a logical and absolute understanding of the universe. Through mathematics Newton's mechanics elucidate the world experience as mathematical repetitions, rendering it in a previously unperceived manner. With Newtonian physics came the potential to remake the world according to humankind's designs and imagination and in doing so, brought the promise that humankind could free itself of its earthly misery.

The culmination of the scientific revolution of Modernism manifested itself in the period known as the Enlightenment. During this period, a number of diverse intellectual elements and historical forces were synthesized into the powerful paradigm of Modernism and centered around the industrial revolution. Of the thinkers of the time, Adam Smith and his theories remain perhaps the most revealing of the period.

Smith's work, The Wealth of Nations, is the result of his recognizing and synthesizing the various components of Modernism into a comprehensive paradigm. Through the use of observation and reason, Smith recognized that the different components of culture, technology, politics, and society all interrelate in the production of economies. There is in his work the normative dimension of consumption as a condition for human happiness. According to Oelschlaeger:

Like Bacon, [Smith] envisioned a 'mundus alter,' a world where the engine of economic

growth drove society relentlessly forward in a ceaseless expansion of production-consumption cycle...Unlimited growth was the ethical justification for capitalism, and the reason why Smith believed it preferable to all other forms of human economy (Oelschlaeger, 92).

Man's salvation, for Smith, lay in the industrial revolution and it is this presupposition that the Enlightenment's attitude towards wilderness and wild nature is manifest. That which has value for man, in the world view of Modernism, is cultured and stripped of any of its wild attributes.

The mechanistic philosophy developed by the natural philosophers discussed above legitimated the capitalist revolution and its domination of nature. According to Merchant:

Mechanical metaphors and the rhetoric of Manifest Destiny became core concepts of a modern philosophy that saw the world as a vast machine that could be mathematically described, predicted, and controlled...[Science constructed] a context free, value free knowledge of the external world. As constructed by the seventeenth-century 'fathers' of modern science, the mechanistic model served to legitimate the human prediction, control, and manipulation of nature (Merchant, 199).

As the eighteenth century gave way to the nineteenth, the forces of history -- the scientific, democratic, and industrial revolutions, the Enlightenment -- amalgamated themselves into a cultural paradigm so powerful and persuasive that it still rules Western society and its institutions.

The Western worldview toward wilderness and nature has a long and complex history. Although Greek tradition saw nature as animated and self-moving, it separated the human soul from the material. Judeo-Christian views strengthened the concept of separation and placed humans in a superior position to the nature they inhabited. Nature was becoming merely a material resource for the earth's rational creature. With the advent of the scientific revolution came the perception of the world and universe as vast machines that could be simply understood if broken down into their component parts. Capitalism and democracy coalesced with machine technology to effect the conversion of nature into simple components in an economic formula, devoid of any intrinsic value, possessing market value only. Modernism completes the intellectual divorce of humankind from nature and defines nature and wilderness in terms of man's designs upon it. It is this "modern" tradition that the Europeans brought with them to the New World that helped to define the foundations of its dominant social paradigm.

CHAPTER 3

MODERNISM AND ITS CRITICS

Introduction

With the arrival of Western Europeans in the Americas and their subsequent settlement, the European worldview as developed by Modernism spread westward across the Atlantic. This chapter discusses the impact of Modernism upon the development of the traditional American attitude towards wilderness, traces the beginnings of the literary, philosophic, and scientific developments of the preservationist and conservationist views toward wilderness, and explores the evolution of the tension between Modernism and its critics.

Traditional American Views Toward Wilderness

Alexis de Tocqueville provides in his classic work, Democracy in America, an excellent introduction to the early American sentiment towards wilderness. De Tocqueville notes that:

in Europe people talk a great deal of the wilds of America, but the Americans themselves never think about them; they are insensible to the wonders of inanimate nature and they may be said not to perceive the mighty forests that surround them till they fall beneath the

hatchet. Their eyes are fixed upon another sight...the...march across the wilds, draining swamps, turning the course of rivers, peopling solitudes, and subduing nature (de Tocqueville 1945, 47).

The attitude toward wilderness manifested itself on many other American frontiers. William Bradford, upon his arrival in the Massachusetts Bay Colony, viewed it as a "hideous and desolate wilderness." Two centuries later fur-trapper Alexander Ross, upon his arrival to the Columbia River basin, recorded his despair in encountering a "gloomy, dreary, and unhallowed wilderness" (Nash, 24). Wilderness for wilderness' sake was never perceived as a value for the American pioneer.

There were basically two components to the American pioneers' bias against wilderness that came to dominate traditional American views toward wilderness. The first of these was simply the physical threat to the pioneers' survival. "Safety and comfort," according to Nash, "even necessities like food and shelter, depended on overcoming the wild environment...[t]he pioneer...lived too close to wilderness for appreciation" (Nash, 24). The second component to the bias against wilderness, and more germane to this discussion, was the continuation of the Western tradition of viewing nature's wildness as being the earthly manifestation of Satan's power in a chaotic wasteland. The transformation of a wilderness from this chaos through the use and design of science into civilization was the reward

for humankind's sacrifices. Humans, through the use of reason and science could perfect an incomplete and unordered natural world and free themselves from the misery of their earthly existence. Western expansion of civilization was perceived as good in an age which idealized progress and used civilization as measure of that progress. In the vocabulary of material progress and the paradigm of Modernism, wilderness had meaning only as an obstacle (Nash, 41).

Counterreaction to Modernism

Modernism, as with all paradigms, was not without its challengers. However, as Oelschlaeger notes, there was not, nor is there now, one dominant alternative counter-paradigm to Modernism. Instead there were at least three identifiable currents of criticism of Modernism and perhaps one of the reasons Modernism still flourishes today: literary, philosophical, and scientific counterreactions. Each had important consequences upon American attitudes toward wilderness. The following discussion describes these various reactions to the dominant paradigm of Modernism.

Scientific Counterreactions

The early scientific counter to Modernism was grounded in an attempt to recast traditional religious beliefs in a manner consistent with the advancing front of science and

reason. These counterreactions in science to Modernist trends blended science with religion and philosophy. As Glacken points out, each of these was concerned with fundamental questions such as the proofs of God's existence, what were perceived as final causes in nature, and the orderliness of nature or "teleology" (Glacken, 505). This early scientific counter was made up of individuals who utilized scientific knowledge in an attempt to gain scientific certainty for traditional Judeo-Christian beliefs, such as a divine creator. Scientific evidence according to these scientists pointed to rational, reasoned God as the final cause for all natural phenomena. In spite of these arguments for design in nature, positive science, which argued for efficient rather than final cause and viewed nature as a mechanism or machine, proved to be more tenable than the uneasy alliance between science, religion and philosophy. The initial scientific counterreaction, however was not without importance. As discussed later, the scientific counterreaction helped set the stage for the work of Charles Darwin, who would in turn shatter many of Modernism's long held scientific beliefs.

Literary Counterreactions

The literary alternative took shape in the form of the early Romantic writers who valued an immediate, personal, and affective relationship with nature and, like their

physico-theologist counterparts in the scientific counteraction, were defenders of the Christian faith in God.

According to Oelschlaeger:

To the Romantics nature was not a lifeless machine, mere matter in motion, but a living organism created by divine providence; they believed that God's presence was revealed through an aesthetic awareness of nature's beauty...The poetic view of nature gravitated toward wild and mysterious aspects, the felt qualitative rather than measured quantitative dimensions of experience (Oelschlaeger, 99).

The Romantic "Lake Poets", Lord Byron, Percy Shelley, and Wordsworth, all perceived the society created by Modernism and its search for material gain as inherently detrimental to the individual and his freedom. Romantics believed humans were more than simple components or inputs in a mechanistic, morally bankrupt, and valueless society.

Nash sees the Romantic appreciation of wilderness as beginning in the cities where, free from the pressures of a frontier living, the literary elite began to feel the first resistance against the traditional Western response as conditioned by the dominant paradigm. The change in attitude began in the change in European worldviews with the advent of the scientific and industrial revolutions. For

Nash:

Romanticism resists definition, but in general it implies an enthusiasm for the strange, remote, solitary, and mysterious. Consequently in regard to nature Romantics preferred the wild...Wilderness appealed to those bored or disgusted with man and his works. It not only offered an escape from society but also was an ideal stage for the Romantic individual to

exercise the cult that he frequently made of his own soul. The solitude and total freedom of the wilderness created a perfect setting for either melancholy or exultation (Nash, 47).

In Europe, Jean-Jacques Rousseau articulated this seminal appreciation for the wilderness condition.

Although his argument was not a call for humans to run naked back into the woods, Rousseau, in his work Emile, does argue for a blending of the primitive and wild qualities of nature in the distorted "civilized life" of Western Europe (Nash, 49). According to Rousseau:

Everything is good as it comes from the hands of the Author of Nature; but everything degenerates in the hands of man...He mingles and confounds the climates, the elements, the seasons; he overturns everything, disfigures everything; he loves deformity, monsters; he will have nothing as Nature made it, not even man (Rousseau 1906, 1).

"Nature," in this case, consists of the material and physical world unmodified by human design, but remains as an intelligent and infallible guide for human endeavors. In Rousseau's view:

We are born sensible, and from our birth we are affected in different ways by the objects which surround us. As soon as we have consciousness, so to speak, of our sensations, we are disposed to seek or to shun the objects which produce them: first according as they are agreeable or disagreeable to us; then, according to the congruity or the incongruity which we find between ourselves and these objects; and, finally, according to the judgments which we derive from them relative to the idea of happiness or perfection which is given us by the reason. These dispositions are extended and strengthened in proportion as we become more susceptible and enlightened; but,

constrained by our habits, they change more or less with our opinions. Before this alteration, these dispositions are what I call our nature. It is, then, to these primitive dispositions that everything should be referred (Rousseau, 4).

With the publication of Emile, Rousseau sought to divest society of its artificial and absurd forms through a return toward primitive simplicity.

For Rousseau, society, its state, science, paradigms, all culture, represented an oppressive force that was suffocating and debasing the human spirit. What was needed for was a return to the natural state where culture and happiness are inversely related. In contrast to Hobbes, Bacon, Locke, and Smith, Rousseau found virtue in a life led closer to nature and its wilderness. Leaving humans in their natural condition, according to Rousseau, was not a necessary evil. It was the chains wrought by civilization that placed man in opposition to one another.

Also found within the Romantic counterreaction to Modernism is an intuitive, aesthetic reaction against mechanistic materialism. Nature for the Romantics could not be perceived as a machine, broken down simply into its constituent parts. The science of the scientific and industrial revolutions, in removing the observer from the observed, also removed the observer from experience of tangible sensations. Scientific nature was stripped of taste, sight, sound, and feeling to be left only with

quantifiable properties of mass, velocity, and repetition of invariant patterns. The Romantic aim was to end the use of the abstract language of science and encourage the use of a poetic nature that was considered alive, subjective, and the source of aesthetic delight and philosophical inspiration. The Romantic movement can be understood, then, as a reaction that purposely took an aesthetic approach. Unlike the strictly philosophical reaction to Modernism, where such thinkers as Spinoza and Schopenhauer systematically worked through conceptual (epistemological, metaphysical, and ethical) issues, the Romantics were concerned with affective immediacy: they followed a direct intuitive route to a realization of the unity of nature, a route which was to have important implications in the development of American attitudes towards wilderness in the mid-to-late nineteenth century (Oelschlaeger, 113).

The Romantic movement sought to investigate and discover man's relationship with nature and his place in it. For example, Immanuel Kant provided insight to humankind's relation with nature that espoused Romantic leanings. In Kant's earlier works, such as the Critique of Pure Reason, the world is given over to the dominant paradigm of the time and consigned to be viewed as a mechanism. Humankind, Kant argued, had achieved through physics a certain knowledge of the phenomenal world that would be good for all people in all places and times. The rational mind, according to Kant,

could, therefore, perceive the world in the modern, scientific perspectives provided by Newtonian physics.

In his later writing, however, and especially in his Critique of Judgment, it is clear that Kant attempted to reconcile the mechanistic with the intuitive and aesthetic constructs of human consciousness. In the Critique of Judgment, Kant points out the inadequacies of reasoned analogies which likened nature to a machine. According to Kant:

In a watch one part is the instrument by which the movement of the others is effected, but one wheel is not the efficient cause of the production of the other. One part is certainly present for the sake of the other, but it does not owe its presence to the agency of that other...hence [a watch] does not itself replace its parts of which it has been deprived of...nor does it repair its own casual disorders. But these are all things which we are justified in expecting from organized nature. An organized being is, therefore, not a mere machine. For a machine has solely motive power, whereas an organized being possesses inherent formative power, and such, moreover, as it can impart to material devoid of it -- material which it organizes. This, therefore, is a self-propagating formative power, which cannot be explained by the capacity of movement alone, that is to say, by mechanism (Kant 1961, 22).

Kant's move away from the conception of nature as mechanism in the Critique of Judgment is ultimately a legitimation of a poetic nature. Kant maintained the autonomy of aesthetic judgment from the rational in the human mind and in doing so suggests that there exists an independent realm of the aesthetic which is quite unique

from other realms of morality and of nature (Megill 1985, 12). This defense of the aesthetic Kant based upon "the indeterminate idea of the supersensible within us" -- intuition (Kant, 208). While defending the aesthetic as a legitimate form of cognition, separate and equal to pure reason, Kant defended implicitly the use of intuition as a conceptual framework. As a result of Kant's work, nature no longer needed to be viewed only in rational, mechanical light. Aesthetic, spiritual, and intuitive constructs of nature gained legitimacy.

Philosophical Counterreactions

The foremost philosophical critic of Modernism was the Dutch-Jewish philosopher, Benedict Spinoza. Classical science, Spinoza argues, prevents the possibility of humans recognizing their relationship between themselves and nature. Since humankind was bound within the constructs of nature, humankind's happiness depends upon its ability to recognize this relationship. Spinoza accepted science's framework of inquiry as a legitimate, comprehensive mode of inquiry, but questioned its failure to consider the relation between humans as agents in the world and nature itself. He therefore sought to devise an ethical framework for humankind grounded in nature which would supersede any disruptions resulting from scientific knowledge and technology. In effect, what classical science had denied --

the relation between humans as ethical agents and nature as the environment in which they acted -- Spinoza hoped to restore (Oelschlaeger, 122).

Spinoza based his ethics on the principle of the unity of nature. Indeed, much of the work preceding and including his Ethics was dedicated to the purpose of reducing the universe to a unified and uniformed whole governed by universal and unchangeable laws. According to Harry Wolfson:

That philosophers before him had fallen short of the attainment of this purpose -- that they had broken up the universe into discontinuous parts by positing a spiritual God as distinct from the material world, and correspondingly in man a spiritual soul as distinct from a material body, with the resulting beliefs of design in nature and free will in man -- was in his opinion due to a logical inconsistency in their thinking (Wolfson 1948, 33).

In separating both God and man from the physical and material, these philosophers, Spinoza argued, could not logically achieve a unified universe. According to Spinoza, one substance cannot be produced by another substance (Spinoza 1933, 41). His corollary to this proposition, then, is that there is nothing can be produced by anything external to itself: something cannot come from nothing. The main-point then of his corollary is that if the material world were produced by an immaterial God, something would be produced from nothing. Rather than trying to work within this conception of God nature, Spinoza proposed both God and humankind be placed under and within, not outside and above,

the universal rule of nature and thus establishing its unity (Wolfson, 332).

Early American Counterreactions

Much of the reaction to the Modernist paradigm found its way into American thought and letters of the early and mid-nineteenth century. In doing so, these critics helped in the development of the early elements of wilderness appreciation. In America, as in Europe, appreciation for wilderness was based upon Romanticism and its use of the sublime (the association of God with wild nature). This appreciation found its way into the thought of those members of American society who were usually not involved directly with wilderness as was the pioneer -- urban elites.

According to Nash, William Byrd II of Virginia is one of the earliest American Romantics. Educated in London, Byrd returned to his family plantation in Virginia but never lost interest in English social and literary trends, including the Romantic counterreaction to the Modernist paradigm. While working as a commissioner in a surveying operation to establish Virginia's boundary with North Carolina, Byrd began to collect his thoughts about the Virginia wilderness and published them in his book, History of the Dividing Line. While this work can hardly be called revolutionary, it does offer the first extensive American

commentary putting wilderness in a more favorable light as seen in the following passage:

Our landlord had a tolerable good house and clean furniture, and yet we could not be tempted to lodge in it. We chose rather to lie in the open field, for fear of growing too tender. A clear sky, spangled with stars, was our canopy, which being the last thing we saw before we fell asleep gave us magnificent dreams. The truth of it is, we took so much pleasure in that natural kind of lodging, that I think at the foot of the account of mankind are great losers by the luxury of feather-beds and warm apartments. The curiosity of beholding so new and withal so sweet a method of encamping, brought one of the senators of N. Carolina to make us a...visit (Byrd 1929, 58).

Byrd portrayed the expedition into "this great Wilderness" as a delightful adventure. It is important to note, however, that this nascent Romantic appreciation, the beginnings of American appreciation of wilderness, and much of the tradition that was to develop out of this small movement, was seldom ever without qualification. Byrd, as with many of those who supported his views, idealized most often the economically useful, pastoral, and controlled experience of nature (Nash, 53).

A particular theme of the American Romantic movement was the sense of freedom that vast expanses of wilderness offered. In his volume The Adirondack: or Life in the Woods, Joel Headley at first expressed the typical Romantic reaction of awe, terror, sublimity, and beauty when confronted with the Adirondacks range. Headley went on to assert that he loved "the freedom of the wilderness and the

absence of conventional forms there" (Nash, 62). Santa Fe trader Josiah Gregg, following his final trip to the Southwest in 1839, wrote:

I have striven in vain to reconcile myself to the even tenor of civilized life in the United States; and have sought in its amusements and its society a substitute for those high excitements which have attached me so strongly to Prairie life. Yet I am almost ashamed to confess that scarcely a day passes without my experiencing a pang of regret I am not now roving at large upon those western plains. Nor do I find my taste peculiar; for I have hardly known a man, who has ever become familiar with the kind of life which I have led for so many years, that has not relinquished it with regret...The wild, unsettled and independent life of the Prairie trader, makes perfect freedom from nearly every kind of social dependence an absolute necessity of being...The exchange of this untrammelled condition -- this sovereign independence, for a life in civilization, where both [humankind's] physical and moral freedom are invaded at every turn, by the complicated machinery of social institutions, is certainly to commend itself to but few, -- not even to all those who have been educated to find their enjoyments in the arts and elegancies peculiar to civilized society; - - as is evinced by the frequent instances of men of letters, of refinement and of wealth, voluntarily abandoning society for a life upon the Prairies, or in the still more savage mountain wilds (Gregg 1966, 219).

However, Romantics feared leaving civilization totally behind. Rather, they preferred to keep a foot in each realm, taking advantage of the virtues offered by each. While appreciation of wilderness existed, it was rarely, if ever, wholly unqualified. Romanticism had cleared enough of the old assumptions away to permit a more or less favorable attitude toward wilderness without entirely eliminating the

instinctive fear and hostility a wilderness condition had produced.

In summary, the roots of traditional American attitudes concerning wilderness were conditioned by the paradigm of Modernism. With the arrival of Europeans upon the shores of the New World, so too came their world view and the initial reaction to the wilderness in which they found themselves. Traditional notions of progress, development, domination, and the conception of nature as a mechanism all helped in the development of the dominant paradigm in American society and its subsequent treatment of wilderness. However, as the European scientific, philosophical, and literary counterreactions to Modernism spread throughout the Continent, they also found articulation in the New World in the form of the American Romantic movement. The seeds of discontent were sown in the fertile ground of urban elites whose experience with wilderness was more limited than that of their pioneer counterparts. From this seminal Romantic countermovement rose America's first true philosophic movement, Transcendentalism, and one of the most important voices in the development of Romantic appreciation of wilderness in America -- Henry David Thoreau.

CHAPTER 4

THOREAU AND ROMANTIC WILDERNESS

Introduction

The Romantic movement in America, reflecting the European counterreaction to the paradigm of Modernism, had profound implications for the American designs upon wilderness. This chapter discusses further the repercussions of the literary and philosophical reaction upon Transcendentalism and, in turn, its impact upon possibly the most pivotal figure in the development of the American wilderness appreciation -- Henry David Thoreau.

Transcendentalism

To understand the thought of Henry Thoreau it is necessary to discuss first the American Transcendental movement and the work of Ralph Waldo Emerson. In her work, Transcendentalism as a Social Movement, Anne Rose notes that much of the academic interest in the Transcendental movement focuses upon its intellectual component. According to Rose:

Here the Transcendentalists helped demonstrate that America had a native intellectual and literary tradition, and the documents Perry Miller collected in The Transcendentalists (1950) are indeed convincing proof of the force and originality of their thinking

...[there is a] strong case...made for the Transcendentalists as leading thinkers ...[whose] heart and soul was the faith that the normal democratic process could be trusted to yield social justice...(Rose 1981, viii).

Transcendentalism was a religious, philosophical, and literary movement and located in the history of American religious thought as post-Unitarian and freethinking, as Kantian and idealistic in philosophy, and Romantic and individualistic in literature. The Transcendental counteraction began as a quest for new ways of conceiving the human condition to replace Modernist concepts that no longer elicited any conviction for many.

"Transcendentalism," according to Paul Boller, "in short, was mainly an enterprise undertaken by bright young Unitarians to find meaning, pattern and purpose in a [modern] universe no longer managed by a genteel and amiable Unitarian God" (Boller 1974, xx).

For those who participated in Transcendentalism, the experience was one of wonder and joy they found in the universe all around them. Transcendentalism meant breaking out of conditioned, habitualized ways of conceiving things and trying to view reality with what has been called the "innocent eye." "In the tradition of Idealist such as Plato and Kant," writes Nash, "the American Transcendentalists postulated the existence of a reality higher than the physical" (Nash, 85). There was for the Transcendentalists, as their name implies, a higher realm of spiritual truth and

vitality that existed apart from the lower world of the material. According to Rose, "[the Transcendentalists] had hoped to save Christianity from historical oblivion and to give it personal immediacy by pointing out the identity of Gospel truth and intuition" (Rose, 38).

Ralph Waldo Emerson, recognized as the father of American Transcendentalism, gave the best explanation of what the word meant in his lecture "The Transcendentalist." According to Emerson:

What is popularly called Transcendentalism among us, is Idealism; Idealism as it appears in 1842. As thinkers, mankind have ever divided into two sects, Materialists and Idealists...The materialist insists on facts, on history, on the force of circumstances, and the animal wants of man; the idealist on the power of Thought and of Will, on inspiration, on miracle, on individual culture. These two modes of thinking are both natural, but the idealist concedes that his way of thinking is in higher nature...it is well known to most of my audience that the Idealism of the present day acquired the name Transcendental from the term used by Immanuel Kant, of Konigsberg, who replied to the skeptical philosophy of Locke, which insisted that there was nothing in the intellect which was not previously in the experience of the senses, by showing that there was a very important class of ideas imperative forms, which did not come by experience, but through which experience was acquired; that these were intuitions of the mind itself; and he denominated them Transcendental forms. The extraordinary profoundness and precision of that man's thinking have given vogue to his nomenclature, in Europe and America, to that extent that whatever belongs to the class of intuitive thought popularly called at the present day 'Transcendental' (Emerson 1983, 193).

Kant was, in short, the wellspring of the American Transcendentalist movement. Kant believed that human reason, inevitably seeks to know what ultimate reality is; it tries to unify the concepts provided by the Understanding (transformation of concrete concepts into the abstract) in order to produce metaphysical or religious ideas that will explain the universe as a whole in its fundamental character (Boller, 39).

Kant's influence upon Transcendentalist thinkers resulted in their placing faith in intuition and not the pure reason of Modernism. This faith in intuition can be seen in the Transcendentalist faith in the natural-material world. Through the use of intuition a natural object, if rightly seen and construed, would reflect universal spiritual truths. Nature was at least the mirroring of higher laws that emanated from God, if not the actual embodiment of God himself (Nash, 85). Boller argues that this in turn provided alternative moral and religious ideals to the society of the age. According to Boller:

The [Transcendentalists] were absolutely certain that these ideals were grounded in the very nature of things and that efforts to live by them made for more fruitful and authentic living than the mechanistic philosophy of the Lockians (Boller, 63).

From the Transcendentalist perspective, humankind finds itself rooted in the material world of a universe divided between object and essence. However, because of

their possession of a soul or spirit, humans are able to transcend their physical condition. According to Nash:

Using intuition or imagination (as distinct from rational understanding), man might penetrate to spiritual truths. In the same manner he could discover his own correspondence with the divine being and appreciate his capacity for moral improvement (Nash, 85).

In its perspective on humans and nature, Transcendentalism had profound implications for the meaning of the American wilderness. Transcendentalism, as a doctrine, placed God and the divine back into nature. Nature was no longer merely the result of God's handiwork, but the actual vehicle through which humans could become aware of and in touch with the divine. In theory, Transcendentalists disabused themselves of the earlier ideas of wilderness as a wicked domain and regarded wilderness and its environment as a medium through which spiritual truths could be seen in a less inhibited manner. In his work, On Nature, what is commonly referred to as the Transcendentalist's manifesto, Emerson makes this point clear:

The stars awaken a certain reverence, because though always present, they are inaccessible; but all natural objects make a kindred impression, when the mind is open to their influence. Nature never wears a mean appearance. Neither does the wisest man extort her secret, and lose his curiosity by finding out all her perfection. Nature never becomes a toy to a wise spirit. The flowers, the animals, the mountains, reflected the wisdom of his best hour, as much as they had delighted the simplicity of his childhood. When we speak of nature in this manner, we have a distinct

but most poetical sense in mind. We mean the integrity of impression made by manifold natural objects. It is this which distinguishes the stick of timber of the wood-cutter, from the tree of the poet. In the wilderness, I find something more dear and connate that in the streets of villages...in the woods we return to reason and faith (Emerson, 9).

This discussion of Transcendentalism introduces the thoughts and attitudes that helped shape the Thoreauvian worldview. It would be a mistake, however, to assume Thoreau to be a mere epigone of Emerson's thought. Emerson and the other Transcendentalists unquestionably left their mark on Thoreau, but Transcendentalism alone does not provide an adequate framework for understanding Thoreau's idea of wilderness. According to Oelschlaeger:

Setting out from his transcendental inclinations, Thoreau developed through ceaseless reflective effort a remarkable philosophical position revolving around the ideas of self, society, and wilderness and the interrelations among them...[Emerson's] key contribution was helping Thoreau to establish a belief that nature can be known through the immediate activity of inquiring consciousness (or, alternatively, an absolute separation between consciousness and nature does not exist). This transcendental axiom, or first principle, was at the heart of the Emersonian philosophical legacy. But comparison of Emerson's Nature and other relevant writings...with Thoreau's mature work underscores the differences in their use of the imagination. Unlike Emerson, Thoreau uses transcendentalism as a departure point, that is, as justifying the intuitive apprehension and active questioning of nature (Oelschlaeger, 134).

This difference is crucial in understanding Thoreau's moving beyond a Transcendental perspective of nature and wilderness (Rose, xi).

For Emerson, consciousness is nothing more than a vehicle to carry man toward a pre-existing conclusion. Nature is not a philosophical inquiry but a literary exercise designed to rest a pre-established belief in God on rational, rather than scriptural, footing. For Emerson then, the emphasis is placed upon the human spirit and its relationship with God. According to James McIntosh:

Emerson urges his readers to study nature by living in it and learning to read God's uncorrupted revelation imprinted secretly on it. On the other hand, Emerson keeps saying that nature is insignificant in itself... 'Nature is but an image or imitation of wisdom, the last thing of the soul; Nature being a thing which doth only do, but not know...' In general, the intention of Emerson's book is not simply to urge a return to nature, but to show how to bring nature under the way of man's spirit, so that the universe may at last be entirely spiritual (McIntosh 1974, 30).

The conceptual focal point for Emerson was not nature or wilderness -- they were mere tools in the effort to achieve spirituality, not an end or good in themselves.

Henry David Thoreau and the Romantic Position

A discussion of transcendentalism alone is not enough to understand the thought of Thoreau. "As with all first-rate minds," writes Oelschlaeger, "[Thoreau's] cannot be reduced to the ideas of his progenitors. Thoreau asks

questions and finds interrelations between the human species and nature about which Emerson never dreamed"

(Oelschlaeger, 136). Rather than attempting to "build a kingdom of man over nature," Thoreau seeks a partnership of equals with it, where nature might foster the poetic in man and man in turn treats nature as a single, living, existential being (McIntosh, 34). It is Thoreau's attraction to nature and its wild attributes that set him apart from Emerson.

Emerson's ideas, however, led Thoreau to make an extraordinary investment in the idea of nature. The principle that humans may in fact correspond with or discover themselves through a relationship with nature "enabled [Thoreau] to think about all the natural life that came into his ken, whether it was beautiful or ugly, wild or tame, exhilarating or boring" (McIntosh, 37). At the same time, however, Thoreau was strained to accept transcendentalism wholeheartedly because of the ambiguities that he felt it held toward nature. As a result, Thoreau developed a double program -- to live intensely in the spiritual and physical realms. According to McIntosh:

[These] two lives pull against each other in his work. The theory also make him acutely aware that he as a conscious seeker was separate from nature. And finally, the theory covertly instilled in him the doubt that nature exists, a doubt that consorted uneasily in his mind with his acute appreciation of nature's presence (McIntosh, 37).

There are, therefore, contradictions in Thoreau's views toward nature. Thoreau's views regarding nature must be approached with the understanding that they are the result of a complex tension between the creative force of his intuition (that nature and man exist in symbiosis) and the rational force of his ideal logic, a logic that questions the benevolence and even the existence of nature.

There is a second factor shaping Thoreau's attitude towards wilderness -- his opinion of civilization. As Nash points out:

By mid-century American life had acquired a bustling tempo and materialistic tone that left Thoreau and many of his contemporaries vaguely disturbed and insecure. To be sure, the official faith in progress ran strong. Yet the idea that a technological civilization and the pursuit of progress was disrupting older, better patterns of living could not be entirely set aside (Nash, 87).

The development of Thoreau's wilderness philosophy must therefore be considered more meaningful when juxtaposed against this sense of discontent with society.

Thoreau's conception of the value of wilderness is a result of vigorous self examination and a lifetime of primary experiences with nature. Not only did he live for two years alongside Walden Pond, but he ranged widely around New England, Maine, and Canada. For Thoreau, the presence of wild nature was of utmost importance. Unlike many of his Romantic contemporaries, Thoreau was not satisfied in only articulating some appreciation for wilderness. Thoreau

grounded his argument in the idea that wilderness was the source of vigor, inspiration, and strength for man's physical as well as spiritual well being. According to Thoreau:

Life consists with wildness. The most alive is the wildest. Not yet subdued by man, its presence refreshes him. One who is not pressed forth incessantly and never rested from his labors, who grew fast and made infinite demands on life, would always find himself in a new country or wilderness, and surrounded by the raw material of life (Thoreau 1977, 611).

Loss of contact with the wild, leaves humans, their culture and society less than whole.

Thoreau's inclinations toward nature are recorded in the Natural History of Massachusetts, considered to be one of the first instances of his nature writing. In it, as seen in the following passage, Thoreau diverged from mainline Transcendentalists:

In society you will not find health, but in nature. Unless our feet at least stood in the midst of nature, all our races would be pale and livid. Society is always diseased, and the best is more so...The doctrines of despair, of spiritual or political tyranny or servitude, were never taught by such as shared the serenity of nature...We fancy that this din of religion, literature, and philosophy, which is heard in pulpits, lyceums, and parlors, vibrates through the universe, and is as catholic a sound as the creaking of the earth's axle; but if a man sleep soundly, he will forget it all between sunset and dawn (Thoreau 1977, 33).

Thoreau, with such writing, was not apt to make many friends or wield much influence among New England's Transcendentalists.

With the writing of Natural History, Thoreau manifests his predilection for the critical. No axiom or opinion was left unturned. Thoreau's iconoclasm led him to another important critique: his criticism of the scientific method. Not only did his critique question the very method through which the Transcendentalists hoped to reveal the eternal laws of nature, but question the Cartesian-Newtonian paradigm itself. Thoreau writes in Natural History:

Wisdom does not inspect, but behold. We must look a long time before we can see. Slow are the beginnings of philosophy. He has something demoniacal in, who can discern a law or a couple of two facts...The true man of science will know nature better by his finer organization; he will smell, taste, see, hear, feel, better than other men. His will be a deeper and finer experience. We do not learn by inference and deduction and the application of mathematics to philosophy, but by direct intercourse and sympathy. It is with science as with ethics, -- we cannot know truth by contrivance and method; the Baconian is as false as any other, an with all the helps of machinery and the arts, the most scientific will still be the healthiest and friendliest man, and possess a more perfect...wisdom (Thoreau 1977, 56).

Natural History was Thoreau's attempt to revive a more primitive awareness of the natural world and to show that a nonmediated or scientific encounter with wilderness provides humans with the raw material to gain such awareness. According to Oelschlaeger, this is a legacy of idealism and Romanticism unrealized in Emerson's Nature.

For Thoreau then, wilderness provided a reservoir of the raw material needed for humankind to regain its

primitive awareness. However, like Emerson's, Thoreau's attention was upon the benefits of nature upon humans. Nature is a tool for humankind to utilize in order to maintain and develop its spirit. According to Thoreau:

The poet's, commonly, is not a logger's path, but woodman's. The logger and pioneer have preceded him, like John the Baptist; eaten the wild honey, it may be, but the locusts also; banished the decaying wood and the spongy mosses which feed on it, and built hearths and humanized Nature for him. But there are spirits of a yet more liberal culture, to whom no simplicity is barren. These are not only stately pines, but fragile flowers, like the orchises...which derive their nutriment from the crudest mass of peat. These remind us, that, not only for strength, but for beauty, the poet must, from time to time, travel the logger's path and the Indian's trail, to drink at some new and more bracing fountain of the Muses, far in the recesses of the wilderness (Thoreau 1985, 712).

Wilderness for Thoreau was essential to humans for it symbolized the untapped potential in every individual. Thoreau urged humans to explore the wild without, in an effort to facilitate the exploration of the wild nature within.

Thoreau, like Emerson, represents a transition. Emerson and the Transcendentalists provided the necessary link between the counterreaction to Modernism occurring in Europe with the seminal American movement. Emerson invested Thoreau with a great appreciation of nature's ability to help humanity correspond with its true nature. Thoreau, in turn, sought to abandon the use of Modernism's paradigm. Wild nature and the opportunity it provides for humans to

explore their inner-self through the use of intuition rather than rationality remained a lasting theme for Thoreau and marks his departure from the Transcendentalist to a Thoreauvian world view. This view, however, was not wholly unqualified.

"While Thoreau was unprecedented in his praise of the American wilderness," writes Nash, "his enthusiasm was not undiluted; some of the old antipathy and fear lingered even in his thought. Encountering the Maine woods underscored it" (Nash, 90). His journey to the Maine wilderness, especially his encounter with Mt. Ktaadn, thoroughly convinced Thoreau that the Transcendentalist's notion of nature and the world existing for human use was wrong. The wilderness Maine presented the uninitiated Thoreau with a view of the world that was vast, wild, and in Thoreau's words, "grim." The landscape was "savage" and "dreary." Where he once exalted in the solitude of the woods surrounding Walden Pond, he found the woods of Maine intolerably lonesome, as seen in the following passage:

It was vast, Titanic, and such as man never inhabits...inhuman Nature has got him at a disadvantage, caught him alone, and pilfers him of some of his divine faculty. She does not smile on him as in the plains...Nature was here something savage and awful, though beautiful...This was that Earth of which we have heard, made out of Chaos and Old Night...There was there felt the presence of a force not bound to be kind to man. It was a place for heathenism and superstitious rites, - - to be inhabited by men nearer of kin to the rocks and to wild animals than we (Thoreau 1985, 640).

Ktaadn awakened Thoreau to what he perceived as nature's darker side. While Walden represents the positive in nature, Thoreau's writings regarding his Mt. Ktaadn experience reveal that nature is not without its negative aspects.

Thoreau's experience in Maine, however, is not without its benefits either. According to Oelschlaeger:

Positively viewed, the position developed in 'Ktaadn' is antithetical to Emerson's philosophy, the final step in Thoreau's development from [T]ranscendentalism to a genuine relationship with the universe. His writings hereafter carry the mark of his singular experiences, of his unique vantage point on the wilderness, and of his genius. More important, the encounter with Ktaadn sharpens Thoreau's understanding of the interrelations between humankind and nature...By the time he returned to Walden he was enroute to developing...a profound revolutionary perspective on nature (Oelschlaeger, 149).

Walden helps form the heart of Thoreau's wilderness philosophy, outlining both the critical -- his continuing critique of Modernism's paradigms and its conventional wisdom -- and the positive -- his recognition of the pervasive continuities between the human and the natural -- sides of his thought (Oelschlaeger, 168). Thoreau's experience with Mt. Ktaadn presented him with the problem of having to rectify his sense of the separateness of humankind from nature and its love for nature. As Nash describes, how was it possible to secure the advantages of civilization without suffering from any of its disadvantages? For

Thoreau the answer lay in an Aristotlean golden mean: the vitality and introspection offered by wilderness balanced by the sensitivity and intellectual and moral growth that characterized his ideal view of civilization. The ideal person or society occupied a middling, or to use Nash's spectrum approach, a pastoral position, drawing on both the wild and the refined. The essential requirement for society was to maintain contact with both civilization and wilderness (Nash, 92).

Thoreau's impact American attitudes and ideas regarding wilderness may be considered two-fold. First, in providing a philosophic defense of wilderness, Thoreau gave the American idealization of the pastoral a new foundation. According to Nash:

Previously most Americans had revered the rural, agrarian condition as a release from both wilderness and from high civilization. They stood, so to speak, with both feet in the center of the spectrum of environments. Thoreau...arrived at the middle by straddling. He rejoiced in the extremes and, by keeping a foot in each, believed he could extract the best of both worlds...According to Thoreau, wildness and refinement were not fatal extremes but equally beneficent influences Americans would do well to blend (Nash, 94).

The second important aspect is Thoreau's identifying the necessity of wild nature to maintain the vitality of the human spirit. This is best seen in his essay Walking where Thoreau writes:

I wish to speak a word for Nature, for absolute freedom and wildness, as contrasted with a freedom and culture merely civil, -- to regard

man as an inhabitant, or a part and parcel of nature, rather than a member of society...Nowadays almost all man's improvements, so called, as the building of houses and the cutting down of the forest and of all the large trees, simply deform the landscape, and make it more and more tame and cheap...what I have been preparing to say is, that in Wildness is the preservation of the World...From the forest and wilderness come the tonics and barks which brace mankind. The story of Romulus and Remus being suckled by a wolf is not a meaningless fable. The founders of every state which has risen to eminence have drawn their nourishment and vigor from a similar wild source...In short all good things are wild and free (Thoreau 1977, 592).

Thoreau's essential insight here is nourishment a communion with nature can bestow upon the individual and society.

Wilderness provides the essential mechanism through which the individual's and, in turn, society's spiritual health and vitality is maintained. The loss of wilderness threatens the loss of this mechanism and subsequently the loss of a society's necessary spiritual health.

Thoreau's work represents a transition. His is a move away from Emerson's theorizing and abstract treatment of nature. Here Thoreau's genius lies not in a retreat from civilization but rather in an affirmation of the reality of an organic process and humankind's inextricable linkage with this process. Thoreau demonstrates through his writings his affinity with the iconoclast and in doing so recognizes the limitations of Modernism's scientific worldview. According to Oelschlaeger:

his intuitive grasp of the evolutionary character of the cosmos, and the intertwining of matter, life, and consciousness in the human animal, has been vindicated, first by Darwin and later by ethology, human ecology, cultural anthropology, and cultural geography (Oelschlaeger, 171).

Thoreau's notions of man, civilization, and wilderness are important here in that they came to form the foundation of the Romantic arguments for wilderness preservation. Arguments for the protection of wilderness by Romantic "preservationists" centered upon the spiritual and aesthetic qualities that wilderness offered society. By their definition, these arguments stood in clear contrast to the materialistic/capitalistic claims upon wilderness brought forth by the modern, industrial interests of the time -- interests that would come to be defended by the conservationist.

CHAPTER 5

THE SCIENTIFIC COUNTERREACTION

Introduction

Previous chapters have identified the dominant social paradigm, its impact upon traditional American views towards wilderness, and the literary and philosophical elements of the counterreaction to Modernism. This chapter explores the scientific thought championed by Modernism, the scientific counterreactions, and the impact of this scientific counterreaction on the conservation movement.

The Roots of Modernism's Science

"The eighteenth-century," writes Donald Worster, "the age of Reason, [as] it is often called, still astonishes us with its fertility of imagination" (Worster 1985, 2) Much of what modern society has become today can be traced directly to the thought and philosophies that evolved during this century. Much of the thinking that evolved from the eighteenth-century looked with envy toward what the natural sciences had achieved: theoretical elegance and precision leading to prediction and causal control.

To understand the scientific counterreaction to Modernism, the following discussion briefly surveys the essentials of the scientific paradigm that are included in the idea of Modernism. A discussion of these scientific essentials starts with a discussion of Classical Greek thought, especially that of Aristotle and his theory of matter and motion.

According to Aristotle, matter remained motionless or in a state of rest unless acted upon. A stone that is unhewn remains unhewn so far as the stone is concerned: it does not hew itself, nor does a hewn stone build itself into a house (Copleston 1960, 312). How then does change occur from Aristotle's point of view? In the modern mind, the cause of change must be a previous change, and that, if the universe were static, it would remain so. In an Aristotelian understanding of motion, according to Bertrand Russell:

we must take account of what he says about causes. There are, according to him, four kinds of causes, which were called, respectively, material, formal, efficient, and final. Let us take...the man who is making the statue. The material cause of the statue is the marble, the formal cause is the essence of the statue to be produced, the efficient cause is the contact of the chisel with the marble, and the final cause is the end that the sculptor has in view. In modern terminology, the word 'cause' would be confined to the efficient cause...[the] final cause...supplies a purpose for change, which is essentially an evolution towards the likeness of God (Russell 1946, 191).

It is important simply to understand that for Aristotle, change depended upon the notion of a "mover" (God) who

provided the impetus for change (the efficient cause of first cause) and the purpose for that change (final cause). Each of these views of change would have profound impact upon later Western thought, particularly that of the Renaissance, the Enlightenment and the scientific revolution.

The scientific revolution inspired a veritable explosion of knowledge; never had such a tool for production of knowledge, such a method of inquiry, been loosed upon the world (Oelschlaeger, 100). Renaissance scientists were primarily concerned about knowledge for its own sake. "But at the same time," observes Copleston:

it was a characteristic of some Renaissance thinkers to emphasize the practical fruits of knowledge. The new scientific discoveries and the opening up of the new world naturally suggested a contrast between a knowledge of nature, gained by study of her laws and making possible a use of nature for man's benefit, and the older abstract discipline which seemed devoid of practical utility (Copleston 1953, 21).

Ultimately the driving spirit of the Renaissance expressed a shift of emphasis away from the other-worldly to the more mundane and from man's dependence upon nature to his creative control over it (Copleston 1953, 250).

Galileo and Efficient Cause

Control over nature began with the revolutionary shift from an organismic to a mechanistic paradigmatic view of nature. This revolution began with Galileo. Galileo

represents the focal shift from the scientific observer within nature to the scientific observer without, and the shift from final causes to efficient causes. Reflecting the social and political attitudes prevalent during this time, Galileo's use of physics ultimately took God out of the primary scheme of the physical and scientific world. The study of final causes seemed devoid of practical utility; the study of efficient causes enable one to control nature and to extend man's dominion over nature (Copleston 1953, 21).

Galileo's focus on efficient cause rather than final cause as the reason for motion and change may be seen in his thoughts concerning astronomy. Motion, for Galileo, was not a result of God's desire and action to cause planets to move constantly, rather, it was inertial movement in the bodies themselves. God, in Galileo's model, put everything into motion once, and the rest is taken care of by the inertial movement of matter itself. Matter interacting with other matter was the cause of motion within the physical realm. Instead of focusing upon the reasoning of the "mover" for motion, Galileo could concentrate on the observable, measurable, mechanical, quantitative, and ultimately predictable actions of celestial bodies in motion. According to Oelschlaeger, the picture of the natural world, accordingly, was radically changed for Galileo. The theory of inertia explained the motion of both the heaven and the

earth, and there was therefore only one true science -- physics -- and God played a very small role in it.

However, Galileo did not divorce final cause from the entirety of the modern worldview, but merely from the scientific understanding and treatment of the physical world. According to Oelschlaeger:

Nature as system of matter-in-motion was to be understood through knowledge of efficient cause and inertial motion, not final cause; but the traditional Judeo-Christian view of nature as an earthly abode designed by God in Heaven for humankind was left intact (Oelschlaeger, 80).

Most of the great names in early modern science, according to Glacken, did not deny design in nature nor the validity of final causes. The Copernican and Galilean theories had not called God or his creative act into question; the cosmic system was a product of divine design and order.

Galileo's treatment of the natural world understood from the perspective of efficient cause inspired the thought of Isaac Newton. With Newton the world was finally comprehended under a unified, dynamic mechanical system. Newton showed the laws of the universe to exemplify one gigantic mathematical harmony moving to the music of the dynamic principles established by terrestrial experiment, and induction by Galileo and himself. With Newton, the world was not only thought of as a machine, but was exhibited in detail as a function of mechanical law -- a system of the world. All matters of celestial and terrestrial mechanics, found among Kepler, Copernicus, and

Galileo, were unified into a grand system of mathematical-mechanical laws (Hurlbutt 1965, 5).

Newton's mechanical-geometrical conception of the world order, however, provided him with the basis for his theological inquiries. The law of gravity, the law of optics, the laws of organisms, all exhibit order and system -- an exquisite design that inherently implies a designer. According to Robert Hurlbutt:

with Newton the system of the world was held to be so beautifully displayed, its cognitive character so well determined, its mechanism so clearly formulated in terms of mathematical proportions that the designer could be specified as an intelligent geometer...In the Godhead, therefore Newton locates by the final cause, the ultimate purpose of the universe, the forms of patterns, and the efficient cause -- the beginning of motion (Hurlbutt, 79).

This use of scientific notions in theology provided theologians with a reinvigorated design and teleological argument that dominated religious thought for a century or more and provided the beginnings of the scientific counterreaction to Modernism.

The Initial Scientific Counterreaction: Physico-Theologists

The scientific counterreaction to Modernism was grounded in an attempt to recast traditional philosophical and religious beliefs in a manner consistent with the onslaught of scientific knowledge. Most seminal scientific thinkers, however, retained some belief in final cause.

According to Glacken:

It is true that [Galileo's and Newton's] scientific method could do without teleological explanation; the basic forces controlling creation could be stated in mathematical terms, and teleology could be put to one side, or survive in the form of conventional piety. It is not so easy, however, to ignore its hold on the earth and life sciences from the seventeenth to the nineteenth centuries (Glacken, 505).

Although efficient cause supplanted final cause within the scientific paradigm, there was within the scientific community a developing minority tradition that did not wholly embrace the mechanistic worldview. Such scientists believed the factual evidence about the world and the creatures in it supported the idea of a divine plan.

The physico-theologist movement (also known as natural theology) led the early challenge to the mechanistic science of Modernism. "Many of these [thinkers]", as Glacken notes:

emphasized the significance of organic interrelationships on the earth, and their views are not unlike modern ideas of the balance and order of nature. There are, however, two significant differences. The destructive interferences of human cultures on the balance and harmony of nature did not enter into their works, and the harmonies, the adaptations of organisms to the environment and to each other, were works performed by God at the creation. The emphasis was therefore on form, adaptation, and arrangement, not on growth and development as in modern evolutionary theory (Glacken, 393).

John Ray's work, The Wisdom of God Manifested in the Works of the Creation, provides an example of the physico-theological position. It examines the nature of the earth

and the natural harmonies observable on it, and attempts to find a place for man and his labors in it as well.

Ray (1627-1705) argued that nature could not be understood simply as inert matter-in-motion, believing that the biological and geological evidence overwhelmingly indicated that nature was more than a mere collection of its parts. Mechanistic materialism, therefore, had failed to account for nature as actually observed (Oelschlaeger, 101). In spite of the apparent success that physical science claimed in explaining the motion of strictly material objects, Ray argued that there was no conflict between faith and reason when it came to the world of animate-matter-in-motion. According to Glacken:

To Ray, a belief in the constancy of nature, in the consistent fertility and fruitfulness of the earth, is not only a logical inference from the divine plan, but is warranted by the evidences of contemporary observation; it is obvious from the use men make of natural products about them...[we may see in the natural products] the wisdom of God in supplying man with the means of lifting himself out of savagery, for without them we could have 'nothing of Culture or civility' (Glacken, 419).

For Ray then, the world was far too complex and diverse to be explained or understood through Newtonian mechanics. Nature was incomprehensible without the notion of a supreme creator and, accordingly, Ray attacked the Cartesian-Newtonian scientific program and developed a positive account of nature as a living entity created by God (Oelschlaeger, 101).

Ray's discussion of nature as the result of a divine plan or final cause was not an attempt to overthrow the new scientific paradigm. "At first," according to Worster, "Ray attempted to salvage the mechanical philosophy from the abuses of those who were using it to account for nature without the intervention and assistance of any superior immaterial agent" (Worster, 42). However, as a natural historian, he did understand the vast amount of information that seemed consistent with the machine metaphor. Accordingly Ray struck a compromise: he could not find sufficient reason through efficient cause to explain the harmonious interrelations among the diverse elements of the natural world, for these testified to the existence of a divine creator (Oelschlaeger, 102). God, for Ray, did exist and he, in turn, designed a world which worked on the observable principles of mathematics and mechanics.

The significance of Ray's work is that it represented an impressive command of the knowledge of natural history in an attempt to demonstrate that unity existed in nature and that this unity was a result of a creative process started and maintained by God (Glacken, 416). Ray's work, however, did not go beyond the anthropomorphic framework provided by Judeo-Christianity. Although the natural abundance of the world was not designed specifically for man, Ray accepted the biblical interpretation for its exploitation. According to Glacken:

Ray considers the planet as a unit...This view of man in his relation to the earth is a gracious, almost idyllic, one: a friendly abode for man has been created by Ray's beneficent Creator...and grateful man...uses the beautiful earth...even though it was not designed especially for him (Glacken, 421).

Ray advocated a kind of Christian stewardship of the earth, but the events of the nineteenth century, the work of Darwin and then Marsh, destroyed the notions of a designed earth and with it, the ethic of Christian stewardship (Oelschlaeger, 103).

Ray had planted the initial seed of ecology in his fusion of natural history into a comprehensive theory of unity. From Ray's seminal work two major traditions in ecology emerged in this early period. According to Donald Worster:

The first was an 'arcadian' stance toward nature, epitomized by Gilbert White, the parson naturalist of Selborne. This arcadian view advocated a simple, humble life for man with the aim of restoring him to a peaceful coexistence with other organisms. The second, an 'imperial' tradition, is best represented in the work of Carl Linnaeus -- the key ecological figure of the age -- and of the Linnaeans generally. Their ambition was to establish, through the exercise of reason and by hard work, man's dominion over nature (Worster, 2).

During the time, the scientific community was moving more and more into the confines of Modernism -- abstract physical and chemical theories that interpreted the natural world as mere matter-in-motion and sought above all else knowledge of efficient cause (Oelschlaeger, 104).

Arcadian and Imperial Science

The Arcadians were a minority in the scientific community, inspired by the work of Ray. Arcadian scientists did not seek the knowledge of efficient causes, but rather an understanding of the whole of the natural world and how each component related with other components. This work was epitomized by Gilbert White (1720-1793). White, along with Ray, had long observed nature and wielded an impressive knowledge of natural history. However, White had a philosophic dimension beyond Ray and his physico-theological leanings which ultimately interpreted the world with a utilitarian palette. This dimension in White's concept of ecology was the arcadian harmony with nature as he found it in his rural life. White's appreciation of nature must be viewed in terms of his shared environment. His was an idyllic, pastoral setting that allowed for appreciation, as opposed to the American pioneer experience that left no time for appreciation. "But, the overwhelming impression in [White's] arcadian writing," notes Worster, "is of a man eager to accept all nature into his parish sympathies" (Worster, 10). Ecology for White was thus a means not to the Cartesian end of power over nature but rather to recreate or rediscover and maintain a primal bond with the natural world (Oelschlaeger, 104).

White's arcadian ecology, however, was not only ignored for almost a half-century, (England was too busy

consolidating and adjusting to the processes of modernization to read about the "crinking of field crickets") but was rivalled in the eighteenth century by imperial ecology, a tradition that sought to control nature and made that one of humankind's most important ends (Worster, 29). The Swedish botanist Carl von Linne (1707-1778, also know as Linnaeus, is recognized as the leading figure in imperial ecology. For Linnaeus, humans occupied a special place of dignity and honor in nature. He declaring that "Everything may be made subservient to [human] use" (Worster, 37). Linnaeus was both Cartesian, in his attempt to classify clearly and distinctly all the natural world, and Baconian in his belief that the end of such knowledge was the control of nature (Oelschlaeger, 105).

The control of nature by man, in a Linnaean framework, used as its root metaphor the notion of nature as a machine. Linnaeus' believed that a creator had designed an integrated order in nature which functioned like a single, universal, well-oiled machine. Accordingly, all parts of nature took on the aspects of machines. Elements of nature were interchangeable, expendable, and had in them only instrumental, utilitarian value. Most importantly, the Linnaean, imperial view found it helpful to ignore any aspect of nature that could not be made to fit into this mechanical picture (Worster, 40). God and humankind stood above and outside of the rest of creation.

Counterreactions to the science of Modernism, beginning with the physico-theologists and continuing through the arcadian tradition, never seriously challenged the notion that nature might be for man's use. "Both the 'mechanick philosophers' and the physico-theologists," according to Glacken, "were united...in the goal of man's attaining control over nature..." (Glacken, 426). The challenge from the physico-theologists leveled itself against what they perceived as science's removal of God from natural history. The physical sciences' use of the mechanistic and mathematical equations to divide the natural world into measurable, quantifiable units seemed to be the first steps in which the divine controlling hand would be replaced by the fortuitous movement of brute matter (Worster, 40). These counterreactionaries were of the opinion that it was not their duty to keep the world free of its use scientific thought, but rather to place God back into its equations and return humankind to harmony with nature.

Darwin and Marsh

The publication of two works -- Charles Darwin's Origin of Species in 1859 and George Marsh's Man and Nature in 1863 -- shattered the foundations of the idea of a divine, pre-established harmony between humankind and the natural world that Ray, White, and Linnaeus presupposed. It

is in the works of Darwin and Marsh that the American conservation movement found the basis for its scientific support. According to Oelschlaeger:

the tension between science and theology, and the strain between the facts determined by research and traditional beliefs established by faith, soon rendered the argument from design untenable...divine providence was on the verge of becoming otiose within the framework of efficient causation (Oelschlaeger, 106).

Although he had grown up within a traditional Judeo-Christian education, and was heavily influenced by the work of the natural theologian William Paley, Darwin could not rectify the design argument with his research: the facts of nature could be basically explained by natural selection. God, in turn, was evicted from the world of science.

Darwin's revolutionary thought, although falling within the purview of the scientific revolution, challenged the dominating scientific paradigm of the time. The science and physics of Modernism defended by Galileo, Descartes, and Newton did nothing to challenge the overall hegemony of the theology of their time. Science, they argued, was a more perfect account of God's glory since he was the architect of the natural world and mathematics was a more accurate narration of God's creation (Oelschlaeger, 106). The implications of Darwin's thought regarding God's place in nature were much more profound.

The bedrock of the idea upon which Darwin built was that the overall survival of life upon the earth was

socially determined (Worster, 156): Nature, Darwin observed, was a "web of complex relations" and no individual organism or species can live independently of that web. Here Darwin shows the influence of the physico-theologist's view that nature was not a mere sum of its parts but a complex of intricate living interrelationships. According to Worster:

A parallel assumption was that even the most insignificant creatures [were] important to the welfare of their conjoining species; somewhere at least they are 'essential members of society, or at some former period may have been so' (Worster, 156).

Much of Darwin's interest focused upon the relatedness of species with their surrounding environment. Darwin concluded from this evidence that nature was indeed one grand scheme of cooperative integration.

Another important element in Darwin's thought was his realization that no one species can hold a particular place in nature forever. According to Darwin:

All organic beings are striving to seize on each place in the economy of nature...All we can do, is to keep steadily in mind that each organic being is striving to increase in a geometric ratio; that each at some period of its life, during some season of the year, during each generation or at intervals, has to struggle for life and to suffer great destruction (Darwin 1896, 94).

That nature could be imperfect and self-corrective through competitive improvement in any one of its many parts was a radical departure from the thought and belief system of the time.

"It cannot be denied" according to Michael Ruse, "that generally the Origin sparked an explosion" with ideas such as a "web" of complex interrelations and nature as being a self-corrective, imperfect system" (Ruse 1979, 203).

However, the most important result of Darwin's thought, aside from his ideas on the interconnectedness of nature, was evolution's impact upon the perception of man's place in nature. For those who were relatively unfettered by orthodox religious beliefs, according to Ruse:

the question of man was fairly easy to answer. Forget religion and let the 'facts' speak for themselves. For someone on the other side of the barrier for whom religion was paramount and the Bible was the authority, the question was again fairly easy to answer. God had created man miraculously in his own image. The person desperately in trouble by the question was the man in the middle -- the one who wanted to roll with the advances of science and who saw great virtues in evolutionism...but who was also keen to see man set apart, the favored of God (Ruse, 245).

However, for Darwin there was to be no compromise: humans, no less than any other organism, must be explained in purely natural terms (Ruse, 248).

Darwin's evolutionary science ran against the idea of humans being created by special circumstance, for the evidence showed that humankind was inextricably related and involved in an environment that was a world of biological and geological variations exhibiting no tendency to a final configuration. According to Darwin:

The main conclusion here arrived at, and now held by many naturalists who are well competent

to form a sound judgment is that man is descended from some less highly organized form...[the] facts cannot be disputed. They have long been known, but until recently they told us nothing with respect to the origin of man. Now when viewed by the light of our knowledge of the whole organic world, their meaning is unmistakable. The great principle of evolution stands up clear and firm...He who is not content to look like a savage, at the phenomena of nature as disconnected, cannot any longer believe that man is the work of a separate act of creation...[the facts] all point in the plainest manner to the conclusion that man is the co-descendant with other mammals of a common progenitor (Darwin 1906, 620).

The human species was not seen as divinely ordained to inherit the earth. Moreover, humankind was more deeply involved in the "web of life" than the physico-theologists and arcadian ecologist suspected.

One of the primary lessons that Darwin noted from his thought regarding evolution was that humans had not been created with special care in the image of God; therefore humans were to be considered one with all other species in a universal relationship with living things. According to Worster:

In the final analysis, the figure of Darwin must remain the most imposing and persuasive force behind the biocentric movement. Conservationist or not...he shared...a quality of feeling of nature that finally may be as important as any of his theories. It survived the shock of the Galapagos, the pessimism of Malthus, and the melancholy of reality of competitive selection...While he might agree that the natural world is not an altogether pleasant or happy place, he could not for that reason believe that man should repudiate it or feel himself superior to it. He never faltered

in his belief that beyond humanity and its affairs lies a living ecological community that has always been man's ultimate home and kin (Worster, 187).

Darwin made it clear that humankind was not above and outside of the world in which they resided, a position that would be expressed in the second important critique of Modernism.

The second scientific critique came in the form of George Marsh's volume, Man and Nature (also known by its second edition as The Earth as Modified by Human Action). Having traveled broadly while in the Foreign Service under the Lincoln administration, Marsh was able to collect a vast amount of knowledge and evidence regarding human impact upon its environs. Considered to be the first modern volume on ecology, Man and Nature's impact can still be witnessed today insofar as the book remains to be in print. Humans, according to Marsh, on the whole, were a destabilizing agent in nature and these activities pointed to an uncertain future. "The object of the present volume is," according to Marsh:

to indicate the character and, approximately, the extent of the changes produced by human action in the physical conditions of the globe we inhabit; to point out the dangers of imprudence and the necessity of caution in all operations which, on a large scale, interfere with the spontaneous arrangements of the organic or the inorganic world; to suggest the possibility and the importance of the restoration of the disturbed harmonies and the material improvement of waste and exhausted regions; and, incidently, to illustrate the

doctrine that man is, in both kind and degree, a power of a higher order than any of the other forms of animated life, which, like him, are nourished at the table of bounteous nature (Marsh 1907, vii).

Although writing clearly from what is an anthropocentric view of nature, Marsh's experience differed from that of previous naturalists. According to David Lowenthal:

Jefferson, Franklin, Benjamin Rush, and their contemporaries were absorbed by man's impact upon the environment, but regarded the transformation of nature as beneficent and desirable. The Jeffersonians thought almost every change an improvement...cultivating the wilderness transformed the countryside from primitive chaos to order and civilized beauty. The characteristic attitude toward man and nature was well expressed by Vermonter Ira Allen; he praised the settler who 'sees the effect of his own powers, aided by the goodness of Providence' (Lowenthal 1958, 250).

Most Americans before Marsh believed in the plenitude of nature, the inexhaustibility of natural resources, and the power of the rational mind to control and enhance wilderness for man's benefit. Although Marsh acknowledged man's power to have a profound impact upon his environment, he assessed the results more realistically than did his predecessors (Lowenthal, 251).

Marsh's thoughts regarding man and nature are straightforward. Beginning with a physical description of the Roman Empire, Marsh described the surrounding land of the Mediterranean stripped of all its natural defenses against the destructive forces both nature and humankind

have to provide. Once humankind has conquered nature, Marsh postulated, it cannot relax its care of it. "This lesson," writes Lowenthal, "led Marsh to consider the quality and extent of human influence" upon its surroundings (Lowenthal, 257). In their natural state, geographical and environmental components generally exhibit change slowly.

However, according to Lowenthal:

man, especially civilized man, 'guided by a self conscious and intelligent will aiming as often at secondary and remote as immediate objects,' transforms the environment rapidly. The evidence convinced Marsh that human impact -- by contrast with that of animals -- was unique in scope and intensity (Lowenthal, 257).

No natural forces, Marsh concludes, balance human influence over the material and natural world. The only limit to humankind's impact upon nature and wilderness was its own self-restraint.

As with so many early "ecological" thinkers, Marsh met nature and its wilderness with a divided mind and his opinions about it were qualified by his religious and philosophical leanings. Although he conceived of nature as being in unity, Marsh molded his Calvinism and Romanticism into a paean of humankind's place in nature. However, Marsh abhorred the mechanistic rationalism of the modern age. His view of a proper balance between humans and nature was modeled on Ray's notion of Christian stewardship. Marsh did not question humankind's superiority over nature, but he rebuked the senseless waste he observed being generated by

the modern market economy. The conclusion of his volume appears remarkably modern in the depth of its ecological insight:

It is a legal maxim that 'the law concerneth itself not with trifles'...but in the vocabulary of nature, little and great are terms of comparison only; she knows no trifles, and her laws are as inflexible in dealing with an atom as with a continent or a planet...human operations...therefore, do act in the ways ascribed to them, though our limited faculties are at present, perhaps forever, incapable of weighing their immediate, still more their ultimate, consequences. But our inability to assign definite values to these causes of the disturbance of natural arrangements is not a reason for ignoring the existence of such causes in any general view of the relations between man and nature, and we are never justified in assuming a force to be insignificant because its measure is unknown, or because no physical effect can now be traced to it as its origin (Marsh, 617).

It was not for nature's sake that Marsh wanted to protect it against humans, but rather for humankind's sake. Nature for Marsh was neutral -- humans were the conscious and moral agent (Lowenthal, 340).

The result of Darwin's and Marsh's thought proved to be a wrecking operation on the Baconian-Cartesian scientific paradigm of Modernism that sought to reduce nature to inert, dead, quantitative matter, devoid of any intrinsic value for its subsequent exploitation in a world market economy. The cumulative effect of the inherent contradictions between faith and reason, and the ongoing course of the scientific and industrial revolutions, helped engendered the downfall

of an entire ideology (Oelschlaeger, 109). According to Worster:

By the 1850's the synthesis of piety and science represented by Linnaeus, Ray, and White had been reduced to a cracked and dried-out shell; little of its vitality remained...as much as [Thoreau] delighted to linger with the older generation of naturalists, he discovered that he had to 'come down' a good distance; their carefully constructed world of intermeshed science and religious values was no longer tenable (Worster, 63).

The position of humankind over nature had been dealt a serious blow by Darwin. The power of Darwin's thought can be understood in terms of the context and paradigm against which he railed. Darwin had undone in a single volume what had been developing in Western thought for nearly two millennia.

The physico-theologists' idea of humankind and nature as God's creations helped provide the initial scientific counterreaction to the Baconian-Cartesian science of Modernism. Although their theoretical framework ultimately failed, with the breakdown of the doctrines of special creation and preestablished harmony, and the collapse of the argument for design and final cause, their movement, in terms of conservation at least, had a positive impact. "The road of the physico-theologists", according to Glacken:

was more winding [than Modernism's science] and there were blind alleys...Much later...when it became apparent that man's stewardship of nature was no longer an accurate description of his role, there was disillusionment, and with it the realization that man could relentlessly destroy nature in ways that they did not even

suspect themselves capable of, that many of their efforts were not divinely guided...[and] that they could not be dignified by identifying them with the Creator's purpose. The real contribution of physico-theology...was that it saw living interrelationships in nature concretely. It documented them. It had already -- before Darwin's 'web of life' -- prepared men for the study of ecology (Glacken, 427).

Considering the unity of nature and nature as non-mechanic, physico-theology and arcadian ecology led to the revolutionary thought of Darwin and Marsh and ultimately helped to shape recent perceptions of humans and their relationship with their environment. Although contemporary ecology is devoid of theological considerations, the underlying notion that every element in an ecosystem has a role to play is historically grounded in the natural theology of the physico-theologists and arcadians (Oelschlaeger, 109).

The reaction to Modernism's philosophy and worldview occurred through a variety of different forms of thought. As described in this and the preceding chapters, the counterreaction occurred at the literary, philosophical, and scientific levels. These literary and philosophical counterreaction traditions came to form the core of the preservationist movement. The scientific counterreaction for the most part, however, was used to support conservationist arguments, although the scientific counterreaction would eventually manifest itself much later

in the preservation movement with the advent of the science of ecology. As will be seen in the following chapter, Marsh's work was used to argue for wise management of natural resources, not their preservation. As such, the conservation movement used the scientific counterreaction in manner which would defend, not challenge, the modern notions of growth and productivity and nature as a material resource.

CHAPTER 6

PRESERVATION AND CONSERVATION: THE PARADIGMATIC TENSION

Introduction

As noted in the previous chapters, there were several levels of counterreaction to the dominant paradigm of Modernism. Each of these, in turn, came to have an impact upon the politics of American wilderness. The philosophical and literary counterreactions were articulated in the preservationist arguments for wilderness. The scientific counterreaction was articulated in conservationist arguments that sought only to manage and regulate, not challenge, the growth and progress advocated by Modernism. This chapter, then, explores the tension between the two competing paradigms represented by the preservationist and conservationist attitudes towards wilderness.

Preservation and Conservation

Although their ultimate ends were both anthropocentric, conservation and preservation differed in terms of their paradigmatic implications. Preservationists represented an shift away from Modernism, appealing to the aesthetic, spiritual, and cultural properties of wilderness

for the development of the individual, and stood firm in its challenge to the unrestrained growth inherent in Modernism. Moreover preservationists argued for a conceptual framework that no longer held humans outside and above of nature. Preservationists became increasingly willing to sacrifice the gains of civilization and Modernism's technology and progress for the benefits that they saw offered to the individual and society by pristine stands of untrammelled wilderness.

Conservationists on the other hand saw conservation of natural resources as necessary for materialistic and economic purposes. Conservation did not, therefore, challenge the dominant social paradigm outright, although it did find it necessary to take into account the scientific observations advanced by Darwin and Marsh, e.g., humankind's place in nature and watershed protection. The conservation movement is best illustrated by figures such as Gifford Pinchot who believed that forests could provide a sustainable yield of timber while providing for multiple use as well. According to Pinchot:

The earth and its resources belong of right to its people. Without resources life itself is impossible. From birth to death, natural resources, transformed for human use, feed, clothe, shelter, and transport us...Without abundant resources prosperity is out of reach. Therefore the conservation of natural resources is the fundamental material problem. It is the open door to economic and political progress...The first duty of the human race on the material side is to control the use of the earth and all that therein is. Conservation

means the wise use of the earth and its resources for the lasting good of men (Pinchot 1987, 505).

According to Worster, this conservationism was a set of ideals wholly compatible with industrialism. The challenge for the conservationists was to manage and regulate forests in the most efficient and economically feasible manner possible, not to preserve wilderness.

Early Arguments for Preservation

It was during the middle of the nineteenth century that preservation became the major vehicle for a national discussion of wilderness. Seminal appreciation for wilderness in America at this time, built upon Thoreau's notion that wildness and refinement were not fatal extremes but equally beneficent influences, led to the sadness at its disappearance from the American scene (Nash, 96). Romantic and nationalists' interest for wilderness grew during this time; however, few thought of being able to challenge successfully the ideas of progress and the claims made by civilization endorsed by Modernism. Preservation of wilderness was almost incomprehensible in the social, political, and economic climate of the time.

There were, however, Romantic arguments being made for the preservation of wilderness. Like other early supporters of wilderness such as John Audubon and George Catlin, Thoreau was disturbed at the disappearance of American

wilderness. The less there was of it, the greater the chance for an unhealthy and spiritually weakened society. Nash notes that in 1854, while he was faced with the prospect of a totally civilized America. Thoreau concluded:

The kings of England formerly had their forests 'to hold the king's game,' for sport or food, sometimes destroying villages to create or extend them; and I think that they were impelled by a true instinct. Why should not we, who have renounced the king's authority, have our national preserves, where no village need be destroyed, in which the bear and panther, and some even of the hunter race, may still exist...-- our forests, not to hold the king's game merely, but to hold and preserve the king himself also, the lord of creation, -- not for idle sport or food, but for inspiration and our own re-creation (Thoreau 1985, 712).

Thoreau recognized in this claim that wilderness was needed not only for the health of the individual, but for the nation as well.

Thoreau made his claim again for preservation of wild spaces while living in a number of small Massachusetts townships in 1859. Thoreau concluded that each of them should have a park or primitive forest of five hundred to a thousand acres, and that the public should hold these areas as preserved from any commercial interests. Several decades of wilderness appreciation, developed through an American sense of "wilderness" nationalism, can be seen as culminating in Thoreau's defense of this proposal: "let us keep the New World new, preserve all the advantages of living in [this] country" (Thoreau 1906, 387). Thoreau of course qualified his argument by indicating that only a few

areas be kept completely wild, while the rest would be preserved as pastoral enclaves. However, in preserving the benefits of wilderness, Thoreau saw the preservation of civilization.

Where Thoreau had taken up the Romantic cause for preservation, George P. Marsh argued the case of conservation for more economic reasons: the earth's ability to sustain humankind's consumptive predilections. Clear-cutting of forests near watersheds, Marsh concluded, resulted in environmental calamities such as droughts, floods, and soil erosion. Such disaster could lead, as in the case of the Roman empire, to the downfall of entire civilizations. In Marsh's opinion the most efficient way to maintain waterflow and supply was to maintain a healthy forest around its watershed. Under the auspices of Marsh's insight, conservation gained an economic justification and subsequently was made compatible with progress and economic welfare as well (Nash, 105).

The Adirondack Preserve

Although Yellowstone National Park represents the first instance of large-scale wilderness preservation in the public's interest, the first instance of wilderness preservation can be seen in New York's forest preserve in the Adirondacks in 1885. As Nash points out:

With [this] milestone in the early history of American wilderness preservation, the ideas of

Catlin, Thoreau, ...and Marsh bore fruit. Yet in...[this] case the rationale for action [did not] take account of the aesthetic, spiritual, or cultural value which had previously stimulated appreciation. In New York the decisive argument concerned the necessity of forested land for an adequate water supply (Nash, 108).

The Preserve Act was initially the result of the scientific counterreaction to Modernism as seen in Marsh's arguments for watershed protection, not preservationist arguments. The science employed in defense of this act was used for economic and commercial gain, and failed to represent a revolutionary shift away from Modernism. The Preserve Act never challenged the idea of progress directly. Wilderness was preserved unintentionally.

The initial "non-commercial" appreciation of the Adirondacks was held by individuals who appreciated the more cerebral and spiritual delights that the Adirondacks offered. Much of the area had been left undeveloped as the nation's population headed. As the population of New York city burgeoned, and more and more people became engaged in the urban experience, urban dwellers began looking to the peace and serenity offered by the large stands of undeveloped forest land that were the Adirondacks. To the middle-class urbanite this area represented an "enchanted island" where city life, often tedious and complex, could be left behind for the simple and untamed splendor of this area (Nash, 116).

While appreciation for the area grew, so too did the attention being made of the loss of its wilderness qualities. Initially the idea was to prevent industrial development from occurring in areas designated as preserves. These same industrial pressures however would find relief in those other areas not marked for preservation. Thus a balance was struck between the pressures upon the region for enjoyment and utility.

This idea of a balance having been struck is important. In suggesting that the areas not preserved be open to development, the supporters of a wilderness preserve did not place themselves in opposition directly to the forces of Modernism -- progress and industry. Rather they argued that the reserve, in preserving timber and maintaining the watershed, would guarantee an adequate and constant supply of drinking water for the city of New York, as well as helping to maintain the state's canal system, which provided for a cheap form of transportation. Wilderness preservation and commercial prosperity were synthesized. However much the Romantics desired preservation for non-utilitarian purposes, they realized that they could not defend their position without accepting the argument for watershed protection based on Marsh's observations (Nash, 118).

By the 1880's, declining water levels began to appear in the Erie and Hudson water systems causing the argument

for preservation of the upland forest to intensify. Where resident's of New York had been indifferent to previous arguments, they now became enraged by lumber and mining practices alleged to be taking place in the Adirondacks.

According to Nash:

It was predicted that without protection of the woodlands municipal water supplies could run dry and periodic droughts [would] render the state waterway useless. At other times disastrous floods might inundate the lowlands. Obviously the effect upon commerce would be catastrophic...merchants believed that if drought eliminated the Erie-Hudson route as a means of shipping goods, railroads would have a monopoly and be able to raise rates at will. It would not require a love of wilderness to come to the defense of the Adirondacks on these grounds (Nash, 119).

Put to the business community in these terms, the New York Chamber of Commerce, under the leadership of Morris K. Jessup, joined the fight for preservation. In May of 1885 the Governor of New York, David Hill, approved a bill establishing 715,000 acres as preserve that were to remain undeveloped in an effort to maintain the Hudson and Erie waterways and New York with a constant supply of water (Schaefer 1989, xxi).

In terms of a shift away from Modernism, the Adirondack preserve offered limited success. Initial Romantic aims may have flown in the face of the dominant social paradigm of the time, but its advocates were all too aware of the social, political, and economic atmosphere of the time as determined by the paradigm of Modernism. The

Romantics deemed their position untenable without the support of the economic, commercial interests. This is not to say, however, that the Romantic position had failed to make an impact.

Although conservation arguments carried the day for the initial preserve act in 1885, New York legislators in 1892 redesignated the reserve as a state park partially for the reason to offer overworked urban folk a chance to get away from the pressures of life in Gotham. The wording of the act is indicative of the Romantic's impact and a subsequent shift of position: Adirondack State Park was to be "ground open for the free use of all the people for their health and pleasure, and as forest land necessary for the preservation of the headwaters of the chief rivers of the state, and as a future supply of timber"

(New York Laws, quoted by Nash, 120). Moreover, during New York's constitutional convention of 1894, proponents favoring the assurance of the preserve's protection (mainly commercial interests from New York) asked that guarantees be written into the constitution itself. Although the commercial (conservationist) argument was used, David McClure, the attorney hired to defend the preserve, declared that the first reason for the preserves purpose was that it was a place for New York's citizen's to rest and recuperate in the quiet and solitude offered only in wilderness. The people of New York, as represented by members of the

Constitutional Convention, invested control of the Adirondacks to the people of the state and secured the area as "forever kept as wild forest lands" (Schaefer, xxi).

According to Nash, the watershed argument had been the mainstay earlier in the defense of wilderness, but by the 1890's those seeking to justify the preserving of wilderness began to turn more and more to preservationist arguments. The Romantic concern for aesthetics and culture had achieved, under the aegis of the New York State Constitution, the same legal recognition as conservationist arguments at the state level. The rationale for wilderness preservation was slowly coming together with the ideology of appreciation (Nash, 121) These Romantic, preservationist arguments were, in turn, even more forceful in the creation of the nation's National Park Service.

The National Park Service

To understand better the creation of the National Park Service, it is necessary first to discuss a key element contributing to its creation -- the national parks. The creation of National Parks, like the New York state Forest Preserve Act, did not initially set wilderness aside for the sake of wilderness. Yellowstone was created in an attempt to protect its natural "curiosities" and "wonders" from private exploitation. "In this manner," according to Nash, "the right of the public to see these sights would be

safeguarded and the scenery itself saved from defacement" (Nash, 110). When first declared a national park, the area of Yellowstone Park included more than 3,300 square miles. The reason for such a vast area, it was argued, was to protect undiscovered wonders in the area -- wilderness did not figure into the initial plans for park preserves (Runte 1979, 34).

Much of the argument in the preservation of scenic wonders in the American landscape came as a result of the translation of the Romantic aesthetic appreciation of wilderness into a notion of national pride. Such natural wonders such as the Yosemite Valley in California, or the geysers in Yellowstone, were seen to help make up for what America lacked culturally. Preservation of wilderness areas, especially those with spectacular scenic displays, became the preservation of American heritage. Where Europe could boast the Louvre and the Coliseum, the United States could boast unique, monumental, natural features such as those found in its national parks. "To ignore the threatened confiscation of Yellowstone's wonders by private interests," writes Runte, "would [have been perceived as saying] that the United States had no pride in its culture" (Runte, 44).

The desire to preserve wilderness was not without scientific interest. Beside attempts at protecting scenic wonders, there were attempts at preserving unique scientific

phenomenon found in America's wilderness which culminated in the Antiquities Act of 1906. Introduced by Iowa congressman John Lacey, himself a staunch preservationist, the bill sought to preserve all objects of historic or cultural interest that are situated upon the lands owned or controlled by the Government of the United States (Runte, 71). Although the focus of the bill was not the scenic splendor found in national parks, Lacey's intent used the same rationale for the national parks: protection of America's cultural heritage.

Although preservation was gathering strength in the early twentieth century as reflected in the growing number of national parks and monuments at the time, the movement suffered a major set back with the loss of Hetch Hetchy Valley in the Yosemite National Park in December of 1913 to hydroelectric development for San Francisco. It was at this time, that a majority of the preservationists agreed that the national parks could not be defended by the traditional Romantic arguments of national pride, culture, or scenery alone. "As a result," according to Runte:

...pirating the slogans of utilitarian conservation, preservationists followed Muir in defending the national parks as a means of preventing 'waste' in their own right. As distinct from proper management of the national forests, the stakes were merely in terms of human 'efficiency'. But if 'we must consider [the national parks] from the commercial standpoint,' Allen Chamberlin, a New England advocate said, 'let it not be forgotten that Switzerland regards its scenery as a money-producing asset to the extent of some two

hundred million dollars annually.' When further tied to scenic nationalism, nothing did more for the preservationist cause. As far back as the creation of Yellowstone National Park in 1872, the railroads of the West promoted scenic protection...in the appreciation that the attraction of more tourists into the region meant greater revenues. Increasingly cognizant of the significance of this fact, preservationist turned to the railroads for political and financial aid during [preservation] campaigns. The rewards of this 'pragmatic alliance' were soon confirmed by the growing public support for a bureau of national parks, an agency fully committed to the principles of [aesthetic] as opposed to utilitarian conservation (Runte, 83).

Such was the situation at the time of the founding of the National Park service.

The passage of the National Park Service legislation in 1916 represents the last major success of what is known in American history as the Progressive Movement. The failure of preservationists to protect Hetch Hetchy from development, and the need to communicate their philosophy, caused members of the movement to reevaluate the traditions and reasoning behind their movement (Runte, 84). Scenic preservation was clearly an established value in the movement and it was made clear that at its roots the preservationists remained firmly committed to its Romantic heritage.

The call for national parks and a government service to run them was supported by a wide variety of groups and individuals such as the Sierra Club, the Boone and Crockett Club, various garden, women's, and horticultural clubs. To

these were added recently urbanized country dwellers whose memories of rural hardships were quickly ended by the "confinement of city streets" (Runte, 85). What developed in the cities and urban fringes was a continuation of the romanticized version of wilderness in America. "Even at the price of one or two hours of commuting, many thought the opportunity to escape from the grime...and overcrowding of city life was a welcome relief" (Runte, 85). It was among these urban dwellers that the large majority of national park supporters were to be found.

Although much of the support for the parks remained aesthetic, in the long run the dominant social and political atmosphere made it necessary to associate scenic protection with more utilitarian economic growth in an effort to defend the idea of a national park system. As with the preservation of the Adirondacks in New York, aesthetics alone could not defend the preservationist movement. It followed that as preservationists played their hand before Congress, the monetary appeal of scenic protection remained a trump (Runte, 100). Instead of the standard preservationist cry for scenery and aesthetics, arguments for the National Park Service ranged from the need to keep tourism within the United States, to the need for providing areas of rest and relaxation for working persons in an attempt to maintain high levels of worker productivity. For the purpose of passing the park service bill, first

introduced in 1911, parks were linked to the idea of utilitarian conservation rather than outright aesthetic preservation.

As Runte notes, the idea of linkage to conservation seemed incongruous with traditional preservationist values, but it was accurate reflection of the quiet desperation the preservationists felt with the loss of Hetch Hetchy. Further, preservationists took comfort from the support of the railroads, whose promotion of the national parks confirmed that the park idea was in fact coming into its own. The efforts of Senator Reed Smoot of Utah to win passage of the Park Service bill added to the growing prestige of aesthetic conservation (Runte, 101). What was achieved under the passage of the bill in 1916 was the association of scenic preservation in the national parks with the country's economic health.

Preservationists arguing for the establishment of the National Park Service again could not in the social, political, and economic climate of the time succeed without invoking commercial and economic language of the conservationists. The Romantic roots can be clearly seen, however, at the heart of the National Parks Service Act. The fundamental purpose of the National Park Service was to:

conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future

generations (U.S. Department of the Interior, quoted by Runte, 104).

The aesthetic preservationists had succeeded in gaining an agency whose purview reflected their own and which helped to counter their losses at Hetch Hetchy.

The paradigmatic implications of the establishment of the National Park Service must be considered in terms of its Romantic roots. Although the preservationist dressed their efforts in the language of economic utility in an effort to garner support for their bill, its central purpose, the preservation of America's natural scenery, always remained. Where New York's Adirondack Preserve Act initially reflected commercial leanings and did little to challenge the dominant social paradigm, the National Parks Service Act was from its inception influenced by preservationist forces and employed conservationist language only in an effort to secure its more Romantic aims.

Defense of Dinosaur National Monument

Half a century after the passing of the National Park Service Act, the aesthetic sensibilities, wilderness rationale, and the political skill of the preservationists were tested again in a nationwide debate over the future of a part of the United State National Park System. The dispute arose over a proposed dam on the Green River at Echo

Park which threatened to flood Dinosaur National Monument on the Colorado-Utah border.

In 1915 President Woodrow Wilson designated eighty acres in Utah, under the authority of the Antiquities Act of 1906, for the purpose of protecting a deposit of dinosaur skeletons imbedded in a shale and sandstone ledge. The area was enlarged under the Roosevelt administration to include nearly one hundred miles of the deep river canyons of the Yampa and Green Rivers with their surrounding benchlands. However, the area had attracted not only paleontologists and wilderness enthusiasts but the hydro-electric engineers of the multi-state Colorado River Storage Project. The project, sponsored by the Bureau of Reclamation, envisioned a ten-dam system that would provide agricultural interests in Nevada, Arizona, and California with adequate supplies of water and electricity. One of these dams, Echo Park, located on the Green River, threatened to flood the Monument with its resulting reservoir. Upon learning of the project, friends of the wilderness and the National Park protested. With the support of the water-conscious Southwest, reclamationists defended their proposal. The controversy quickly assumed major proportions, dominating conservation politics in the 1950's (Nash, 210).

As in the previous cases, it is necessary to understand the socio-political climate in which this case was operating. Post-war America was demanding a greater

amount of power than ever before to fuel its burgeoning consumer society. Areas of the Southwest were becoming more and more dependent upon water from diverted sources to maintain their tenuous foothold in the marginal environment of the West. Even the Adirondacks, an area designated to be free of development forever, came under heavy pressure from hydro-electric interests. The preservationists were again under pressure to defend their notions of the aesthetic value of wilderness from commercial interests.

In the case of the defense of Dinosaur National Monument, as with the other events previously discussed, not only was it necessary for preservationist forces to have the proper funding and publicity, but it was essential for them to have a convincing argument. The preservationists brought to bear the product of a century of thought regarding the meaning and value of wilderness and remained with their traditional Romantic roots. According to Nash:

Some arguments rested on the need of civilized man for wilderness sanctuaries which had precedents in the ideas of [Emerson], Thoreau, and Muir...In 1950 Ulysses S. Grant III, grandson of the President and himself the president of the American Planning and Civic Association, defended Dinosaur because 'our industrial civilization is creating an even greater need for the average man...to reestablish contact with nature...and to be diverted away from the whirling wheels of machinery and chance.' George Kelley, representing the Colorado Forestry and Horticultural Association...point[ed] out that 'wilderness areas have become to us a spiritual necessity, an antidote to the strains of modern living...[and allow people] to renew their

souls and gain fresh perspective on life'
(Nash, 213).

However, as the Congressional hearings on the Echo Park project continued in 1955, it was clear that the preservationists approached the problem with an additional resource. Rather than backing their traditional arguments with commercial arguments, as had been done in the two prior cases, the director of the Sierra Club at the time, David Brower, turned the scientific data offered by the government and its bureaus against them (Nash, 217).

The first tactic stemmed from the traditional Romantic arguments of aesthetic and spiritual values of wilderness in a materially driven, consumer society such as that found in mid-twentieth century America. Preservationists questioned whether the pioneer domination of wilderness was an appropriate attitude for the twentieth century. Writer Sigurd Olson, while addressing the Senate sub-committee, pointed out that the frontiersman:

'did the job that needed to be done' but wondered if 'in our mad rush to dam every river, chop down every tree, utilize all resources to the ultimate limit...we might not destroy the very things that have made life in America worth cherishing and defending?' (Olson, quoted by Nash, 217).

The flooding of Dinosaur National Monument, Olson concluded, threatened the very philosophical core of wilderness appreciation and the intangible qualities that had evolved through history to help shape the American character.

While Olson and other wilderness advocates sounded the Romantic battle cry once more, Brower challenged the Bureau of Reclamation and the government with its own tools: science, math, and statistics. Much of the Bureau's argument for the project was based on its calculations regarding the amount of water lost to evaporation. Their claims asserted that the reservoir that would flood Dinosaur National Monument was necessary to help maintain the water supply as mandated in the Colorado River Compact of 1922. Brower's testimony to the Senate's subcommittee claimed exactly the opposite. According to Nash:

Brower's testimony presented the mathematics supporting his contention that the Bureau of Reclamation had erred in its calculation of the water that would be lost by evaporation from an Echo Park reservoir. Using the Bureau's own base figures, he showed that the lake would actually be far more costly in terms of water loss than advertised and that the alternative dam sites, outside wilderness areas, were preferable in this respect (Nash, 217).

Brower's contentions regarding the accuracy of the Bureau's statistics not only called into question the economics of the Echo Park reservoir but brought into question the entire Colorado River Storage Project.

The preservationists had found their mark. Although the project had passed the Senate with approval, the House Committee on Interior and Insular Affairs endorsed a version of the plan without the Echo Park Dam. The language of the bill, late in 1955, even included a statement that Congress would not allow any dam or reservoir to be built under the

authorization of the act within any National Park or Monument. The bill setting the Colorado River Storage Project became law on April 11, 1956. The wilderness movement and preservationists, as Nash describes, had their finest hour. Basic to the preservationists' success, according to Nash, was the development of a convincing justification for the existence of wild country along with an increase in the number of Americans who subscribed to it. The justification, however, had to operate within a Modernist framework in that it had to address economic concerns and could not simply rest upon Romantic, preservationist arguments.

The defense of Dinosaur National Monument marked a success for the preservationist position. However, it marked as well the continuing tension between the dominant social paradigm and its counterreaction. Because Modernism was the dominant social paradigm, preservationists could not successfully argue for or defend their position without ultimately addressing conservationists' commercial (and scientific) concerns. The Romantic spiritual and aesthetic arguments of the preservationists had to be tempered with the economic reasoning of the conservationists to make their arguments justifiable.

EPILOGUE

According to Sheldon Wolin, the idea of paradigms is challenging in that it no longer allows for an "overly simplified view" of science, philosophy, worldviews, and the societal values they come to influence (Wolin, 131). A society's worldview can be seen as being conditioned by its dominant social paradigm, which provides it with a core cluster of beliefs, values, and ideals that influence their views regarding society itself, its government, and an individual's responsibility within society. However, these paradigms often fail to resolve adequately crises and anomalies within their interpretive framework and give rise to new, competing paradigms.

The importance of paradigms as an interpretive device, as this paper demonstrates, can be seen in the discussion of the history of American wilderness preservation and the development of the conservation movement. As previously indicated, there were two competing strains of thought articulated in the preservation and conservation movements, each representing a competing paradigm. The preservationists represented the literary and philosophical counterreactions to the dominant social paradigm of

Modernism, while the conservationist represented the commercial and economic forces sanctioned by Modernism.

The politics of wilderness preservation can therefore be understood in light of the tension experienced between Modernism and its counterreaction, as seen in the history of American attitudes towards wilderness beginning in the late nineteenth century. While preservationists brought their "romantic" arguments to bear upon social issues affecting wilderness, it became clear that their position was untenable without employing commercial arguments as defined by Modernism as well. Although the preservationist arguments have gained some strength in the years since the late nineteenth century, the tension between conservationist and preservationist traditions continues to exist.

In paradigmatic terms, the failure of preservationists to successfully argue for wilderness preservation without addressing commercial interests reiterates the point that Modernism remains the dominant paradigm. Its theoretical and practical framework, at least in the area of wilderness preservation, remains viable and must therefore be interpreted as successfully meeting the challenges presented to it by its anomalies and crises. This paper, however, does not assume that Modernism is without critics and competition from other paradigms. This in turn warrants the question: Must there be a paradigmatic shift in order to preserve wilderness for preservationist (spiritual) ends?

The counterreactions to Modernism and its views on nature treated in this paper represent just one of many paradigmatic alternatives to Modernism. However, the alternative explored here keeps humankind as its focal element, as does Modernism. Both paradigms are anthropocentric. The paradigmatic shift then to preserve wilderness for preservationist ends need not be that drastic. One possible approach, then, to this question may be found in Albert Borgmann's work Technology and the Character of Contemporary Life.

According to Borgmann, Modernism's science and technology have failed to live up to the promise of liberty, prosperity, and individual development:

Technology is geared to meet challenges, to dam rivers, drain swamps, log forests, and mine coal. Wilderness areas within this framework, appear as the last bastions yet to be taken by technology, the last areas where we would be able to cut, drill, and extract. At the very least these areas should be made available as recreational resources. But wilderness is a challenge to this entire way of dealing with nature, i.e., to technology itself. In the controversies about the establishment of wilderness areas, the unspoken disagreement is always on how we should understand the challenge of nature, whether we should meet the challenge with domination or with respect (Borgmann 1984, 185).

While it is clear that Modernism's science and technology has sought for the past three centuries to dominate nature, Borgmann suggests that Romantic claims need not abandon its homocentrism nor its science and technology in their attempts at preservation.

Humankind is indeed guilty of a violent past towards nature through its use of science and technology in attempts to secure the promise of Modernism. Nature was brought under the domination of civilization in an effort to liberate and enhance the human spirit. However, "[o]nce the heedlessness of the exploitation of the natural resources came to be recognized as a danger to the welfare of technology," according to Borgmann:

the latter's conceptual resources...could be drawn upon to bring technology in balance with its physical setting. To act in the technological spirit of scientifically grounded security and stability is to have proper respect for the limits and fragility of the natural environment. It is consistent with that sort of respect to urge the protection and preservation of those parts of nature that are not known to be useful but may turn out to be so in the future (Borgmann, 185).

This of course is exactly the vein in which preservationists have had to dress their arguments from the very beginning, a tactic that is now failing them. Moreover, as Christopher Stone notes:

When [preservationists] argue this way, to the exclusion of other arguments or find themselves speaking of "recreational interests" so continuously as to play up to and reinforce, homocentric perspectives, there is something sad about the spectacle. One feels that the arguments lack even their proponent's convictions. I expect that they want to say something less egoistic and more emphatic but the prevailing and sanctioned modes of explanation in our society are not quite ready for it (Stone 1974, 43).

How then can technology come to be used to argue for wilderness without surrendering completely to the Modernist forces technology has come to represent?

Technology may be utilized to support more spiritual claims upon wilderness if technology can be reformed. The first step in this process is the acceptance of the idea that humankind's significance is best understood through its engagement with things that are recognized and respected in their own right. As Borgmann states:

we must distinguish, then, between the base anthropocentrism of mature technology and the higher anthropocentrism of the respect for things in their own right. We can also put the point in [an alternate manner] and say that the liberation of nature is inseparable from human liberation (Borgmann, 193).

Borgmann is not endorsing the impossible task of abandoning technology. He is, rather, calling for a move away from the base technology used in Modernism to a higher technology -- a technology that would take into account the fact that humankind is best served by respecting the natural world in its own right.

An element of this new maturity is simply the acceptance of technology with all of its possible disruptive forces. These forces do exist and, of course, cannot simply be ignored. As Borgmann indicates, respect for wilderness will never again be nourished by its formerly indomitable wildness (Borgmann, 194). Rather, respect for wilderness emanates from its fragility and vulnerability, especially in

the face of technology. Where subduing wilderness teaches the acceptance of technology, humans also learn to respect the wilderness through technology's destructiveness (Borgmann, 194). This acceptance comes not from the resources or power that nature might provide but rather its beauty or spiritual qualities.

Science and technology, according to Modernism, is infinite in its resourcefulness. However, in the procurement of spiritual qualities, technology is indeed limited. Technology, in fact, cannot overcome or secure it. According to Borgmann:

[Technology] can procure something that engages us fully and in its own right only at the price of gutting or removing it. Thus wilderness teaches us not only to accept technology, but to limit it. The limitation of technology is an impossible task when it is undertaken with a view to technology only (Borgmann, 195).

However, when technology is understood in terms of humankind's need for respectful engagement with the nature that surrounds him, principled and sensible steps to wilderness preservation are possible. In essence, humankind can learn from wilderness that pretechnological experiences and values are not lost in Modernism, merely blunted or hidden and that a new, mature, technology that weds human liberation with that of nature, might help humankind to achieve them.

As history shows, preservationists need not necessarily witness a radical paradigm shift in order to

preserve wilderness for spiritual ends. However, while Modernism still dominates, preservationists will need to address its concerns to advance their ends. As suggested, technology may represent the key. A new, more mature view of technology, with its initial promise of enhancing and liberating mankind, could lead to the view of mankind's liberation as inseparable from the liberation of nature. Although this view in itself represents a shift in technology's emphasis, an attempt at a new technology need not require a radical paradigmatic shift away from Modernism, merely a refocusing of technology's goals. In this scheme, technology and wilderness would no longer be at odds, allowing preservationists to employ technological, rather than commercial and economic, valuation in order to secure wilderness preservation for its spiritual ends.

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