Aldo Leopold (1887-1948) was an American conservationist, forester, and wildlife ecologist who was deeply concerned about the speed and impact of industrialization on the natural world and human-nature relationships. Since human agency in the modern world is so profoundly shaped by economics, Leopold knew he would eventually have to come to terms with the premises and consequences of economics in order to address modern environmental challenges. In Leopold’s mind, economics did not have a satisfactory way of handling concepts like wilderness or beauty or land health, things that Leopold cherished. Writing in 1938, he noted that “[i]t seems likely that the present muddle [in the pursuit of conservation through public ownership of land] arises from the fact that the conservation problem involves a new category of economic phenomena; one with which economists are unaccustomed to deal.”

Leopold’s response to economics is best understood in the context of the broad history of conservation, ecology, and economics in the U.S., especially the developments that led to the emergence of the University of Wisconsin as a center for innovative approaches to land economics. This was the institutional and intellectual environment in which Leopold responded to society’s trend towards simplistic economic growth and land degradation. His thinking on economics and the human-land relationship would mature over his career and would eventually lead him to articulate his land ethic in *A Sand County Almanac*.

Aldo Leopold came of age at the height of the Progressive movement as a force in American society and government. The Progressive era in the United States from 1890s to 1920s marked a period of social reform as the country sought to address the conservation problem of how to reconcile a finite and diminished endowment of natural resources with a growing population and economy. University education and research blossomed during this period, and scholars applied themselves to the country’s problems. In the fields of political economy and forestry, the intellectual heritage could be traced back to Germany, where several key figures received their training. They included Richard Ely, Bernard Fernow, and Gifford Pinchot, all of whom made major contributions during this period of intellectual ferment. With the creation of the American Economic Association in 1885, the field of “political economy” gradually became “economics.” It would remain a pluralistic discipline until just after World War II.

Ely’s tenure at the University of Wisconsin at Madison from 1892 to 1925 led to the creation of the Wisconsin School of Institutional Economics. Its focus was on a topic’s historical and sociological context and relevant institutional structure. This school of economic thinking gave rise to two economic sub-dis-
The historical and institutional conception of economics at the University of Wisconsin made it possible for Leopold, then professor of game management (later wildlife management), to participate in well-informed economics discourse. The tendency of economic forces to lead to environmental deterioration—and the potential of an alternative economics to address such degradation—prompted him to reflect on conservation economics, under the influence of such thinkers as George Wehrwein and William Vogt, author of *Road to Survival* (1948), an important precursor of contemporary ecological economics. The human relationship to the land must rest, not on mere economic expediency, Leopold argued, but on ethics, aesthetics and a mutually beneficial state of ecological resilience and integrity.

After World War II the pace of human development quickened. The expeditious rate of economic and technological transformation in the 1950s and 1960s produced severe stresses on the environment, which led to the emergence of an environmental movement amidst a larger context of cultural self-examination. As part of an expanding discourse on issues of population, consumption, and limits to economic growth, there came thoughtful challenges and alternatives to the simple economic-growth paradigm. These in turn lay the foundations for more recent (and more sophisticated) explorations of sustainability.

The themes that Leopold had struggled with in his work dominated environmental discourse during the 1960s and 1970s. Like Leopold, a number of concerned intellectuals such as Nicholas Georgescu-Roegen (author of *The Entropy Law and the Economic Process* [1971]) and Herman Daly (author of *Steady-State Economics* [1977]) recognized the need to rethink human activities in a broader, integrated, and ecological worldview instead of the standard, narrow economic worldview. Leopold’s discussion of the tension between private and public interests and the difficulty of achieving conservation goals through economic laws alone anticipated the growing issue of the “tragedy of the commons” and the management of common resources during the 1960s and 1970s.2

The goal of the field of ecological economics as it emerged in the late 1980s is similar to that of Leopold in the 1930s and 1940s, namely, to rethink the foundations of economics in light of emerging ecological principles. After selling modestly in its early editions, *A Sand County Almanac* became influential with the rise of the modern environmental movement. Leopold contributed to the birth of ecological economics both indirectly, through the popularity of his book, and directly by inspiring prominent and influential ecological economists, such as William Rees and Richard Norgaard.

Leopold’s views on and contributions to economics have been explored by several scholars. Gerald Vaughn provides an overview of Leopold’s thoughts in economic policy with regards to conservation. Craufurd Goodwin describes how Leopold went from being influenced by a utilitarian economic perspective to eventually discarding it after realizing its inadequacy in handling environmental issues. While Leopold’s land ethic focused primarily on the impact of economic production on the land, Douglas MacCleery points out that today’s consumption-driven economy suggests that Leopold’s land ethic needs to be supplemented by a “personal consumption ethic” for it to be efficacious. Donald Snow notes that the economic phenomenon to which Leopold was responding would be better understood as “commercial determinism” in present-day parlance. Bill Shaw reviews the development of environmental policy and the efforts to reconcile environmental consciousness with neoclassical economic concepts before discussing how Leopold’s ideas represent a new paradigm.3 Building upon these studies, we can find new insights by examining the personal and professional foundations of Leopold’s ecological-economic worldview.

**THE DEVELOPMENT OF LEOPOLD’S ECOLOGICAL ECONOMICS**

Academic study in the United States developed rapidly in the mid-nineteenth century. This period was marked by the professionalization of academic research, allocation of resources to academic institutions, overseas graduate study by the first generation of scholars (particularly in Germany), curriculum reform, and a sense of academic activism in addressing social issues. The origins of the American Association...
of the Advancement of Science (AAAS) can be traced back to the founding of the Association of American Geologists in 1840. The organization was renamed two years later to include naturalists and was finally renamed the AAAS in 1848 after chemists and physicists proposed to join. The late nineteenth century saw a steady growth in membership of AAAS, with meetings held annually (except from 1861 to 1865, due to the Civil War). The Morrill Act of 1862 provided significant momentum for moving university education forward to include subjects with a more practical bent. Under this legislation, funds generated by federal grants of land were allocated to each state for the purpose of establishing and maintaining institutions that would training in agriculture, the mechanical arts, and the applied sciences. The result was the creation of an American system of land-grant universities.

During this period, economics in the United States was a nascent field struggling to establish its curricular status in academic institutions. Political economy, as it was known then, had to operate within the constraints of the university curriculum, which was dominated by classical subjects such as Greek, Latin, literature, theology, and moral philosophy. This traditional curriculum structure was based on a European model. Prior to the 1870s, political economy operated as a subdivision of other subjects, and the instructors, who usually taught other subjects, were mostly self-taught since economic instruction was limited and advanced training was unavailable in the United States. Economic courses, numbering only one or two at each university, were offered on an irregular basis.

In the 1870s, young American students who wanted more than a nominal education in political economy turned to Europe, especially to Germany, a trend that was reflected in almost all disciplines. Advanced academic training in Germany was well-established, rigorous, and highly regarded throughout the world. Political economy was held in high esteem in Germany, and its academic economists exercised strong influence in both industry and government.

Although the English had begun the classical economic tradition with the publication of Adam Smith’s *Inquiry into the Nature and Causes of the Wealth of Nations* in 1776 and had, by late nineteenth century, developed a formidable theory of economics with contributions from foreign scholars, a different kind of economic thinking took hold in Germany. The German historical school of economics advocated the application of academic study to social problems from an empirical, inductive, and historical perspective. This was in opposition to the dominant English school of economics, which was deductive, individualistic, and oriented towards the *laissez-faire* economy. The German historical school was especially influential in the U.S. during the 1870s and 1880s. American scholars adapted the attitudes of the German historical school to the country and developed new realms of application in such areas as public finance, infrastructure, and agriculture.4

Among the Americans who studied in Germany during this period was Richard T. Ely (1854–1943), who graduated with a Ph.D. in political economy from the University of Heidelberg in 1879. In 1881, he took up the first professorship in political economy in the United States at The Johns Hopkins University, which was founded five years earlier. During his eleven years there, Ely exerted considerable influence in the social sciences through his publications and through an impressive roster of distinguished students who later became leaders in their own social science disciplines, including John R. Commons in economics, Frederick Jackson Turner in history, Edward A. Ross in sociology, and Woodrow Wilson in political science.5

Economics as a discipline slowly gained recognition in the 1880s and 1890s through the presence of professional organizations. At the 1882 AAAS meeting in Montreal, the different academic disciplines represented in AAAS were divided into nine sections, with Section I being Economic Science and Statistics. In 1885, the economists formed a national organization, the American Economic Association. Ely played a key role in its founding by authoring its original statement of purpose and serving as its first secretary. The term “economic” was chosen over “political economy” because the latter was considered too popular and unscientific. The economists were seeking to distinguish their field from the other social sciences.
In 1892, Ely was recruited by the University of Wisconsin in Madison to head the new School of Economics, Political Science, and History, which was founded to advance the social sciences at the university. Ely moved quickly, bringing three of his Johns Hopkins students with him to Madison and expanding course offerings in political economy, resulting in Wisconsin’s rapid rise to national prominence in the subject. Over time, Ely’s school was split into individual academic units, following reorganization at the university. In 1903, Ely’s title was changed to chairman of the Department of Political Economy. He continued his illustrious academic career at Wisconsin, helping to develop agricultural economics and making important contributions to land economics. Students at Wisconsin included Henry C. Taylor, Benjamin H. Hibbard, and George S. Wehrwein, all of whom became distinguished scholars in agricultural and land economics.

These scholars were activist-intellectuals who sought to link thinking with social action, following the “Wisconsin Idea” that the university should be devoted to public service to the state and its citizens. The contributions that they made to the government and citizens included serving in office, offering informed advice about public policy, developing and sharing technical skills, conducting research directed at solving social problems, and engaging in outreach and extension activities. The economists sought a “middle ground” between state socialism and unbridled capitalism, employing an old-fashioned approach to economics that was historical, statist, ethical, and applied. Together with the sociologist Ross, they comprised the so-called Wisconsin School of Institutional Economics.

The Wisconsin School constituted a part of a broader institutional orientation in social science, which, in turn, was a part of the rich plurality of economic thinking during the years between the two World Wars. This was especially palpable during the New Deal period, when economists offered contrary advice, and economic policies were not dominated by a particular, consistent mode of thinking. As a faculty member in the university’s agricultural economics department, Leopold worked within this academic environment.

In retrospect, it seems inevitable that economics would give Leopold much to ponder. Leopold’s intellectual curiosity was unbounded—later in his life he wrote, “there are two things that interest me: the relation of people to each other, and the relation of people to land.” Chief among his interests were outdoor recreation activities such as hunting fishing, and camping, which led him to an interest in forestry as a career. Moreover, economics was beginning to play a central role in the new social order that emerged with industrialization and the Progressive era. At the same time, government at all levels was beginning to pay more attention to the economy and economic planning. Conservation in its early period, from 1890 to 1920, aimed primarily to produce efficiently a sustained yield of products to support the country’s economy. Although grounded in the natural sciences, it was largely uninformed by ecology, just then an emerging science in an inchoate state. Leopold’s expertise in ecology and his experience with on-the-ground conservation efforts would later lead him to criticize the simple utilitarian stance of economics in natural resource management.

The themes of preserving wilderness lands, sustaining organic resources, restoring land health, reinterpreting ecological facts, and evaluating the concept of economic growth and progress resonated throughout Leopold’s work. He held that human beings can maintain a high quality of life on the land only if their economic system worked with and not against the characteristic diversity and dynamics of the land. The environmental complexity that ecology was beginning to reveal meant that human action, which had been driven primarily by short-term economic policies, would need to be more measured and circumspect than before.

CONSERVATION ETHICS AND CONSERVATION ECONOMICS

At the beginning of the New Deal era, Leopold published two important papers, “The Conservation Ethic” and “Conservation Economics.” In them, he discussed the key issues that hampered conservation at the time. The interaction between people and land had been dominated by economic expediency, leading to environmental degradation. Conservation, conceived as a response to this outcome, was relying on public ownership, on the one hand, and the imposition of laws and regulations on the private landowner, on the other. While both methods were efficacious and to
some extent necessary and appropriate, they were insufficient. Moreover, a strict distinction between the private and the public sectors was confounding conservation efforts and Leopold, by contrast, addressed the issue of reconciling private economic interest with the public good. After analyzing the prospect of conservation within the context of the economics and social thinking of the time, Leopold concluded that deep changes in the human-land relationship were needed.

In “The Conservation Ethic,” Leopold placed economics and conservation in the greater context of history, the ecological realities of natural resources, and human purpose, thus inviting the reader to reflect upon the ethical aspects of conservation.\(^2\) The central thesis of “The Conservation Ethic” is that conservation efforts had failed because humanity’s relationship to land had been dominated by economic expediency: “The land-relation is still strictly economic, entailing privileges but not obligations” (p. 182). Society was obsessed with economics and gadgetry (then, as now), and was delegating the land, and the plants and animals it sustains, to an afterthought. This was exemplified by the way in which conservation efforts focused on the recovery of abused land instead of preventing abusive practices in the first place. Leopold argued that in order to preserve both human society and the land, this relationship would need to be expanded beyond the economic realm to include ecology, ethics, and aesthetics. Land use could be practiced in a way that combines utility and beauty. Given that the success of a civilization depended on how well it adjusted to its resource base, Leopold felt that society would need to change its callous attitude towards land and cease letting economic law, what he described as “that sacred variety of chance,” hold sway in decisions concerning the land. He wryly summed up the irony of the technological age when he observed that land-use decisions were dependent on capricious economic conditions and society’s resolute commitment towards technology development: “[t]o build a better motor we tap the uttermost powers of the human brain; to build a better countryside we throw dice” (p. 189).

Leopold recognized the limits of public ownership in achieving conservation. Public ownership was an important and helpful option addressing such issues as wildlife protection and recreation, but its reach was inherently limited. The problems of soil erosion and forestry, Leopold stated, are “coextensive with the map of the United States. How far can we tax other lands and industries to maintain forest lands and industries artificially?” (p. 187). Public ownership is only a means to a greater end: “a universal symbiosis with land, economic and esthetic, public and private” (p. 188).

In “Conservation Economics” Leopold articulated his thoughts on the New Deal approach to conservation, drawing from his experience in several of the projects at the time.\(^3\) One problem with the New Deal approach, he argued, was an over-reliance on public ownership in solving conservation issues. Conservation goals involving forestry, soils, game, and recreation require a minimum land area and connections across the landscape, something that public landownership alone cannot achieve. The conclusion, then, was that conservation requires conscientious use of the entire landscape. While public ownership of odd parcels of abused land would help advance conservation to a certain extent, he challenged the assumption that “bigger buying is a substitute for private conservation practice” (p. 196). Public ownership might even encourage land abuse in a perverse way, fostering expectation that the government would bail out the destructive private landowner. Leopold summed up the problem as follows:

The thing to be prevented is destructive private land-use of any and all kinds. The thing to be encouraged is the use of private land in such a way as to combine the public and the private interest to the greatest possible degree. If we are going to spend large sums of public money anyhow, why not use it to subsidize desirable combinations in land use, instead of to cure, by purchase, prohibition, or repair, the headache arising from bad ones? (p. 200)

A second problem with the New Deal approach was the lack of coordination among the disparate programs, each dealing with a single aspect of land-use. From his experience in the American Southwest in 1933, Leopold saw how conservation efforts were contradicting one another, and in some cases the
confusion was compounded by a tangle of legislative acts. For example, a crew would cut a grade along a clay bank, roiling the trout stream that another crew was trying to improve upon with dams and shelters. These “crossed wires,” as Leopold called the situation, seemed inevitable: it was the first time complex conservation needs were being addressed on such a large scale using a top-down approach. Moreover, the enthusiastic technicians leading the work were schooled only in their respective specialties. However, Leopold has another, alternative model in his experience: the Coon Valley watershed conservation project in Wisconsin, which Leopold had participated in, managed to avoid these setbacks. There, Leopold writes in 1935, “not only soil conservation and agriculture, but also forestry, game, fish, fur, flood-control, scenery, songbirds, [and] any other pertinent interest were to be duly integrated.” Although the field of ecology was developing rapidly at that time, it had not, according to Leopold, influenced the early New Deal efforts. Leopold recognized the difficulty of achieving conservation by government agency.

Leopold would continue to ponder the role of the private individual in achieving conservation and the tension between individual and public interests. In particular, Leopold considered pursuing research to follow up with the themes highlighted in “Conservation Economics” after it was published. Although primarily occupied with establishing his university program in wildlife management, from 1934 to 1938 he drafted four research prospectuses for a conservation economics project. The research objective was simple but broad: to study the reasons for the failure of private landowners to practice conservation and identify what needs to be done to reverse the situation. In the last draft, written in 1938, Leopold argued that conservation can only be achieved by the “foresight and ingenuity” of resident operators of land, not absentee ones. Private landowners who believe in conservation and possess the technical know-how are best placed to bring about conservation. The government is inherently an absentee operator; it cannot be a resident operator unless it buys the land, but it cannot buy all the land.15

The heart of the problem was how to encourage private landowners to engage in conservation, which yielded public benefits but perhaps little or no private economic benefits. According to Leopold, the legal and economic structure in America was transplanted from Europe, where the land was more resistant to derangement and developed before the advent of mechanical power and industrialization. The terrain in America was less resistant; when subject to destructive use, it had led to the escalating disruption of the workings of the land’s diversity and function. America would need to develop its own social and economic structure that would be suitable for its particular circumstance. In 1934 he wrote, “What we need is a positive inducement or reward for the landowner who respects both [the private and public] interests in his actual land-practice… What should this reward or inducement be? What is a practical vehicle for it? These are the two basic questions in American conservation. An answer seems to require the collaboration of economists, jurists, regional planners, ecologists and aesthetes. I here plead for a joint search for an answer.”16

The Great Depression and the corresponding New Deal interventions brought into contrast two broad attitudes towards economics. The first was a reaffirmation of laissez-faire thinking, which holds that markets work best when they are unencumbered by artificial restrictions, such as quotas and taxes, and when the government’s presence is kept to a minimum. This was exemplified by the vigorous economic activity that lasted from the Gilded Age of the late nineteenth century to the beginning of the Great Depression around 1930. The second was the statist, technocratic approach of economists, including those from the Wis-
In his 1939 essay, “A Biotic View of Land,” he conceptualized land—consisting of soil, water, plants and animal species—in a holistic way. In this “biotic view,” land was not a mere economic resource, but a living community, best represented as a “biotic pyramid,” with soil at the base, plants and herbivores in the middle, and carnivores at the top. Energy from the sun is channeled from the base to the apex. At the end of an organism’s life, the nutrients in its body are returned to the soil through decomposition. Accordingly, the tendency of the pyramid—the vast and intricate circuit of food chains—was to become more complex over time through evolution.

In the late 1930s Leopold shifted his focus from game management to wildlife management. He revised his earlier thinking on predators of game species, viewing them as an integrated part of the landscape that should be respected, not exterminated.

Yet government intervention was also limited in its ability to achieve the necessary reforms. Leopold was largely disillusioned by the New Deal. Large-scale heroic measures by the government masked society’s inability to promote conservation among private landowners and consumers. The New Deal’s conservation efforts, consisting of public ownership of degraded lands and scattershot resource improvement projects that sometimes contradicted one another, meant well but were primarily remedies and did not address the prevention of land abuse by private landowners (or, for that matter, public agencies) in the first place. Neither could they point the way toward positive inducements for actions that restore land health and diversity and thus serve the long-term public and private interest.

Leopold’s ecological thinking matured during the 1930s, stimulated by the 1931 Matamek Conference on Biological Cycles, an international conference of biologists in Labrador, Canada, where Leopold met Charles Elton, a leading expert in animal ecology and Professor of Zoology at Oxford University. Elton’s ideas on ecology would begin to influence Leopold’s thinking on wildlife management specifically and on conservation more generally. In early 1935, Leopold purchased a worn-out and abandoned farm on the Wisconsin River in Sauk County, Wisconsin. The farm would become the weekend retreat of the Leopold family and was later nicknamed “the shack.” Crucially, the shack gave Leopold an opportunity to practice land stewardship and became the focus for his affection of land, in turn shaping his thinking on conservation.

In the late 1930s Leopold shifted his focus from game management to wildlife management. He revised his earlier thinking on predators of game species, viewing them as an integrated part of the landscape that should be respected, not exterminated.
was inconsistent with ecological reality or conservation needs. It was undermining the prospects of life, human and non-human, to thrive.

These emerging concepts in Leopold’s ecological-economic worldview directly challenged the foundations of mainstream economic thinking (regardless of school). Mainstream economic thinking in America built upon the Enlightenment’s emphasis on individualism and rational thinking as guides to human action and progress. The end result was a dominant disciplinary doctrine of coordination through competition—the pursuit of rational private self-interest by individuals would lead to well-functioning markets and maximize social welfare. The social order gradually emerging from this period was one that revolved primarily around economic activity, pursued by private producers and consumers, with a democratic and secular government facilitating the process by enforcing laws and property rights. Subsequently, scientific inquiry and technological development led to industrialization, thus furthering economic growth and development.

While free-market economics brought forth new energies and activity in society, the strict dichotomy between the private and the public sectors, industrialization, mass production, trade, and modern transportation led to a general trend of increasingly extensive environmental degradation. With larger scales of production, competitive pressure, and goods being sold in distant markets, the tendency for producers was to overlook environmental and social (e.g., labor) concerns while pursuing private profit. Consumers generally lacked information on the decisions made during the production process and the resulting impacts, which they could not recognize until the environmental and social transgressions became too serious to be ignored.

The pursuit of material well-being gradually became the central concern of society and transformed the people’s relationship to the land to one driven by economic expediency. The ironic result of this chase for material abundance was the divorcing of people from the ultimate source of wealth in the land, which was being degraded at an alarming rate. “Nothing could be more salutary at this stage than a little healthy contempt for a plethora of material blessings,” wrote Leopold in *A Sand County Almanac*.21

As economics gradually came to occupy the center of modern society, economic competition became a fact of modern life—with faith invested in the workings of Adam Smith’s famous invisible hand. Competition among countries, companies, and individuals, led to an expediency of action marked by unscrupulous haste and the need for economic survival. The “environment” became seen as merely a resource and a sink to be utilized, and consequently it became severely damaged. Leopold was aware that the economic mechanism that was generally assumed to manage resource consumption through resource-scarcity and high prices had failed to materialize. He noted that resources were still being drawn down and rising prices had in some cases led to substitution instead of cropping or conservative management.

The failure of economics to properly value and preserve the land and all its interwoven organic components, including its human communities, affected Leopold so deeply that he constantly reflected on the situation, trying to come up with possible solutions to this predicament. He recognized the economic assumptions, premises, and practices that were detrimental to conservation and sought to propose straightforward and pragmatic solutions.

To Leopold, human action in the land as dictated by modern economics was based on a utilitarian attitude towards land. He traced this thinking back to the Judeo-Christian tradition, noting that “[f]or twenty centuries and longer, all civilized thought has rested upon one basic premise: that it is the destiny of man to exploit and enslave the earth. The biblical injunction to ‘go forth and multiply’ is merely one of many dogmas that imply this attitude of philosophical imperialism.”22 At issue here is how the worldview of Western civilization has been deeply influenced by what Leopold has described as a conqueror mentality towards land. However, this worldview was becoming increasingly untenable in view of human population growth,
the increased power and efficacy of human technology, and ecological findings on the interdependence in the land as a community. Conservation was a response to an overly simplistic economic worldview, but its success, Leopold realized, would depend on whether society was able to revise this worldview. The dominant economic worldview would need to be reconciled with an ecological understanding and ethical treatment of what we now call the biosphere.

One of the main flaws Leopold noted in economic behavior was a tendency for economic activity to continue unabated even after the overall outcome of the activity had begun to show signs of detriment. The ethos of society, as mentioned earlier, facilitated economic expediency, resulting in an unquestioning general commitment to the simple goal of economic growth. The rapid pace of industrialization led to growth in material wealth but also placed a tremendous burden on the land. This concern was evident in many of Leopold’s writings from his commentary on the booster’s drive to increase his town’s status and population to his observations of the prevalent trend toward “slick-and-clean” farms that left no space for wildlife. Moreover, Leopold held that the idea of continuous growth in economic activity, essentially an exponential phenomenon, contradicted ecological principles. “We learn, in ecology at least,” he argued, “that all truths hold only within limits. Here is a good thing—the improvement in economic tools. It has exceeded the speed, or degree, within which it was good.” In economics the scale of economic activity is determined primarily by the concept of economic efficiency, which does not take into account the social and environmental context of the activity.

The pressure of economic expediency had always been immense and much had been sacrificed in its name. An uncritical devotion to the idea of economic growth and the resulting environmental deterioration led Leopold to describe economic growth as a “Jugernaut.” He frequently used a phrase from Shakespeare’s Hamlet to describe the results of exponential growth—a population may “die of its own too-much”—to invoke the potential harm of excessive human interference of the ecological processes of the land.

Industrialization had been one of the main driving forces behind economic development in modern times, resulting in a general fascination with machinery in society. The availability of mechanical power to work the land, urged on by competitive pressure from economics, resulted in what Leopold called “violent” changes in the land. Leopold, as revealed in his voluminous writings, was not against industrialization per se, but was concerned about excessive degrees of industrialization and the blind manner in which it was pursued. In addition, industrialization, together with the trend toward urban living, had the profound impact of masking the presence of nature in everyday life, thus diverting the attention of the people away from land. This was a formidable obstacle for conservation efforts.

While he was aware that the pursuit of self-interest by private economic actors was hindering conservation efforts, Leopold was also cautious about not swinging over to a more traditional socialist position and inflating the role of the government. He was disturbed by the rise of militarism and oppression in Germany that he observed first-hand when he visited the country on a study trip in 1935. In the United States, the inability of New Deal conservation programs to coordinate and deliver successful results made Leopold realize the shortcomings of government-directed conservation.

Leopold was prodded on in his thinking on conservation and economics by a few close associates. In 1944, Leopold received a letter from Douglas Wade, a former student, on this subject. Wade wrote: “I believe that you have sensed this pull [towards socialism and national planning] and have battled against it. In other words you have wanted to be a ‘liberalist’ but have been unable to conclude many of your essays because they point in the direction of socialism or national planning; at least this is what I seem to get from some of your essays...” In a short reply, which, he noted, was not to be taken as his proper answer to this important question, Leopold wrote:

As far as I know the thing that is lacking in my papers arises from my realization that nothing can be done about them without creating a new kind of people. Rules and recipes are useless for those who can’t understand what’s behind them.

I am not aware of a conflict between liberalism and social planning in my mind because I am thoroughly convinced that social planning in the degree apparently favored by me is thor-
oughly no good. Things that are done wholly by government are really not done, because any decent land-use is worthwhile, not only for its effect on the land, but for its effect on the owner. If the owner is an impersonal government, nobody is benefitted except the government employee.\textsuperscript{31}

The problem of reconciling personal freedom with the need to coordinate human action on the land, which is usually thought to be achieved through coercive state-directed efforts, would become a recurring theme in environmental discourse during the environmental movement of the 1960s and 1970s—and up to the present.

Leopold’s conclusion here that “a new kind of people” was needed effectively transcended the entrenched dichotomy in economic philosophy. This no doubt stemmed from his recognition that collectivist economic models essentially pursued the same economic goals as the free-market economic model. In 1933, he observed that capitalism and its alternatives—socialism, communism, fascism—were all concerned with the “distribution of more machine-made commodities to more people, or, in other words, “s\textit{alvation by machinery}.”\textsuperscript{32} The competing political ideologies at that time all rested on industrialization, differing only in how factors of production were organized and how goods were distributed.

By the 1940s, the lack of progress on conservation seemed dire to Leopold. The dark experience of World War II made Leopold less optimistic. The “\textit{juggernaut}” of industrialized economic growth and the resulting environmental deterioration seemed unstoppable, especially as new war-time technologies were unleashed in the civilian economy. Leopold became convinced that a solution for conservation would not come from within economics. Sensing that change at a deeper level was needed, he focused on ethics, as he had done earlier in his 1933 essay “Conservation Ethics.” In the 1947 essay “The Ecological Conscience,” Leopold noted that conservation efforts thus far had not touched the psyche of the nation: “No important change in human conduct is ever accomplished without an internal change in our intellectual emphases, our loyalties, our affections, and our convictions. The proof that conservation has not yet touched these foundations of conduct lies in the fact that philosophy, ethics, and religion have not yet heard of it.”\textsuperscript{33} Leopold used the phrase “\textit{ecological conscience}” to describe a general awareness of the dependency of all life, including that of humans, on ecological processes. He gravely observed that this awareness was sorely lacking in society.

The juggernaut of economic development had proved relentless in a society that tended to equate “bigger” with “better.” Conventional economics was seemingly unable to relate economic activity to the ecological and social context and society therefore was unable to moderate its own economic activity. Leopold sought a moderating force outside of economics. In 1947, Leopold composed his essay “The Land Ethic,” which would eventually be published in \textit{A Sand Country Almanac}. At the heart of Leopold’s conservation thinking was an emphasis on the importance of personal stewardship on the part of private landowners that would be ultimately based on values and beliefs that defy economic pressure. In the essay he proposed that human beings view themselves as “plain members and citizens,” and not conquerors, of the land community. He then proposed that economic expediency be supplemented, perhaps even preceded, by other considerations: “quit thinking about decent land-use as solely an economic problem. Examine each question in terms of what is ethically and esthetically right, as well as what is economically expedient. A thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community. It is wrong when it tends otherwise.”\textsuperscript{34}

In the end Leopold concluded that both the profit motive and nostalgia for a more “natural” past were inadequate to bring about conservation. Leopold’s land ethic combined the emotional, the practical, and the intellectual.\textsuperscript{35} It implied that only by exercising all these aspects of our minds and our experience could we realize the full potential of our humanity, while sustaining the health of the land. Leopold’s criteria for successful conservation—respecting the “\textit{integrity, stability, and beauty}” of the land—constitutes a balancing force against the commonplace utilitarian mindset that is driven by the growth “\textit{mania}” of economics.

Plainly, Leopold’s land ethic did not propose a facile kind of social change. It represented a shift from a rational, mostly quantitative system of beliefs to a synthesis of profound, difficult, and subjective concepts.
for guiding human behavior in an ecologically complex world. Leopold himself noted that his was not the last word. “Nothing so important as an ethic is ever ‘written,’” he wrote at the end of A Sand County Almanac, noting that ethics can only evolve “in the minds of a thinking community.” However, he felt that social discussion on conservation would be expedited if everyone shared a “common concept of land” that ecology helps to provide. “We might get better advice from economists and philosophers,” he believed, “if we gave them a truer picture of the biotic mechanism.”

Leopold’s thinking on the nature of human-land relationships could be interpreted as an attempt to establish the ecological and aesthetic aspects of the individual self in society. If establishing a harmonious human-land relationship would require “a new kind of people,” then his land ethic was perhaps an attempt at articulating the constitutional basis of this kind of people. It can be seen as a way of reconciling the need to recognize the ecological realities of the landscape we inhabit while preserving the exalted individualism spirit of the country. Hence, Leopold’s emphasis on personal stewardship on the land could be seen as the foundation of an alternative to both unbridled and unprincipled economic capitalism and a socialist economy with a paternalistic government presence.

The fact that mainstream economics still has not been touched by ecology (and the natural sciences generally) in a meaningful way reflects the formidable impediments to change imposed by economic and political expediency. This only highlights, in turn, the need to develop a deeper and more integrated understanding of the human-nature relationship in society. The work of Leopold demonstrates what a gifted and industrious individual could accomplish in this enormously challenging enterprise and provides guidance and inspiration for later generations.

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NOTES
8 Robert J. Lampman, ed., Economists at Wisconsin: 1892–1992 (Madison, Wisconsin:
25. A. Leopold, “Wilderness as a Form of Land Use” (1925), in Flader and Callicott, The River of the Mother of God and Other Essays, 134-42. See also Leopold, “The Conservation Ethic.”
28. C. Meine, Aldo Leopold: His Life and Work, 358, 68.
34. A. Leopold, A Sand County Almanac, 224-25.
35. C. Meine, Aldo Leopold: His Life and Work, 503.
36. A. Leopold, A Sand County Almanac, 225.