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# Planting the Future: Aldo Leopold on Agriculture's Next Century

*Curt Meine*

As Aldo Leopold's preeminent biographer, Curt Meine is known as author of many published works about this famous Iowan for whom the Center was named, including the authoritative *Aldo Leopold: His Life and His Work*, published in 1988 by the University of Wisconsin Press. Curt's credentials also include countless lectures and presentations throughout the U.S. and abroad.

Curt has served as a consulting conservation biologist and as a researcher, writer, editor, reviewer, and advisor for a broad range of conservation organizations and other institutions at the state, national, and international level. He currently serves as an action plan coordinator for the International Crane Foundation and as a consulting conservation biologist for biological diversity in Bulgaria.

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Aldo Leopold assumed many roles over the course of his forty-year career as a conservationist: forester, range manager, soil conservationists, game manager, wildlife ecologist, wilderness advocate, landowner, professor, advisor, writer. He worked in landscapes from the wild to the well-settled, and from the American Southwest to central Europe. As varied as his activities and interests were, they all emanated from his life's core theme: the promotion of a more enriching, enduring, and harmonious relationship between people and land. It was this theme from which his ideas and actions flowed, and against which they were measured.

Leopold's breadth as a conservationist was matched by his sense of priority and proportion. The "formula" for conservation, in his view, included all components of the land community, and all land uses and land users. Leopold made substantial contributions as a defender of wilderness, a pioneer in restora-

tion, a leader in the new science of ecology, an articulator of the land ethic. His most significant contribution, however, may have been the example he set in integrating all these facets of modern conservation.

It was Leopold's sense of priority that led him to devote so much attention to the role of the farmer in conservation. He recognized that agriculture, as the dominant land use in much of the United States, had to be centrally involved in conservation; that the complicated and politically sensitive issues of agricultural economics and policy could not be neglected in the development of an American conservation ethic. "It is the individual farmer who must weave the greater part of the rug on which America stands," Leopold wrote in his essay "The Farmer as a Conservationist." "Shall he weave into it only the sober yarns which warm the feet, or also some of the colors which warm the eye and the heart?"

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Leopold's question still marks the spot where agriculture and conservation intersect, and is likely to stand there for decades to come. It begs further questions. To what degree shall agriculture be defined and pursued strictly as an economic activity, and to what degree as a human activity with cultural, ethical, and aesthetic implications? What forms of encouragement and support does the community-minded farmer require? How can the farm products that "warm the eye and the heart" become as fully recognized and rewarded as those that fill the belly? How, in the century ahead, can agriculture contribute to the further development of a conservation ethic?

### The Land Ethic in Retrospect

As we celebrate the Leopold Center's first ten years, and as we anticipate the beginning of the new century, we also have reason to look back. Fifty years ago, during the summer of 1947, Aldo Leopold was pulling together the pieces of a collection of essays about land and wildlife and ecology that he called, at the time, "Great Possessions." In trying to bring greater coherence to these essays and the themes that bound them, Leopold constructed a new essay that he called "The Land Ethic." This essay became the capstone of the book that would be published in 1949 as *A Sand County Almanac*. And after publication it would become one of the foundation stones of environmental philosophy. The first documentary evidence we have of this essay is in a draft foreword to the book dated July 31, 1947.

The nuances of "The Land Ethic" are best appreciated within the context of the times. In July 1947, American society was still emerging from the World War II experience, settling into new patterns of daily life, but within a vastly altered world. In this immediate post-war atmosphere, no one could quite predict the shape of things to come, but most everyone

could sense that the times would be changing quickly. Especially important were evident trends in international relations, as the cold war's competing blocs assumed their hardened forms; in the domestic economy, as the peace released war-constrained appetites; and in American society, as new technologies began to transform lifestyles. Living rooms began to flicker with the cool blue of television screens. Joseph McCarthy—another Wisconsin product whose memory is not so honored as Leopold's—began to broadcast accusations and feed phobias.

The war had greatly enlarged the role of science and scientists, and in the years following the war, science would continue to be transformed by infusions of federal funds and by the educational opportunities afforded by the G.I. Bill. These trends in the culture of science would have important implications for the conduct of agriculture, as new input-intensive management practices and technologies spread quickly across the rural landscape. With the rise of a more powerful scientific establishment and the impulsive adoption of new industrial processes and products came the faint early stirrings of environmental concern.

July 1947 left important milestones for future students of history—the founding, for example, of the U. S. Central Intelligence Agency. Students of alien lifeforms and pop culture remember it as the time when an unidentifiable flying something crashed into the desert near Roswell, New Mexico, and spawned another sort of new industry. Leopold's composition of "The Land Ethic" may have been a quieter event, but it was destined to be one of slow, steady, and continuing consequence for the world.

Leopold's evolving manuscript needed a final

essay to summarize the conservation philosophy that was woven into and through the rest of the book. By extracting nuggets of older essays, and mortaring them together with newly written material, Leopold was able to construct a complex argument of equal parts science, philosophy, and history, and that itself entered the realm of literature. "The Land Ethic" offered an unprecedented articulation of ecology's importance for all the fields of conservation and land management. It made the point that this new science raised relevant issues in the realm of ethics. It expressed a firm commitment that all of us as individuals must assume in our land relationships the same sense of responsibility that we assume in human relationships.

"The Land Ethic," of course, is rich in quotable passages. For the purposes of establishing the essay's historical context, consider this: ...a land ethic changes the role of *Homo sapiens* from conqueror of the land community to plain member and citizen of it. It implies respect for his fellow members, and also respect for the community as such. In human history we have learned (I hope) that the conqueror role is ventually self-defeating. Why? Because it is implicit in such a role that the conqueror knows, *ex cathedra*, just what makes the community clock tick, and just what and who is valuable, in community life. It always turns out that he knows neither, and this is why his conquests eventually defeat themselves.

The passage is indicative of the subtle post-war character of "The Land Ethic." The essay, and the book for which it provides the upshot, were themselves post-war products. In other contemporary references scattered throughout *A Sand County Almanac*, Leopold reveals the impact of the war on his thought. Here he has made the connections explicit: that so many of our modern dilemmas, social and environ-

mental, reflect a systematic urge to conquer and control, abetted by an approach to science that lacked ethical guidelines. Standing in opposition were the traits that typified Leopold's kind of science, reflected so well in the essays of *A Sand County Almanac*: humility, restraint, integration, respect, delight.

### Leopold and Agriculture

The agricultural sciences were, of course, not exempt from Leopold's ecological critique. They provided in fact the main stimulus of that critique. From his earliest professional writings as a forester to his last publications as a professor in one of the country's leading colleges of agriculture, Leopold applied his pen constantly to the theme of rural life and the rural environment. In the last ten years of his life, he wrote often about the ways in which ecology changes our understanding of the farm landscape. As a wildlife ecologist, he was able to see that landscape from a perspective quite different from those of his more production-oriented colleagues.

A particularly clear example of this came in a 1945 address, "The Outlook for Farm Wildlife":

"Behind [recent] trends in the physical landscape lies an unresolved contest between two opposing philosophies of farm life. I suppose these have to be labeled for handy reference, although I distrust labels:

- (1) The farm is a food factory, and the criterion of its success is salable products.
- (2) The farm is a place to live. The criterion of success is a harmonious balance between plants, animals, and people; between the domestic and the wild; between utility and beauty.

Wildlife has no place in the food-factory farm, except as the accidental relic of pioneer days. The trend of the landscape is toward a

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monotype, in which only the least exacting wildlife species can exist.

On the other hand, wildlife is an integral part of the farm-as-a-place-to-live. While it must be subordinated to economic needs, there is a deliberate effort to keep as rich a flora and fauna as possible, because it is 'nice to have around.'

It was inevitable and no doubt desirable that the tremendous momentum of industrialization should have spread to farm life. It is clear to me, however, that it has overshot the mark, in the sense that it is generating new insecurities, economic and ecological, in place of those it was meant to abolish. In its extreme form, it is humanly desolate and economically unstable. These extremes will some day die of their own too much, not because they are bad for wildlife, but because they are bad for farmers."

Half a century later we are still no closer to resolving the issue of whether farms are food factories or places to live, and it is unlikely that we will fully resolve it anytime soon. It parallels other such issues our society faces. Are our hospitals "health care factories" or are they places to heal? Are our universities "employee factories" or are they places to learn? Are our government offices "legislation factories" or places to govern ourselves? We can look back to Leopold's day with a clear if unsettling sense of the growing influence, not only of science but of economics, on our basic institutions.

There are indications, however, that we have finally begun to take much more seriously the role of (in Leopold's own words) the farmer as a conservationist. The rededication of the Soil Conservation Service as the Natural Resources Conservation Service may be taken as one small but telling indicator of such a change.

We may finally be starting to understand that conservation applies to all lands and waters, and all the components therein. The NRCS, as Paul Johnson has so poignantly expressed it, has "no visitors centers, except the whole American landscape." And as in Leopold's day, agriculture must be at the core of a complete and balanced conservation movement.

It seems almost quaint to speak of a "conservation movement," when it has been decades since that term held any bite. But conservation is reinventing itself, with new institutions (such as the Leopold Center), new scientific alliances, new applied fields. It may be that conservation movement, as the search for harmony between people and land, has really only begun, and that its first century has only been occupied with the initial laying of foundations. Ultimately we may answer the question of the essential role of agriculture, but it will be embedded within a still larger question: Is the earth itself merely "a factory" or is it a place to live?

### **Leopold and the Agricultural Prospect**

Agriculture's future will not be discontinuous with the past. The forces that have transformed agriculture over the last half-century will no doubt continue to shape the character of the farm landscape in the century ahead. Leopold was able to recognize how these had already begun to do so in his own lifetime. His land ethic can be read as his effort to propose a coherent response.

What have been and will be the driving forces behind the changing agricultural landscape? In briefly articulating some of these, there is little that is new. What may be new is the admission that we cannot simply engineer our way past the problems these forces yield, but that we must continue to formulate an ethical response as well.

### *Continuing growth in human population*

Human population growth underlies all other issues and trends. In 1947, the world held less than 2.5 billion people. Most students of the situation are now predicting that the human population may level off at perhaps 10-11 billion by the middle of next century. Leopold, who worked essentially as a population biologist, fully understood the fundamentals of how populations affect habitat. As a conservationist, and especially in the last years of his life, he gave greater attention to this part of the larger equation of sustainability. The relationship between population numbers, resource pressures, and environmental impacts is complicated, but from a conservation standpoint, the point is basic: increasing population pressures reduce the margin for error and the opportunity for creative experimentation.

### *Structural and demographic changes in agriculture*

It is no secret that the last fifty years have seen vast changes in the size and numbers of small farms and in the demographics of the farm population. One study whose results have been reported at this meeting shows that over the ten years from 1982 to 1992, Iowa counties lost on average 190 farms, while the average farm increased 45 acres in size. This loss of small farms, combined with the aging of the active farming population, bodes ill for those concerned with the character and vitality of the rural landscape. Leopold's concerns in the 1940s are well reflected in these trends. He observed and understood how economic and technological change, without input from the realms of ethics and the humanities, would affect agriculture. We are continuing to build a farm landscape that is "humanly desolate and economically unstable."

### *Changing sources of energy*

Over the last fifty years, American agriculture

has become increasingly dependent on fossil fuels, not only to run machinery, of course, but in fertilizers, pesticides, and other purchased inputs, and in the transportation and processing of farm products. In the words of historian Donald Worster, "Put those barrels [of fossil fuels] to work on remaking the landscape, as they are every day, every year, and there is no mountain or river that can defy them, if the human will is there, no species that can run away." Leopold had observed the impact of this trend on everything from the status of wilderness to the pursuit of fish and game. "The Land Ethic" raised the question of whether people could indeed alter their "will" to make room for other species.

### *Increasing role of genetic engineering*

This trend has multiple ramifications, of course, but let us consider just one. Biotechnology has drawn vast funds and much human talent to the manipulation of an increasingly narrow genetic base of crops and livestock. Yet biodiversity, concurrently and ironically, is being lost at historically unprecedented rates. The loss includes not only the species diversity of wild plants and animals, but the genetic diversity of crops and livestock, and populations of semi-domesticated breeds and landraces. In many parts of the world, the intensification of traditional farming practices, and the spread of agriculture into wild and semi-wild parts of the landscape, are root causes of biodiversity loss. Thus, at the global scale we are witnessing the sad spectacle of agriculture consuming its own biological foundations. Although the term "biodiversity" is new, the concern is not. Leopold, especially in last ten years of his life, was stressing the basic importance of diversity in maintaining flexibility and responsiveness in ecosystems, including agroecosystems.

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*Centralized wealth and the globalization of the economy*

Leopold could not have fully foreseen the overarching influence that global economic forces are now having not only on our rural landscapes, but on all facets of our lives. He understood fully that economic forces "limit the tether of what can or cannot be done for land," but he rejected "the belief that economics determines all land use." At century's end, we can still question the theoretical viability of economic determinism, but it has become increasingly difficult to resist the "forces that be."

These are all difficult issues to think about, as conservationists and as citizens. We are poorly equipped to do so. We all bring our ideological baggage to the discussion. The issues by their fundamental nature can conspire to divide us. But because they are fundamental, we cannot avoid them. They (and no doubt others) provide the context that Leopold anticipated, and in which we are all now working.

### **Lessons from Leopold**

Essentially, when we ask how Leopold viewed the future of agriculture, we ask whether we will be able to see farming as a social and biological activity, embedded within an ecological and evolutionary context. We ask how well our activities — our arts, our sciences, our faiths, our educational institutions, our community traditions, our stories — help us to see and understand and enjoy agriculture in this manner. Aldo Leopold's own thoughts and experience offer some trail signs as we seek answers to these questions.

First, we can and must appreciate the breadth of Leopold's vision as a conservationist. He was concerned with, and about, all human relationships with all kinds of the landscapes, from wildlands to farmlands to urban lands.

He was involved in protection, sustainable management, and restoration. He understood the value of multiple approaches to, and needs in, conservation. Iowa needs sustainable crop production; it also needs protection of its remnant prairies and oak savannahs and other wild places; restoration of its savannahs, prairies, wetlands, and rivers; sensible and sensitive design of its towns, cities, and neighborhoods. Can the Leopold Center for Sustainable Agriculture help create the conversation here, so that in the future we can have more opportunities to compare notes with our colleagues? We inhabit, after all, one landscape.

Even as the conservation vision broadens, it must continue to check its glance downward. From early in his career, Aldo Leopold expressed constant concern for what he called the "fundamental resources" of soil and water. There is simply no alternative to eternal vigilance in matters of soil and water conservation; Leopold's appreciation of biological diversity likewise remains fundamental. We have only begun to recognize the importance of biodiversity in agriculture: in the genetic diversity of crops and livestock; in the agroecosystems we create; in the larger landscape that agriculture inhabits. If we can begin to see agriculture within the context of larger ecosystems and landscapes, the connections with other branches of conservation will inevitably emerge.

And although it may go without saying, it remains important to say: that we must appreciate again that agriculture has social, aesthetic, cultural, and (yes) spiritual dimensions. The opening lines of Leopold's well known essay "Good Oak" in *A Sand County Almanac* speak directly to this point: "There are two spiritual dangers in not owning a farm. One is the danger of supposing that breakfast comes from the grocery, and the other that heat comes from the furnace."

Finally, we need again to note the connection between agriculture and our democratic traditions. This connection has, of course, a long history in America. Maybe in fact we are rediscovering that history and now reinterpreting it through the lens of the still evolving land ethic. On this point, we can turn for not to Leopold, but another of Iowa's native sons, Wallace Stegner:

We are the most various people on earth, and every segment of us has to learn the lessons both of democracy and of conservation all anew. . . . What freedom means is freedom to choose, but it takes a long time to learn how to choose, and between what options. If we choose badly, we have, not always intentionally, violated the contract. Democracy assumes, on the strength of the most radical document in human history, that all men are created equal, and that given freedom they can become better masters for themselves than any king or despot. But until we arrive at a land ethic that fits both science and human affections, until we achieve some common reverence for the earth that has blessed us, Ameri-

cans are likely to be what Aldo Leopold in an irritable movement called them: people remodeling the Alhambra with a bulldozer, and proud of their yardage. . . . It would promise us a more serene and confident future if, at the start of our sixth century of residence in America, we began to listen to the land, and hear what it says, and know what it can and cannot do.

It may seem sometimes a far reach from the health of our body politic to studies of more cost-effective fertilization and tillage practices, or new soil nitrogen testing procedures, or biocontrol of purple loosestrife, or wildlife uses of terraces in rowcrop fields. But the connections, in the Iowa landscape, and in the human community upon it, are there. A hundred years from now, we may look back and see this as the Leopold Center's most significant contribution: helping us to learn to live well on the land that produces not only our food and fiber, but our sense of place, and our sense of belonging; helping us to find ways to live not as conquerors of the land, but as citizens with, and within, the land.

