

Translating the Leopold Legacy to Iowa Agriculture

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I am honored to be a part of the 1998 Prairie Festival. I have long been an admirer of the Land Institute but this is my first visit here. It is humbling to be here among the great leaders in sustainable agriculture and the followers of Aldo Leopold. To paraphrase, never has so much ecological talent been gathered at one site since Aldo Leopold sat alone on the Leopold Bench at the Shack before breakfast.

My purpose today is to share with you how the Leopold legacy guides the Leopold Center. This seemed a simple topic, one that should easily flow through the word processor. But it did not work that way. It has been a tough talk to write, especially because I wanted to apply Leopold's thoughts to today's agriculture in Iowa. And also because this is an unconscious action of the Center in large part. We know Leopold so well that we usually do not have to backtrack to the writings to find our way. What I want to tackle today is to explain how the Land Ethic applies to the Leopold Center. How do the multitude of small decisions and the larger choices get reflected in the Leopold legacy and the Center? Incidentally, Leopold may have been one of the first to use the concept of sustainability when he discussed sustained yield in relation to the managing of guano (bird droppings) in Peru by the guano industry.

**THE LEOPOLD CENTER FOR SUSTAINABLE
AGRICULTURE**

Permit me to digress briefly and explain the Center and its setting. Many of you I am sure have heard of the Center, but it is important to understand it for this talk. (A small brochure is available at the registration desk). The Center was established by legislative action and the primary author of the legislation, Paul Johnson, will be speaking next. The Center was started because of the problems that brought about the agricultural crisis of the 1980s and the groundwater contamination issues that were just coming to the forefront in the mid- to late 1980s. Problems the Center was to address were recognized as interdisciplinary and of landscape scale in nature and that would require education and voluntary action to solve. It recognized that agriculture was central to Iowa's economy, and that farmers and the privately owned lands they manage were key to solving environmental problems and ensuring a sustainable future for Iowa.

The Center was placed within Iowa State University, and given an external advisory board. The Center did not grow out of faculty pressures so it is not a creature of ISU. It is not an NGO or a foundation. It receives virtually all of its operating money from state funds, about two-thirds of its annual budget of \$1.6 to 1.8 million comes from fees on nitrogen fertilizer and pesticides, the other one-third from yearly appropriations from the state legislature. It has a small staff, limited office space, and a cap on the number of people it can employ.

I am often asked to paraphrase the Center's mission. I regard it as "to develop farming systems in harmony with a sustainable agriculture, that is systems that protect and enhance the natural environment while providing for a profitable agriculture that sustains the farm and the rural communities, and to transmit the results of its findings to the public in cooperation with Extension and other educational institutions."

Why are these facts important? The Center is within ISU. Change is slow, and often not necessarily toward interdisciplinary activities at land grant universities. And yet the Center was given a charge that certainly infers that business as usual will not be the way to answer problems of agriculture. Second, Iowa is a conservative rural state, slow to change but also highly dependent on a profitable agriculture. So from the beginning the Center had to get real, to connect with agriculture in a meaningful way.

Why spend so much time on the prelude? Because no matter how beautiful and eloquent Leopold's writings are, no matter how well they portray the future as we might see it intellectually, it is always a reach to apply the Land Ethic and other Leopold writings directly to today's agriculture. This means that the Leopold Center as it interprets the great legacy of Aldo Leopold must keep its programs grounded in today.

Aldo formulated the Land Ethic somewhat in isolation from agriculture. He came from an intellectual background, and no matter how much we in academia think we are part of the land, we really are one or more steps removed. Further, Aldo wrote the Land Ethic from experiences in states where agriculture was not the dominant land use. He wrote it in a time when the modernization of agriculture was just really beginning.

The country, including agriculture, had just come through a horrific depression followed by W.W.II. Farm prices had swung from historic lows to where surpluses were beginning to occur. The country was beginning a social and technical revolution that continues today with vastly different lifestyles. The politics of the Cold War and attacks on intellectuals by McCarthy were dominating the news. Agricultural policy was just being recognized as a major force for change, but major issues such as global climate change, international trade, water pollution, environmental effects on human health and on ecological biodiversity were hardly even on the scientific crystal ball. However, a review of some of the cartoons of Ding Darling did show that some issues discussed then including world food supply, government subsidies (part of the New Deal), and soil erosion were on Iowans' minds. But the point remains, how do we translate writings made in another time to today?

Agriculture in Iowa is big business. Large land holdings, high capital investment, large machinery, large animal rearing, and large debts. More and more it is a high risk, least cost producer business. And it is high visibility politics. Virtually all of the political decisions in the state hinge around agriculture, because quite simply, agricultural legislators dominate. It is very difficult to pursue an environmental agenda without proof that it pays, or in absence of such proof,

presence of adequate financial incentives to do the public's will.

APPLICATION OF THE LEOPOLD LEGACY

Leopold spent much of his time writing about agriculture in relation to land use and conservation of land resources. What are some of his philosophical statements that seem to be most meaningful today?

Certainly the land ethic and the philosophies that led up to that epic statement are key. In 1939, in the "Farmer as a Conservationist" (Meine, 1987), Leopold says "Let's admit at the outset that harmony between man and the land, like harmony between neighbors, is an ideal - one we shall never attain. Only glib and ignorant men, unable to feel the mighty currents of history, unable to see the incredible complexity of agriculture itself, can promise any early attainment of that ideal." Leopold here recognizes the complexity of agriculture, that "land harmony" is a vision and not an objective. Might I say that "sustainable agriculture" fits the same mold?

So what does this mean to the Center, or to any of the outstanding public and private institutions for sustainable agriculture? To me, it means that when a program is set up we cannot ask for precise outcomes and time frames. Instead the vision should be clearly articulated and the institution committed to long-term support of that vision. This in fact is what is happening with the Leopold Center Issue Teams and initiatives. They are long-term and likely will not directly achieve quantified end points. Examples are the managed intensive grazing and riparian buffer programs. Indeed this is science itself, and society for that matter. Yet for some reason measured outcomes become the driving force of government programs and sadly even of foundations.

In 1933, speaking on wildlife conservation (but in a speech in which any natural resource could be substituted), Leopold wrote "Most of what needs doing must be done by the farmer himself. ...All the non-farming public can do is to provide information and build incentives on which farmers may act." (Meine, 1987). This is an issue Leopold worried much about over the years.

The Leopold Center is part of the non-farming public, which

is supporting its work. The issue is what information is needed. Here the Center must look forward to tomorrow and provide, along with other scientific and educational partners, information on protecting the natural resource, waters, soils, and biota. Given the complexity of agriculture, the Center must work to keep the information in the multidisciplinary, multipartnership mode. It could provide, for example, information on how to grow corn and soybeans more efficiently, fitting a small part of the sustainability equation. Or it could provide information on how to limit dependence on pesticides, alternate crops, or create a more diverse enterprise base. Importantly, the Center must engage in, as Leopold emphasized, work that helps the farmer do conservation.

Leopold also spoke frequently of the need to integrate land uses, using land in its highest value. This he felt was the best way to promote conservation. That is why the Leopold Center has tried its best to stay away from research and education programs that promote single land uses, particularly row cropping. It is a tough line to walk in a state and a university where the corn and soybean kings dominate pressure groups and politics.

Modern trends in technology were forecast by Leopold in the 1938 article "Engineering and Conservation" (Flader and Callicott, 1991). While he speaks solely of engineering tools and how they are being applied to soil conservation efforts, the words are prophetic today. "We end, I think, at what might be called the standard paradox of the twentieth century: our tools are better than we are, and grow better faster than we do. They suffice to crack the atom, to command the tides. But they do not suffice for the oldest task in human history, to live on a piece of land without spoiling it."

Appropriate technologies have been and always will be a challenge for the Leopold Center. Do we support work on efficiency tools such as precision agriculture, fertilizer placement, reduced rates of herbicides, or even the genetically engineered crops? Or do we move instead to better soil testing, more diverse landscapes, biological pest control, and more "eyes per acre"? Some answers to these questions are relatively clear, but many are fuzzy. Is the economic situation of the Iowa farmer improved with better management for

today or for the future? Who is responsible for the research on short-term efficiencies, and who should worry about the future? Clearly the Leopold Center must look at the future, but should the Agricultural College thus heave a sigh of relief and continue on with serving its industrial and commodity groups with short-term technologies? Is there a way to do both? Is there a way to screen ethically for appropriate technologies?

Leopold in the 1939 "Biotic View of the Land" recognized the futility of many of pest control approaches of the day. He stated "Agriculture science is largely a race between the emergence of new pests and the emergence of new techniques for their control." Much of the Leopold Center research and outreach effort has been focused on biological pest control technologies. These are regarded as far more sustainable than the chemically-based pest control methods currently available. But now, as new technologies such as genetically modified plants for insect control come on line, new concepts of what is sustainable must evolve. We are not in a static world.

EDUCATION

Leopold was strong on education as one of the tools of conservation, but was often critical of the educational establishment, particularly the university. In "The Land Ethic," he wrote (p. 207-208) "Conservation is a state of harmony between men and the land. Despite nearly a century of propaganda, conservation still proceeds at a snail's pace.... The usual answer to this dilemma is 'more conservation education.' No one will debate this, but is it certain that only the volume of education needs stepping up? Is something lacking in the content as well? ..It is difficult to give a fair summary of its content in brief form, but, as I understand it, the content is substantially this: obey the law, vote right, join some organizations, and practice what conservation is profitable on your own land; the government will do the rest."

The failures of education as we know it are a litany of many of our institutions. The Center has taken this failure to heart, and much of its outreach involves supporting interactive programs directly in communities, working as a learning organization, and using the power of farms as laboratories. We have experimented some with distance learning, deciding that the technology is not yet there; it is but one of many formats that

can be used. We produce many brochures and other printed materials, but do not rely on these for our primary messages. The power of a locally planned and promoted program, done in the landowners back yard, has not escaped us.

ECONOMICS

The issue of economics of conservation was an important one for Leopold. He often spoke of the problems of assessing the value of noneconomic members of the biotic community, the birds, fishes, and plants. He was convinced of the importance of biodiversity. Yet he was highly practical, and often offered more encouragement than he did actual ways to improve on the economics of conservation. In "The Land Ethic" (p. 210) he wrote: "One basic weakness in a conservation system based wholly on economic motives is that most members of the land community have no economic value..... When one of these non-economic categories is threatened, and if we happen to love it, we invent subterfuges to give it economic importance." This truism holds today. The spotted owl, the snail darter, the hypoxic zone in the Gulf Coast, and many other examples show how little value society places on wild things of little economic value. So a pragmatic approach is necessary if preservation of wild things (biodiversity) is to be enhanced. Here the Leopold Center has more to offer. We have looked at the values of a diverse landscape, and have had two major successes, the riparian buffer strip project that showcases our approach to solving problems of surface erosion and water quality, and rotational grazing that keeps grass and other forages on steeply sloping lands.

The Center attempts to add diversity to its programs, supporting evaluation of cover for birds, alternative crops, buffer strips, and grazing programs. Certainly this is part of our thought process. But the opportunities to be creative are limited in a two-crop dominated state. Most of the research findings and product development in the university and the ag business complex promote lowered diversity and recognition of yield and economic return only.

To this end, Leopold in "A Biotic View of the Land" wrote that "Biotic farming, in short, would include wild plants and animals with tame ones as expressions of fertility. To accomplish such a revolution in the landscape, there must of

course be a corresponding revolution in the landowner.....a good farm must be one where the wild fauna and flora has lost acreage without losing its existence...It is easy, of course, to wish for better kinds of conservation, but what good does it do when on private lands we have very little of any kind? This is the basic puzzle for which I have no solution." It is good that Leopold admits he does not have glib answers for major issues.

Land health often was a part of Leopold's writings. In 1935 he wrote of "Land Pathology" and in 1941 of "Wilderness as a Land Laboratory" (Flader and Callicot, 1991). In the speech on land pathology, he discussed the many subdivisions of conservationists and pointed out how they must be integrated to accomplish both utility and beauty. He also pointed out that both conservation and production can be attained on the same piece of land, an important part of today's conservation policies. Yet, economics dictate that remedial measures to improve land health will seldom if ever pay because of the lack of value placed on wild things. He worried that the remedies require research and "the injection of some new and important forces to effect any real change." The emphasis on the importance of private land contributions to conservation was repeated often. Here the Leopold Center has often worked with the forestry community, public and private, to increase the amount of trees on the land in important places where they provide soil conservation and financial returns.

Leopold was clear in the way he distinguished the landscape as one beyond food production. In his 1945 address "The Outlook for Farm Wildlife" he wrote about the contrasting philosophies of farm life:

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 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.... It was inevitable and no doubt desirable that the tremendous momentum to 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 someday die of their own, not because they are bad for wildlife but because they are bad for farmers."

THE FUTURE

In his final section of "The Land Ethic", titled "The Outlook," which should be quoted in its entirety, Leopold states:

"Perhaps the most serious obstacle impeding the evolution of a land ethic is the fact that our educational and economic system is headed away from, rather than toward, an intense consciousness of the land." Is this the final way the Center must be measured relative to the Leopold legacy? Can we change the educational and economic forces sufficiently to address Leopold's concerns? Is the Center part of the "minority" that is in obvious revolt against the "modern" trends?

"The 'key-log' which must be moved to release the evolutionary process for an ethic is simply this: 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." The Land Ethic is thus presented for what it is; a social movement, not a technical one. As such, the Leopold Center is placed in that uncomfortable spot for an academic institution, on the cusp of change in people's thinking.

The extreme words of Leopold half a century ago offer perhaps the most challenge to the Leopold Center. It toils in a state and nation that support factory farms, and where the researchers work and are rewarded for developing the technologies that allow factory farms to gain clear economic

advantages. As a small institution, can the Leopold Center have the right kind of knowledge ready for the time when the situation reverses? Or is this a waste of taxpayer money that favors continued economic development without regard to social and ecological cost?

There are exciting developments, as pointed out by Curt Meine in a recent speech on the anniversary of Aldo Leopold's death. He talks of the conservation movement "reinventing" itself, and provides evidence such as the new NRCS, new institutions such as the Leopold Center, and new scientific alliances. I would add to that list the growing influence of the NGOs and urge that they continue to be supported by their backers.

The Leopold Center has been a part of this movement, assisting others in the formation of community groups, community supported agriculture, and marketing groups. The Center supports finding alternate ways to avoid the industrialization of agriculture and still make a profit (e.g., the hoop houses), ways to use knowledge instead of outside inputs (e.g., the soil nitrogen test), ways to save energy and minimize dependence on pesticides and other external inputs.

Curt Meine, in his April 1998 Ames speech, finishes prophetically: "A hundred years from now, we may look back and see this (referring to Leopold Center programs) 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." If this be the legacy of the Leopold Center, then it has truly lived up to the visions of Aldo Leopold.

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