

love." The real problem, he says, is that Zeide's "vision of the world"—others might call it religion—is "arrogant" and seeks "human domination" of nature. In other words, people like Zeide are seeking to play God, the ultimate sin in the Bible. By contrast, Callicott observes, E.O. Wilson has a much superior ethos that reflects an appropriate "humility," including an unwillingness to change Creation by extinguishing species or destroying natural systems.

Callicott's attempt to present ethics as science produces further intellectual confusions when it comes to his treatment of ecosystem management. Assertions that there is a "science" of ecosystems are really an effort to preserve the claims of "scientific management" despite the manifest failures of forestry, range management, and other natural resource disciplines. After 100 years of suppressing forest fires in the name of science, the Forest Service now admits that its "science" was misguided, and actions based on it probably did more harm than good. Rather than abandon the very aspiration to scientific management, however, the Forest Service—and Callicott seems to agree—now says it has found a better and truer science, ecosystem management. Forgive a cynic for believing that perhaps the Forest Service is really just concerned with finding some new way to maintain the legitimacy of the claims to scientific management expertise on which it has historically justified its existence.

At this point, perhaps surprisingly, I find myself agreeing in considerable part with the message of Leopold (and to some extent Callicott), even as I object to the false scientific claims. Although Leopold's poetry was grounded in metaphors drawn from science, the radical part of his message was actually that the traditional scientific management of the professional land managers had failed. Leopold apparently felt that he had to fight fire with fire. To challenge "scientific" management, he had to offer a better science, but he was really hoping to offer a better religion.

The time may have come to recognize that theological arguments should be presented in explicit value terms. The subject of theology has a long and distinguished intellectual lineage. If environmentalists and others involved in land management

want to talk about religion, that is an understandable and altogether worthy goal. So I say, let's talk about religion in a language of religion. Let's drop the pretense that the discussion is about the relative merits of one or another pseudoscientific system. The real debate between the claims to scientific management of the Forest Service (and Zeide) and Leopold's (and Callicott's) rebuttals is a conflict of basic ways of thinking about the world, not about scientific truth.

## A MYSTERY SOLVED

*Curt Meine*

With J. Baird Callicott, I applaud the *Journal of Forestry* for providing the reexamination of Aldo Leopold's land ethic in its January 1998 issue. During his lifetime Leopold was respected among his peers for the critical approach that he brought to the large questions of conservation practice, policy, and philosophy. One suspects that he would have appreciated this review, in the very journal to which he contributed many of his most significant discussions of these questions (e.g., Leopold 1933, 1934, 1936, 1939).

That said, one wonders if the journal could have offered a better-grounded and more dispassionate critique than that provided by Zeide. One also wonders if, as a professor, Zeide would tolerate the same standards of scholarship in his students that he displays in his own "analysis." For whatever else the author was seeking to achieve in his article, a considered understanding of the historic record and context was apparently not a high priority. To respond to each of the article's misrepresentations and plain mistakes would be a rather daunting task. So let us focus on just the largest and most baffling—the opening premise that "Aldo Leopold's influence is based largely on a brief essay (20-odd pages) that outlines what he calls the land ethic." The influence of that essay, and of Leopold in general, Zeide calls a "mystery."

Zeide appears to be taking his cues from Roderick Nash's important, though necessarily limited, treatment of Leopold, which is cited (Nash 1987). Zeide might have profited more by going to primary sources—the vast body of Leopold's published works. At the least he might have sought out secondary sources that have explored the full spectrum of Leopold's activities (see, for starters, Flader 1974; Meine 1988; Flader and Callicott 1991). He might even have consulted those surviving students and colleagues of Leopold's who could attest somewhat more authoritatively to the sources of Leopold's "mysterious" influence.

From such sources, Zeide might have gained a finer-grained appreciation of the tensions, insights, dilemmas, events, professional relationships, intellectual influences, field experiences, and personal challenges that eventually precipitated, in the last year of Leopold's life, the essay "The Land Ethic." He might have come to see *A Sand County Almanac* as only the last act of a highly productive 40-year career in conservation. He might have approached the questions of ethics in resource management (of which Leopold's land ethic is only one, albeit highly important, expression) against a more complex background of historic changes in conservation ideas.

For the record, let us recall just the most basic facts of Aldo Leopold's career: that he belonged to the first generation of trained American foresters, graduating from the Yale Forest School in 1909; that as such, he helped put forestry on a sound political and scientific footing in its formative years; that during his almost 20 years in the USDA Forest Service he made important contributions in fields ranging from range management and fire ecology to wilderness protection, wildlife management, and forest administration; that he played a key role in establishing the nation's first designated wilderness area, the Gila, in 1924, and remained a staunch defender of wildlands until the end of his life; that he was among the first to recognize the fundamental importance of ecology in understanding how organic resources might be managed in a truly sustainable manner, and applied this knowledge across the full range of resource management professions; that he wrote the first text in wildlife management and became the first professor in the emerging field (both in 1933); that he was deeply involved in some of the

earliest experiments in ecological restoration; that he was a prolific writer, publishing more than 300 popular and technical articles during his lifetime; that in 1935, even while carrying a heavy load of professional responsibilities, he purchased the worn-out farm featured in *A Sand County Almanac* and, as a matter of personal responsibility, sought with his family to restore its biological diversity, productivity, and beauty; that many of his students (not to mention his children) became effective professional leaders in their own right.

The "mystery of Leopold's influence" disappears once one takes the time to explore this unique and fascinating record and how it led to "The Land Ethic." It reveals Leopold as one who was able to grow through his own mistakes and misconceptions, as well as his successes, and to advance conservation in the process (Flader 1974). This quality was readily apparent to those who knew him. Leopold's way of thinking, one of his students once remarked, was "not that of an inspired genius, but that of any other ordinary fellow trying to put two and two together." The difference was that Leopold "added up [his] sums better than most of [us]" (Meine 1988). The basis of Leopold's lasting influence thus becomes plain. He had a gift for integrating ideas, information, and experience. He provided provocative answers to important questions that continue to concern many people. And more to the point for this journal's readers, he exemplified the interdisciplinary approach upon which not only forestry, but all resource management and conservation professions, will have to be built if they are to achieve the sustainability that Zeide professes to endorse (Meine 1995).

Is there room to criticize Leopold and the land ethic? Of course—and Leopold would have had it no other way. Far from ignoring the root causes of environmental degradation, as Zeide charges, Leopold in "The Land Ethic" made a valedictory attempt to draw on his own life experiences in defining and addressing those root causes. He knew, however, that his was not the "last word," that others would have to take up the effort. We do indeed need, in Zeide's words, "many things" to achieve a sustainable future. But the most urgent need of all, I would suggest, is a sound understanding of the past. The most significant effect of Zeide's flawed critique may be to remind us of that.

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## DOGMAS AND MANTRAS

*John H. Beuter*

I write because I fear that the constructive essence of Boris Zeide's article will be overwhelmed by accusations such as J. Baird Callcott's that Zeide has an ulterior motive, to defend sustained-yield monocultural forestry and discredit ecosystem management.

Zeide's dissection of Aldo Leopold as the "spiritual father of ecosystem management" is perhaps an unfortunate focus for his insightful, analytical perspective on the nature of ecosystems. Zeide will not change Leopold's place in history, nor do I believe he intends to. Instead, he strives to get us to think objectively about ecosystems and forest management.

His most important insight is to distinguish between ecosystems and organisms. We are led to believe by some that ecosystems are organisms requiring protection from disruption or management in order to survive. Zeide points out that ecosys-

tems have no central control that preordains their structure, their place in the universe, their mortality or immortality. To divide or transform an ecosystem does not preordain its destruction or death. Half a loaf is still a loaf.

Natural catastrophes and human use and abuse of forests have demonstrated time and again the resilience and regenerative power of forest ecosystems. We don't have to settle for even half a loaf. As a sink for extraterrestrial energy (not to mention carbon), the forest comes as close to perpetual motion as anything on earth.

Setting aside his trivia about Leopold's knowledge of history and philosophy, and his qualifications as a forester, Zeide seeks to get us to think about "inconsistencies and misinterpretations" that exist about ecosystem management. In citing the life-support functions of ecosystems that have been transformed into wheat fields and productive forests consisting of monocultures of introduced species, Zeide reminds us that there is legitimacy to objectively considering the highest and best use of the land. Tree farms are ecosystems, too. Land-use choices are made with a blend of scientific, economic, political, social, cultural, and spiritual criteria, the weights among them determined by circumstances.

One would expect more objectivity in the direction of science, economics, and politics, but it seems at times that the will to be objective is overwhelmed by a spiritual mantra that characterizes ecosystems as inviolate organisms. It is understandable that a scientist of Zeide's background and standing would rebel at that tendency.

The land economist Ciriacy-Wantrup defined conservation by our ability to economically mitigate the undesirable consequences of land use. That is, can the lost pieces or leakage Leopold cautions us about be replaced or fixed economically? For example, as old-growth gets scarce, its value increases and the costs of mitigating the consequences of continuing harvest increase relative to the benefits of harvest. At some point it is economically rational to preserve old-growth.

How much old-growth? Who knows, but we might take a cue from George Perkins Marsh, author of *Man and Nature*, who it can be argued was the real father of ecosystem manage-