a publication of the

CENTER FOR HUMANS AND NATURE

Expanding our Natural and Civic Imagination

MINDING NATURE

a journal exploring conservation values and the practice of ecological democratic citizenship

APRIL 2011

VOLUME 4, NUMBER 1

APRIL 2011

ON THE COVER
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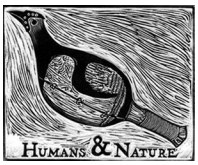

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Minding Nature is published electronically by the Center for Humans and Nature, an independent, non-partisan, and non-profit organization. The Center's mission is to explore and promote moral and civic responsibilities to human communities and to natural ecosystems and landscapes.

Minding Nature will print letters to the Editor, which may be edited before publication and should be submitted in electronic or hard copy (no more than 500 words) to the address below.

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IN SEARCH OF LOST MEANING, WITH NO TIME TO LOSE

I RECENTLY HAD THE PLEASURE OF attending a showing of *Green Fire: Aldo Leopold and a Land Ethic for Our Time* in Chicago. In the discussion period following the film, someone asked a pertinent and important question about why the film does not stress the problem of climate change. Now, climate change is mentioned in the movie, to be sure, but *Green Fire* is clearly not a reprise of *An Inconvenient Truth*. My colleague Curt Meine ably addressed the question and opened our eyes to the host of very complex judgments that go into the making of a documentary film that tries to interconnect—much like a Leopoldian biotic community—the biographical, the historical, and the contemporary world of ethics, politics, and policy.

Reflecting on this afterward, my jet back to New York trailing its carbon stream, I recalled how the film explained that when Leopold referred to "the land" he meant the term quite broadly. It refers not simply to the soil, but also to the water, animals, and plants. The land is a whole system of interconnections and interdependencies between organisms and inorganic chemicals; it is cycles and processes that make life possible and the web of life flourish and evolve. In short, "the land" is a synecdoche (a figure of speech in which the part stands for the whole) in the writings of Leopold, who was as careful and deliberate a rhetorician as he was a scientist. I also remembered one of the people interviewed in the film saying that what Leopold called the "land ethic" was really an "earth ethic."

Just so. The land ethic is a earth ethic, a biospheric ethic, an ecological consciousness and conscience, an ethic of care and responsibility. It is more exacting and turns our attention in different directions than the predominant ethical frameworks now discussed in mainstream social and policy debates. These are frameworks such as utilitarianism, in which human welfare and utility are the exclusive touchstone, and contractarianism, in which our obligations are created by agreements we have willfully and autonomously entered into, not duties we have inherited or responsibilities generated by the limits of nature or the vulnerability of webs of life.

The land ethic recognizes a moral inheritance beyond informed consent. Its reach is broad, and it operates across many different scales and domains—from the local farmer's market and composting in one's backyard to regional conservation efforts, like Leopold's own project in the Coon Valley of Wisconsin, to political economy on a national and an international scale.

So, yes, climate change is pertinent, as is biodiversity loss, depletion of soil, water, and forest, and other concerns of contemporary conservation, many of which Leopold foresaw, some of which he did not. Many of the causes of GHG pollution and human-instigated alterations in the geophysical thermodynamics of the atmosphere and the oceans may be said to arise from a failure to take the land ethic seriously. This is not in essence a personal or a private failure; fundamentally it is an institutional and a "political" failure. When I say political failure here, I do not simply mean the current paralysis of governance and the inability of our leaders to achieve reasonable conservation and environmental policy in a timely fashion, even when it comes to something as monumental as climate change

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or biodiversity loss. Rather I am thinking of our present widespread failure of political imagination: that is, our utter inability to comprehend and attend to the cooperative pursuit of the common good in the service of our moral self-realization as human beings.

In *Green Fire*, Leopold is quoted as saying that he is interested primarily in two things: the relationship between people and the land, and the relationship among people. Conservation and social science; the land ethic and a social ethic—I gather that he did not see these inquiries as truly separate, nor did he see the moral domain as bifurcated and destined to tragic divisions and trade-offs. Therefore, crucial to the land ethic is not only science and ecology—natural reality, as it were—but also history and culture, what we might call *the reality of meaning*. If the land ethic is to lead to conservation, preservation, and sustainable living, it must include the task of recovery and remembering from the past, as well as emancipatory imagination aspiring toward the future. It must recover the foundations and lineaments of a lost sense of the political and reinvigorate a currently suppressed motivation to act as responsible steward-citizens.

The articles in this issue of *Minding Nature* are quite diverse, but they are tied together by the following perception: One of the greatest challenges facing us—from the point of view of the land ethic, and from the point of view of the survival of even a minimally decent society—is the recovery and refashioning of purposive meaning. This must be done in the face of a worldview which for three centuries at least has been systematically drained and desiccated of such meaning. It must be done in order to motivate us ethically and politically in constructive governance. And it must be done quickly because the clock of natural reality is ticking, and it is approaching midnight.

Buddy Huffaker begins by putting his finger on one of the most interesting aspects of a film like *Green Fire*—what does it take today to *reach* people, by which I mean not just exposure to people's eyes (the kind of thing data on audiences can tell you) but also the transformation of people's hearts? A similar question stands behind Paul Waldau's perceptive discussion of one fault line within the community of people who are at least closer than many to the ambit of the land ethic. He invites us to think through the terms on which such tension can be resolved. Perhaps this is a test case for other types of controversy that surely lie ahead.

Alexandre Poisson and Qi Feng Lin, both students at McGill University and both connected to ongoing research projects at the Center for Humans and Nature, each take on the very complex task of understanding the philosophical and spiritual dimensions of the lost meaning that our science, ecology, economics, and policy need to recapture. Both essays are deeply informed by the history of ideas and cultures. Poisson sees connections between Whitehead's process philosophy and contemporary ecological economics. Qi Feng Lin focuses on Leopold and a more connected sense of humans and nature that one finds in the worldview and culture of many Native American peoples. These two young scholars are following a course charted in the work of Strachan Don-

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nelley, the founding president of the Center. These articles might well be read together with his essay, "Minding Nature, Minding Ourselves," which appeared posthumously in *MN* 2.1 (April 2009).

Rounding out this issue is a reflection and review essay by Dana Beach. His close personal involvement and professional leadership in the land conservation movement in South Carolina over many years gives him a valuable perspective on the second documentary film on the Center's list of top Oscar nominees this year, *Common Ground: South Carolina's ACE Basin*. Beach tells a story of remarkable people and a significant achievement. This story, which is also the focus of the film, is a tale of the land ethic in action and a refreshing dispatch from the front lines of hope.

Behind the Scenes in the Making of *Green Fire*

By BUDDY HUFFAKER

One of my fondest early memories is going to the theatre with my father to watch Walt Disney's *Jungle Book*. To this day it is on my top-five list of favorite all-time movies, along with *Lonesome Dove*, *Searching for Bobby Fisher*, and *The Power of One*, It is with some trepidation that I credit Disney with molding my interest, concern, and ethics toward the natural world, but given the dates of my formative years and the typical suburban upbringing I had, the multi-national corporation clearly did have an impact through this film. The *Jungle Book* —even with its warped and inaccurate sense of ecological communities and species assemblages—does present the case that humans, despite our strained relationship to other large predators and our overriding attraction to our own species, are in fact part of the larger biological community. It shows how, with courage and connections, humans can come to appreciate and care for other species.

Add to this storyline the fact that I watched this film with my father during a most impressionable period, and I begin to connect the dots: watching that particular film, at that particular time in my life, in the presence of my father truly did have an impact on my own personal orientation and appreciation for the natural world and humanity's relationship to it. It also gave me a profound appreciation and awareness of just how powerful an impact film, a "tool" in this case, can have on an audience and an individual.

COMMUNICATION CHALLENGE

I should acknowledge—or confess—that I don't keep up with journals like *Minding Nature* as attentively as I should. At the age of forty I find myself in between phases, or stages, in many respects, but most particularly in respect to technology. I use email regularly, but I don't text. I surf the Internet regularly, but I still rarely read newspapers or articles on-line. I watch movies but don't subscribe to Netflix. It isn't that I have some hard-core philosophical position on the matter. Rather, it is more a consequence of not having the knowledge and not being adept at using the technology. And yet, here I sit, writing an article for an on-line journal on a laptop in a park in Madison, having just served as the executive producer of a film, full of substantive ideas as well as profound images, that has required a large investment of time, energy, and financial resources from multiple institutions. Though I won't be doing it, I wouldn't be surprised to see some people watching it on their cell phones in the not too distant future.

We all know our society is becoming increasingly disconnected from the natural world, in large measure because we are more "connected" to the virtual than ever. The Internet's ability to connect us to others with shared interests and values, as described in *The Long Tail* by Chris Anderson, has given rise to new and stronger "communities" while fragmenting the ability of the traditional communication media, such as print and television news, to convey information and values.

This reality, in combination with rapidly changing demographics, poses a fundamental challenge to the conservation movement at the moment. How do

we communicate, cultivate, and instill a conservation ethic that will advance any genuine and sincere definition of a land ethic, or, in common parlance, sustainability?

PROJECT BACKGROUND

It was the realization of this profound challenge by the film's project team that ultimately resulted in the conception, development, and production of *Green Fire: Aldo Leopold and a Land Ethic for Our Time*. For years, many people at and around the Aldo Leopold Foundation discussed the potential value of having a documentary about Leopold's life. This was fueled by the prominent role Leopold played as an individual in films such as *Tallgrass Prairie*, *The Greatest Good*, and *Lords of Nature,* which examined broader topics but used Leopold as a central theme.

> "...humans, despite our strained relationship to other large predators and our overriding attraction to our own species, are in fact part of the larger biological community.

It was when the Leopold Foundation hosted a premiere screening of *The Greatest Good*, a history of the first one hundred years of the U.S. Forest Service—and, by extension, a history of the conservation movement—that the potential to do a film on Leopold took a step forward. At the reception after the film's Baraboo, Wisconsin, premiere, Leopold biographers, Curt Meine and Susan Flader were talking with me, Sally Collins, a U.S. Forest Service leader, and with filmmakers Steve Dunsky, Ann Dunsky and Dave Steinke. The filmmakers indicated that while Leopold had a large role in *The Greatest Good*, relative to any other former employee except the Forest Service's founder and first chief, Gifford Pinchot, they still had a lot of additional material on Leopold—perhaps even enough to do another movie on him. The hook had been set.

PROJECT DEVELOPMENT

Fortuitously for the project, the Dunskys and Steinke were all professionally trained filmmakers and were also employees of the U.S. Forest Service. As the partnership between the Forest Service and the Leopold Foundation came together for *Green Fire*, the agency's leadership recognized both the value and impact *The Greatest Good* had in sharing the agency's history and mission. They also realized that a subsequent film on Leopold could extend the energy and enthusiasm created with the release and distribution of their previous film. But the agency's commitment to the project at the highest level created an opportunity for the Dunskys and Steinke's expertise, experience, and energy to be brought to bear to the project.

When these factors were combined with Flader and Meine's deep knowledge of Leopold and contemporary conservation and with the time, energy, and connections of the Leopold Foundation staff, the makings of a project team were in place. Along the way, a scriptwriter was added, along with associate producers, transcriptionists, field researchers, and many others.

FINDING DIRECTION

As with many projects, we had a general sense of what we were doing—making a movie. But where we were going . . . well, that was a little fuzzy. There was, of course, Leopold's life, which needed to be conveyed and was the raw material of the storyline. There was his idea, his vision, of a land ethic, which of course emerged and evolved over the course of his lifetime. But there was also his legacy—how people had learned from him and had been inspired to think critically or differently about the natural world, our place in it, and our responsibility to it. Early on, everyone agreed that weaving historical and contemporary segments together was critical. How to do that, however, was at best uncertain.

There were also a lot of eyes on the project in the sense that, because of the partnership, there were lots of people to please, all of whom had their own ideas and opinions about what the film should do and how it should do it. Add in other realities such as wanting the film to be only about 60 minutes to facilitate wide distribution, our limited financial resources, and the multiple shooting locations, and I can now see, looking back, that the challenges were significant.

OVERCOMING OBSTACLES

I've always felt Leopold's most admirable qualities were his foresight, patience, and persistence. His foresight was articulated in his vision of a land ethic, his patience revealed by his understanding that cultural change was slow, and his persistence embodied by his will to come back and plant pine seedlings at his farm after they died four years running from drought, or to continue to work on his manuscript for what would ul-

timately become *A Sand County Almanac* after six rejections before finally landing Oxford University Press as a publisher.

This project used each of these three strengths. The project team was held together by the foresight that if the film was done right and could capture Leopold's compelling vision, it would have the desired impact. And, at various stages, equal parts patience and persistence were required. Patience was needed to allow the film to develop its own identity. It was also needed because the economic recession greatly impacted our ability to raise the financial resources necessary for a project of this scope, scale, and quality. Persistence was required because some of the locations were difficult to get to, the weather didn't cooperate, more money was needed to keep the project moving, and at times, the team had to weather doubt and concern about the direction of the project.

One of the biggest challenges was weaving the historic and contemporary storylines together in a coherent and compelling manner. There were times in the project's development that we were heavy on the history, and times when we were heavy on the contemporary. At some point in the process, the idea emerged that Curt Meine, as Leopold's biographer and also as an active conservation biologist, could connect the past and present to help "guide" the audience through Leopold's life and legacy. Different than your typical removed narrator, Curt would instead be what we called an "on-screen guide." For those of you that have the good fortune to know Curt, he was predictably a reluctant star but rose to the occasion admirably. The partnership was then formally expanded to include the Center for Humans and Nature, where Curt serves as Director of Conservation Biology and History, as one of the organizational co-producers.

MAKING THE SAUSAGE

"It ain't pretty," as the saying goes. Well, it turns out the saying holds true for making documentaries as well. While the finished product is delicious, at least for most palates, it is amazing what all goes into it. Mostly there is a lot of hard work, of both the physical and intellectual sort. Hiking to remote locations with heavy camera equipment, working in inclement weather, and transcribing hours of interviews, is just a sampling of the physical demands. The intellectual portion only begins after you figure out where the film is headed—the "narrative arc," in industry terminology. Then you have to develop the more detailed script, shoot to the script, respond to the reality of what the interviews and shooting provided, develop both visual and verbal transitions, hone language, reduce verbiage, and all the while keep it accessible and inspirational.

It is not enough to manage the physical and intellectual, however. To have a really successful film, you must also include the artistic element. This begins with the cinematography captured by the cameramen, includes the sound and music that get laid over the imagery, moves on to the "animation" that brings photos and footage in and out of the picture, and ends with the editing that brings all of these pieces and more together in a coherent way.

In order to ground our direction and execution we listened to Leopold's counsel to "pause for breath." During these pauses, we invited comments and criticisms from focus groups. Feedback ranged from the mundane to the profane. Everyone involved had to develop thick skin, but in particular Curt. "Too much Curt," "Not enough Curt," and "Why did Curt say this, or that?" are just examples of some of the things we heard. Conflicting feedback was common: "more history," "less history," "more about Leopold's life," "what about climate change, species extinction, and other current efforts?" The most polarizing moment revolved around how the incident described in Leopold's essay, "Thinking Like a Mountain," was handled, which is of course significant because it provides the film's name, *Green Fire*.

> "...our society is becoming increasingly disconnected from the natural world, in large measure because we are more "connected" to the virtual than ever ... This ... poses a fundamental challenge to the conservation movement ...

Candidly, some were concerned that we might not be able to realize the ambitions of our project. One colleague, Peter Annin—a former *Newsweek* journalist and vice president of the Institute for Journalism and Natural Resources who is now the managing director of the Notre Dame Environmental Change Initiative—recently expressed this as follows: "As I said when we spoke after tonight's premiere, last year—after seeing a short preview of the film while it was still a work in progress—I was a little worried

about how *Green Fire* would turn out. And tonight, as I was leaving for the show, I confessed to my wife that I was somewhat worried about what the evening at the Barrymore might entail."

Finally, after three years of earnest work, we were pushed by a deadline, just as any good project is: we had scheduled the film's "world premiere" a year in advance, and amazingly, the Earth had nearly completed its cycle. Input was synthesized and digested. Decisions were made. And the race to the finish line was on . . .

> "I've always felt Leopold's most admirable qualities were his foresight, patience, and persistence.

SELLING THE SAUSAGE

We are still awaiting the final verdict, which will be years out. But based on preliminary reports, the film is off to a spectacular start. We have had multiple "sell-outs" with crowds of over one thousand people at some venues. In addition, the feedback from the great turnout at our early premieres has been overwhelmingly positive. Peter Annin, the same colleague who had expressed concern about the film, said this after one of the Madison, Wisconsin, showings:

> One of the reasons I was worried, I suppose, was because of the enormous importance of the task: I knew it wasn't going to be easy to capture the essence of Leopold and his conservation philosophy in film, and vicariously, I felt the pressure you both [Curt Meine and Buddy Huffaker] were under.
>
> But I could not have been more impressed with how the final product turned out. I thoroughly enjoyed the film, and so did the people seated around me. They laughed, they cried, and they sat riveted and fulfilled by the final product. I learned from the film, and felt it did an outstanding job of conveying the importance of Leopold's work and what the land ethic means for past, current, and future generations.

Steve Dunsky, one of the filmmakers, says, "Every film has an audience; the challenge is finding it." So, ironically, now that we have "finished" the film, the reality is we have just begun a new phase of the project—finding the film its audience.

Our strategy at the moment—provided financial resources are available—is to continue the series of major premieres across the country. Upcoming ones in the spring and summer of 2011 include Chicago, Denver, Portland, and Boston. Fall will include Seattle, most likely New York, and many academic showings. We are also contacting film festivals and conferences to utilize them as major venues for showings. And then, if resources permit, a national release on public television will take place around Earth Day 2012.

From the beginning our target audience was not people in the "know" or in the "choir." We purposely developed the film to connect with a more general audience—one that probably will have never heard of Aldo Leopold. That said, we also feel our primary mechanism to reach these folks will in fact be our friends, who themselves have been moved to action by Leopold's eloquence and ideas. This is why we are so pleased with the response to date. In order to continue to engender that response, we have developed a resource kit that is designed to facilitate and support just this kind of community showing. We are pleased and proud that, less than two months into the distribution phase of the film, we have shipped over two hundred kits.

Additionally, from the beginning, "community" was the central theme we wanted to communicate—that we are part of the biological community, not apart from it. If this expanded sense of community can be achieved in even a few people, the success of this project will be profound. Therefore, we think the film will have its greatest impact at the community level, in libraries, nature centers, visitor centers, civic centers, churches, and other places where people gather to think and act on behalf of their own community.

FINAL CHAPTER

We end the film with Leopold's quote: "I have presented the land ethic as a product of social evolution, because nothing so important as an ethic is ever 'written.'" This is our call to arms—the evolution continues, and, as Curt says, it is now in all of our hands. Many of the decisions we made in the film's development were made with this thought in mind. How can we best inform audiences about our shared heritage and the conservation movement through the life of Aldo Leopold, while at the same time inspiring—or, just as importantly, re-inspiring—people to be careful stewards of what Leopold described as the "slow laborious process" of building a new relationship with the natural world?

The film, as a documentary, was not particularly made for the pre-K–12 audience. However, I hold out

hope that someone at least younger than me will watch it with a loved one and that one day he or she will look back and experience something similar to what I feel when I remember watching the *Jungle Book* with my father.

How did we do? Well, you will have to be the judge—you, or perhaps your spouse, partner, parent, or child. The best measure we have is the feedback we have gotten to date. In the words, once more, of Peter Annin: "I know the last few years have been brutal as you and your team spent countless hours compiling and honing the material for this project. I can only imagine the late hours, the feverish debates, and the genuine concern you both must have had about producing a product worthy of Leopold's legacy. But you should know, as you make the rounds across America with this premiere, that all that hard work has paid off. You and your team have produced a moving, tangible, and highly accessible film that will carry the Leopold legacy well into the next century—a major accomplishment."

If we were able to play any role in carrying Leopold's legacy into the twenty-first century, it was worth every minute of it.

Buddy Huffaker served as the executive producer of *Green Fire* and is the executive director of the Aldo Leopold Foundation in Baraboo, Wisconsin, where he works on a variety of land management issues, including the integration of agriculture and conservation, and the ethics of land management.

Animal Welfare and Conservation: An Essential Connection

By PAUL WALDAU

I

Thich Nhat Hanh, the well-known Vietnamese Buddhist monk, is fond of suggesting that "there is no path to peace—peace *is* the path." In this article, I pose a question that one likely encounters in a variety of forms if one walks the path of peace, which could also have been referred to by this Buddhist master as nonviolence or *ahimsa* (non-harming). The specific form of the question I ask here is one, I suspect, that *every* reader of this journal will have heard at one time or another—what is the relevance of "animal rights" to the rich set of concerns we call out with words like "environmental," "conservation" and "ecological"?

This is a question that arises constantly in the "Animal Law" course I teach at Harvard Law School and in the "Religion and Animals" course I teach at Harvard Summer School. The question constantly was asked in the veterinary ethics courses and the "animals and public policy" graduate seminars I directed for a decade at Tufts University Cummings School of Veterinary Medicine. It also looms large in the minds of the students and scholars who today are enriching the burgeoning field of animals studies, such as the undergraduates and graduates whose concern for other-than-human animals drive the Anthrozoology programs now preoccupying me at Canisius College in Buffalo.

I do not claim that the particular answer to this question adumbrated in this article will convince every environmentally conscious person. Even the more extended, diverse arguments I make in the book from which a portion of this article is drawn, *Animal Rights: What Everyone Needs to Know*, may not convince everyone. I do hope to *invite* a wide range of readers into open-minded consideration of animal protection issues.

And I do believe that a serious discussion of "animal rights" and their relevance to environmental/conservation/ecological concerns is part of a peace-constituted path essential to human health and thriving. I suggest this because over the last decades, I have met countless leaders and rank-and-file animal protection people from all over the world whose lives are the richer for their work. Many of them today wonder what might open the minds and hearts of the environmentally-conscious who take joy in "minding nature" but, for some reason or another, shy away from noticing—or at least taking seriously—animal protection causes and complaints that people around the world group under the rubric "animal rights."

So what is the relationship of animal rights to environmental concerns? And what, indeed, do those in the environmental and conservation communities, as well as everyone else, need to know about animal rights? I contend that there are many reasons that individual humans, as members of a most powerful and dominant form of animal life on this shared Earth, *need* to know other animals' lives and realties. I also contend that the question of animal protection (a synonym for, but also more generic term than, "animal rights") is deeply important for the environmental protection community. I rush to acknowledge that I am *fortunate*

to know many conservationists and environmentalists (for example, the two law professors described in the anecdotes below) who are animal protectionists in every sense precisely because they *fully* grasp and support what I suggest in both this article and *Animal Rights*. But I also know, after decades of working on a range of causes and educational topics, that *at times* animal protection efforts and discussions have been marginalized, even excluded, by some people who are popularly called environmentalists or conservationists in ways that are not unlike how many other educators, scientists, veterinary administrators and religious leaders dismiss animal protection as sentimental or misguided in some way.

> "...a serious discussion of "animal rights" and their relevance to environmental/conservation/ecological concerns is part of a peace-constituted path essential to human health and thriving...

Though I feel on safe ground observing that tensions and unresolved issues remain, I relate here two anecdotes as a kind of "evidence" that such marginalization and dismissal are still significant factors today. At an annual animal law gathering at Harvard Law School in February 2011, a conservationist affiliated with a major midwestern American law school confided that his conservation colleagues on campus *oppose* establishing an animal law course at their university. Such opposition is troubling for many reasons, but one is this—because two-thirds of the almost two hundred accredited American law schools and virtually all of the top-rated institutions *already* have such courses, proposals to offer an animal law course are hardly "radical" and controversial any longer. Further, *everyone* of these courses of which I'm aware has been instituted because of *student demand*. What conceivably justifies this law professor's conservation colleagues opposing students seeking what they (the students) consider relevant education of a type already offered at a majority of similar institutions?

In an entirely separate conversation at that same conference, another faculty member at a major American law school lamented that even in the ecology-conscious Northwest of the United States there are conservationists known for aggressive challenges to power plant emissions of green house gases who simply refuse to recognize the impact of green house gas emissions from factory farming. What is tragic about this, of course, is that there are major reports, such as the 2006 report of the United Nations Food and Agriculture Organization entitled *Livestock's Long Shadow*, that reveal startlingly high figures for the emission of greenhouse gases from industrialized agriculture—in fact, as the FAO report indicated, the industrialized agriculture sector *out emits*, as it were, the *entire* transportation sector. Couple this with the tremendous pollution and social dislocation problems created by industrialized agriculture as described in a 2008 report published jointly by the Pew Charitable Trusts and the Johns Hopkins School of Public Health, and environmentalists and conservationists alike have reason to join active citizens in the animal movement in decrying factory farming.

Although I have friends who are fond of suggesting lightheartedly that "the plural of anecdote is data," I do not claim that these two anecdotes fully represent what conservation-minded people think about animal law. In fact, such stories in no way exhaust the complex issues arising at the intersection of animal rights, on the one hand, and environmental concerns, on the other. But these two anecdotes do suggest that *today there still is tension* for some conservation-oriented citizens when it comes to the worldwide social movement that in so many circles goes under the rubric "animal rights."

Whatever name one gives this social movement, it has been marginalized for some time in important circles. A well-known early example in which a conservation-focused voice derided animal protection approaches is found in Baird Callicott's 1980 essay "Animal Liberation: A Triangular Affair." Callicott worked in this essay to distinguish what he clearly viewed as the superior qualities of "holistic environmental ethics" relative to the weaknesses and misguided features of the animal movement's concern for individuals. In animal protection circles, too, there are also well-known examples of reaction and dismissal going the other way, so to speak—one example is a comment by Tom Regan, who became a preeminent animal rights philosopher when he published *The Case for Animal Rights* in 1983. Regan suggested that those who advocate the interests or "rights" of *species* or the "good of the biotic community" are guilty of "environmental fascism" because they thereby override the "rights" of *individual* animals.

Importantly, each of these distinguished philosophers has since written much that indicates he recognizes the rhe-

torical overkill of these early claims. Puzzlingly, however, *the spirit of dismissal still moves some*, such that these cousin social movements have yet to walk arm-in-arm together. In effect, allowing relatively small differences to tyrannize the possibilities of these two major social movements working together is to miss the genius of each movement and thereby forego the obvious synergies these two movements can create when they work together. (I develop this more fully in an essay included in *Ignoring Nature*, ed. by Marc Bekoff, [Chicago, IL: University of Chicago Press, forthcoming].)

> ...any claim to animal protection that does not foreground conservation and environmental insights, as well as consider the plight of human animals is a violation of the animal movement's spirit, internal values and logic...

Consider, in light of what follows, two possible conclusions. First, any claim to animal protection that does not foreground conservation and environmental insights, as well as consider the plight of human animals is a violation of the animal movement's spirit, internal values and logic (humans are, after all, animals, too). Second, any form of conservation or "environmentalism" that privileges *only* our own species (that is, privileges all and only members of the human species and no other animals at all) also violates the spirit, internal values and logic of the conservation and environmental movements, as well as that of science generally. Why? Because such positions are not merely *unscientific*, but also *anti-scientific*, for each repudiates the key tenet of the life sciences—that the animal kingdom includes both humans and other animals in the community of life and in shared ecosystems that are in every meaningful sense integrated and interdependent.

II

As I contemplated how to answer the question "What do people need to need to know about the important but controversial notion of animal rights?" I considered three things. First, I thought of the hundreds, perhaps thousands, of conversations on this topic that I have had with people in ordinary walks of life from all over the world. These have helped me appreciate the great variety of views on this topic.

Second, I thought about what I had learned during several decades of studying animal topics in various educational contexts. I spent years in Oxford, England, studying the academic side of various issues, and I then spent a decade teaching in a veterinary school. At about the same time, I taught the subject of "animal law" at some of my country's best law schools. I also had the privilege of lecturing at dozens of universities and law schools as well as in public conferences, before thousands of people.

Third, I looked at hundreds of books, printed articles and Web sites that used the phrase "animal rights" because I wanted to see whether people were talking to—or past—one another.

Based on all of this background and research, I came to the conclusion that the following issues are the most important ones, and thus comprise "what everyone needs to know" about animal rights.

Animal rights is an ancient topic that recently has taken a special twist. The phrase "animal rights" has been, and still is, employed most often to describe *moral rights* and social values in favor of compassion and against cruelty. The modern twist is the emergence of conversations where the term means all of this *and more*, namely, the possibility of *legal rights* for some or all nonhuman animals. The latter are important protections, and today there is a very active debate over how often and to what extent our different human societies might put specific legal rights and other protections into place for specific animals.

> ...many people recognize discussions about animal rights as being *pro-people* ... concerns to protect the living beings outside our own species honor humans in a special way by first affirming and then strengthening *our* ethical nature...

This debate about "animal rights" as "specific legal rights" colors what many influential people say about the term, but this special and, I think, important sense of the term still remains secondary to the more generic meaning of "moral protections." "Animal rights" in the sense of moral rights is the larger and more fundamental issue, and specific legal rights for specific nonhuman individuals reflect but do not encompass all of animal rights as moral rights.

Second, the debate over animal rights often is polarized, but only in some circles. In those places where

polarization impacts how people talk and hear one another as this issue is discussed, the advocates and activists at opposite ends of the long continuum of views continue to debate in ways that fuel even further polarization.

Third and most relevant to today's use of "animal rights" I found that many people do connect with each other when talking about animal rights. Further, many people recognize discussions about animal rights as being *pro-people*. This conclusion will seem counterintuitive to some, perhaps even an outright falsehood to others. But if you explore the debates over animal rights at length, you will notice that those who make the claim that animal rights can be pro-people argue their point in several different ways. Some argue this must be so because humans are "animals." Others argue that talk of animal rights affirms life, which of course has decidedly pro-human features. Still others argue that concerns to protect the living beings outside our own species honor *humans* in a special way by first affirming and then strengthening *our* ethical nature.

> "People recognize that… we thrive when we connect to some larger project that began before our own life and which will continue after it…

Lots of people also sense that the phrase "animal rights" is not a complicated phrase, but instead a phrase that easily and naturally means something very simple and basic along the lines of "protections for other living beings." Others think the phrase most truly means "we should listen to the voice of animals." Veterinary students often told me that "animal rights" is "a valuable term," but when they use it they risk condemnation by some classmates and, tragically, members of their veterinary school faculty and administration.

Many people feel "animal rights" has undeniable appeal but that it is compromised whenever animal activists use violence on behalf of "the cause." Quite a few who mentioned violence commented on how rare such violence was, and then answered their own concerns by asking out loud, "Why let a few violent people control whether we use a term that describes a movement that was originally nonviolent and today remains overwhelmingly so?"

Today animal protection is a worldwide social movement. At times, active citizens in this movement challenge deeply cherished values and longstanding practices. Some other citizens react strongly to such challenges, which suggests that the risk of polarization is not going to disappear, no matter how effective any argument is at getting all of us to talk fairly, fully, and respectfully about the basic issue of our relationships with the life out beyond the species line.

What is most sorely needed is a willingness to recognize that the debate over "animal rights" is one in which fundamental values are being worked out. Without question, some people feel strongly that mere mention of the topic is a repudiation of humans and thus deeply immoral. But I found that many more people feel this kind of thinking focused solely on humans falls short of humans' ethical possibilities.

Thus, I think everyone needs to know how many people find multiple connections with the world in concerns for "animal rights." Because the phrase works for so many *not as a repudiation of humans* but as an affirmation of humans' special abilities to care about others—whether those "others" be human or other-than-human—the phrase opens doors to the rich, more-than-human world that is out beyond our species. For them, animal rights is a win-win situation, not an either/or matter.

Particularly revealing about those people who find the notion of animal rights to be a connecting, rather than a disconnecting, one is the range of connections affirmed by "animal rights." Of course, one set of connections is with other animals. As the English historian Marc Gold wrote in 1995, "The term animal rights is nothing more than a useful kind of shorthand for a movement based on the recognition that non-human animals live purposeful emotional lives and are as capable of suffering as humans. . . . kindness and tolerance for those different and weaker than ourselves are amongst the highest possible human aspirations." (Mark Gold, *Animal Rights: Extending the Circle of Compassion*, [Oxford: Jon Carpenter, 1995, p. 73].)

But the connections by no means stop there. The phrase "animal rights" also connected people with "nature," "the environment," the local ecological world in and beyond their backyards, and, incredibly, *with other humans in a variety of ways*. Of great significance for the future, it seemed to me, was a pattern of children pushing their parents to consider "the animals."

These connections were not always called out explicitly. Yet even when these connections were only implicit, they were every bit as real, personal, and motivating. Both adults and children found animal rights

to be one way to honor the world as—to use a phrase from the recently deceased visionary Thomas Berry—"a communion of subjects, not a collection of objects."

So one point is that *everyone needs to know* that polarization over animal rights need not be the dominant feature of the debate. Instead, the dominant feature of most discussions about animal rights is the common question, "What is the meaning of life?" My experience in exploring the animal rights debate has taught me that people ask this question because they feel emotionally committed to those around them. People recognize that daily actions, choices, and work can express human imagination and our considerable ability to care, and they know that we thrive when we connect to some larger project that began before our own life and which will continue after it.

Ethical concerns for other living beings, whether human or not, provide such possibilities. Many people today understand "animal rights," however one defines it, to be a path of caring that leads to the fullest possible future. They have found that this form of life not only fosters virtues but in actual practice sustains the prospering of human imagination. My own experience is that in the class, as in life, inquiring beyond the species line prompts healthy, communicative forms of thinking and rationality, rather than the destructive, manipulative, instrumental forms of thinking so characteristic of selfishness and a small soul.

When humans experience others—again, it matters not whether these "others" are human or members of some other species—paradoxically this experience of getting beyond the self allows humans to become as *fully human* as we can be, that is, human in the context of a biologically rich world full of other interesting living beings. As Viktor Frankl said in his influential *Man's Search for Meaning*, "self-actualization is possible only as a side-effect of self-transcendence." This is true not only for human individuals but also for the human species as a whole. This has in fact been the message of many religions, many ethical systems, and various wisdom traditions anchored in small-scale societies.

Through writing I came to understand that animal rights, as most people described it to me, is about connecting to the meaning of life.

III

A few words in conclusion—just as there is a surpassingly important insight driving the suggestion that there is no path to peace *because peace is the path*, so too one might suggest that environmental and animal protection concerns are not merely vehicles by which we get to a better, human-centered world—rather, they are themselves constitutive of a better whole and our larger and truest community.

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A portion of this article is reprinted with permission from Paul Waldau, *Animal Rights: What Everyone Needs to Know*. New York: Oxford University Press, 2011. Follow this link to hear NPR interview (January 18, 2011) about this book: http://will.uiuc.edu/media/focus110118b.mp3

The Influence of A. N. Whitehead on the Future of Ecological Economics

By ALEXANDRE POISSON

The western world is now suffering from the limited moral outlook of the three previous generations ... The two evils are: one, the ignorance of the true relation of each organism to its environment; and the other, the habit of ignoring the intrinsic worth of the environment which must be allowed its weight in any consideration of final ends.[1]

A century ago an influential movement in philosophy known as "logical positivism" effectively banished metaphysics from science, declaring such speculative thought meaningless. Many disciplines in the humanities followed this lead, including economics and political science. This rendered the connection between political economy and fundamental questions about the essence of the natural world invisible.

My argument in this essay is that we must regain a critical understanding of the relationship between science, cosmology, and metaphysics on the one hand, and ethics, economics, and politics on the other. Indeed, it is problematic assumptions about human nature and our connection to the natural world that are directly tied to the deep failures of our current political-economic system. If we are to alter the destructive and unsustainable direction of our current political economy, we will need to rethink our underlying world view. To do this, we can recover the insight of earlier philosophers who still knew how to think creatively about metaphysical questions. One such philosopher is Alfred North Whitehead (1861 – 1947). My aim is to show how Whitehead's work in cosmology, "process thinking," and "process theology" is contributing to the ongoing development of an alternative to neoclassical economics—namely, a new trans-disciplinary field called ecological economics.

Alfred North Whitehead was an English mathematician, physicist, and philosopher. As a thinker who considered himself part of the "Platonic" tradition, Whitehead recognized deep interconnections between the trajectory of civilization on the one hand, and its dominant contemporary moral outlook, epistemology, and cosmology on the other. He attempted to intervene on contemporary thought and culture by conceptualizing those deep links, and by addressing problems at their root, he hoped to initiate a broad sweep of intellectual reform.

> "...we must regain a critical understanding of the relationship between science, cosmology, and metaphysics on the one hand, and ethics, economics, and politics on the other.

In this article, I first review and recover central elements of Whitehead's thought, by situating it—as he himself did—in the discourse of classical Greek philosophy and in contrast to Newton's world view and cosmology. Secondly, I focus on ecological economics and examine how that promising approach to a new

political economy has dovetailed with the philosophical outlook found in Whitehead's thinking. Finally, I offer a broad assessment of where and how Whitehead's ideas can continue to shape the development of ecological economics.

> How can we account for the tremendous multitude and diversity... yet, is there not as well a remarkable unity in all things, a wholeness of "being" that cannot be divided?

REDISCOVERING PROCESS COSMOLOGY

One of the central themes animating philosophy and science since their beginnings has been the nature, origin, and intelligibility of permanence vs. change, or being vs. becoming, in the world. How can one same reality be both permanent and changing at once? Which of the two are more fundamentally real, and where do they come from?

This simple paradox has had the most profound reverberations in every field of thought imaginable. Great dynasties and civilizations appear to have indestructible strength and absolute permanence. A world view based on permanence helps to reinforce belief in the status quo—the belief that the political structures, laws, and social order in place will never change and are meant to be exactly as they are. In reality, however, dynasties and civilizations eventually collapse, and once-powerful tyrants leave behind ruins in the sand. A world view which includes the necessity of change may anticipate or even precipitate radical political reform and fundamental cultural and social change, as well. Philosophically understood, however, permanence and change do not simply alternate or clash in history or in human understanding. In works of classical sculpture, for example, one finds a more complex situation. The Greek *discus* thrower's motion has been immobilized in hard marble for thousands of years by his sculptor, but at the very unique moment where motion itself is about to change in both direction and acceleration. Here, the art presses upon us a recognition of a new becoming. (Compare ancient Greek and Egyptian sculpture in general: the Greek depicts elegance and motion, while the Egyptian depicts power and static permanence.)

Another dominant theme in metaphysics since ancient Greece is practically inseparable from that of being and becoming. It is whether our universe is primarily "one" or "many."

How can we account for the tremendous multitude and diversity of visible entities and phenomena around us? Did it always exist, and where does it come from? And yet, is there not as well a remarkable *unity* in all things, a wholeness of "being" that cannot be divided? Do we not have, at the largest of scales, an almost inescapable impression of universality and coherence among diversity, as if the entire cosmos were One, and inseparable? What gives the universe unity and coherence?

A tremendous tension is generated by the attempt to untangle the mystery of the cosmic coexistence of change vs. permanence, and unity vs. multiplicity.

GREEK ORIGINS

In the sixth century B.C., a strange school of thought arrived in Athens, led by Parmenides and Zeno (515 – 430 B.C.E.), which baffled (if not mesmerized) the Greeks, with their infamous logical paradoxes of motion, being, and oneness. The Eleatic school of Parmenides has had, for better or for worse, the most profound influence on the course of all Western thought, including mathematics, science, theology, and political economy.

> The loss of unity and interconnectedness implied by the atomists troubled many thinkers, both ancient and modern, but it has come to be exceedingly influential...

Consider Zeno's paradox of motion. This is captured by the infamous "arrow" that either never arrives at its destination, never leaves its initial location, or never "moves" even though it arrives at its destination. To cover a distance in space, an arrow must travel through an infinite number of intervals of space. This would take an infinite amount of time, however, and hence would never occur. Worse, in changing places the arrow would have to cease "being" at any one place, and thus, in ceasing to be, it would lose its very existence. In this view, being is incompatible with motion. Yet another paradox is this: since nothing can be in two places at once, the arrow can only be in one place during any given instant of time. If so, during that instant, it can only be at *rest* (think of the still frames of a movie); and so the arrow is always at rest, and never in motion. Thus, motion and change (be-

coming) for Parmenides and Zeno had to be but an illusion! And for similar reasons, so, too, was diversity.

The ontological paradoxes proposed by Parmenides and Zeno raised profound questions about physical nature, the meaning of existence, space, time, infinity, parts and wholes, being and becoming, and indeed, about the problems and traps of pure logic and abstract thinking itself. It forced generations of thinkers to reflect on the nature of the universe, its origins, and its future development. It also forced generations of thinkers to reflect upon the nature, limits, and possibilities of their own minds, and how their minds relate to the rest of nature.

> Matter itself was conceived as passive (or "dead"), in that one of its main properties was to offer resistance to change (both hardness and inertia). Newton defined "forces" as the factor mediating externally between passive bodies in an empty void.

Coming back to Zeno's arrow: clearly, the most practical of solutions was simply to say that all this *a priori* logical thinking was utter nonsense, since we actually see the arrow arriving at its destination, plain and simple. One possible conclusion to be inferred about reality from sense perception was that both being and becoming simply coexist in our universe in the form of matter and motion. Problem solved.

Two proponents of this solution were the early empiricists and atomists Leucippus, Democritus, and later Epicurus (who derived ethical consequences from this epistemology and view of reality). They held that the ultimate building blocks of all of nature (bows and arrows, life, human beings and mind included) were tiny material atoms: homogenous, unchanging, and eternal. These tiny hard balls were the substance or being at the origin of all things. There was no going beyond or behind atoms. According to the theory, atoms were the essence of reality. In the attempt to get around some aspects of Zeno's paradoxes, Democritus and Epicurus also hypothesized that between each tiny atom, there must be an absolute void, or non-being: an absolute empty space through which the atoms could move freely. But Parmenides and Zeno's penetrating thought had posed another problem—namely, that it was impossible for "non-being" itself to exist. Therefore, how could the absolute void itself exist? This was a paradox that Democritus's school and many later scientists (including Newton) could not solve, and so they had to introduce the void as a brute axiom. Because of the introduction of the void, the atoms necessarily gained a quality of isolated existence, where all atoms of "substance-being" were fundamentally separated from each other as isolated islands in a sea of absolute emptiness. This infinite separation between all islands of "being" implied that the universe could not have unity, coherence, or wholeness; it could not be "One." All events (and people) in one location of reality are entirely disconnected from events in another. This conception of reality was later revived by Newton as scientific materialism and reductionism, and it inspired or justified a crude individualism in social and moral philosophy.

The loss of unity and interconnectedness implied by the atomists troubled many thinkers, both ancient and modern, but it has come to be exceedingly influential in the post-Enlightenment period in the West, particularly in classical and neoclassical economics.

Both doctrines (the static universe and atomism) have not gone unchallenged, however. Prior to Parmenides, Zeno, and Democritus, Heraclitus of Ephesus (535 – c. 475 B.C.E.) had taught the contrary view: that *all* is change and becoming; that "everything flows," everything comes into being and decays. Heraclitus is now recognized as the wellspring of *process* thinking. He taught that nature's opposites (light-dark, heat-cold, friends-enemies, war-peace) conflict with each other, yet at the same time depend on each other, and coexist with and are transformed into each other, all at once in a great turmoil of flux.

> Whitehead will combine...evolution and quantum theory... into a new modern concept: cosmic evolution by the successive emergence of new epochs of ordered "societies."

The fact that reality was always changing didn't lead Heraclitus to believe that most of nature was fundamentally unknowable or that our minds were alienated from nature's most predominant characteristic. Heraclitus believed that behind all the change observed in the perceptual or physical world was an all-pervading *Logos*, an intelligence "eternally valid" and

"common to all." This *Logos* provided the necessary unity which gave the universe coherence in change. He says, "Soul is the vaporization out of which everything else is composed; moreover it is the least corporeal of things, and is ceaselessly in flux, for the moving world can only be known by what is in motion." For Heraclitus, the mind, itself of a very active and dynamic nature, was capable of knowing and connecting with the constantly changing character of the universe.

> "...two problems, above all ...plague economic theory today: failure to acknowledge the interconnection between the human economy and our finite natural "environment," and the highly reductionist conception of human nature and the individual economic actor.

Finally, Plato, too, struggled with Parmenides' paradoxes and proposed his own solutions, developed especially in the *Timaeus*. Plato thought that harmonious patterns in the visible and ever-changing world were the dim reflections of a higher form of reality, largely unseen by the senses alone, but accessible by the powers of a well-trained heart and mind. He developed a theory, similar to that of Heraclitus, that all things visible were in a constant process of becoming but shared a common origin, unity, and interconnectedness. Plato taught that the common origin of all things was an Absolute Good, with characteristics of infinite intelligence, justice, and beauty.

Heraclitus's early process thinking and Plato's *Timaeus* were the most important sources of inspiration for Whitehead's "philosophy of organism," and by drawing upon them, he was able to develop an alternative to the predominant framework of metaphysics and cosmology in the modern era.

THE NEWTONIAN SYNTHESIS

By 1715, with his epoch-making *Principia,* Newton had provided a new synthesis of both science and natural theology, building, as he said, on the work of predecessors such as Copernicus, Kepler, Galileo, and Descartes. These thinkers brought down a view of the cosmos that had been defended by powerful imperial and religious authorities for nearly two thousand years. We can understand this scientific revolution as a modern attempt to solve the paradoxes of being and motion once formulated by Parmenides.

In Newton's new system of the world, matter and linear motion were both primary and eternal (conservation of momentum), and as such, resembled the ancient system of atoms of the Greek thinker Democritus. All bodies were composed of tiny hard particles that obeyed three astonishingly simple laws of motion: the laws of inertia, acceleration, and equal-and-opposite actions.

Matter itself was conceived as passive (or "dead"), in that one of its main properties was to offer *resistance* to change (both hardness and inertia). Newton defined "forces" as the factor mediating *externally* between passive bodies in an empty void. The fact that the forces themselves were proportional to the quantity of matter (F = ma) therein only helped to reinforce the importance of dead "matter" in the new system of the world.

A most mysterious and unexplained element of Newton's particular synthesis was the fact that forces could act not only through the direct mechanical contact of bodies, but also across overwhelmingly large astronomical distances, through an absolute void, instantaneously, without the need of a transmitting medium. Newton's "action at a distance" doctrine led scientific opponents to refer to these mysterious forces as Newton's own *occult*, or fictitious, qualities. Other problems raised by scientific contemporaries included Newton's notion of independent and absolute space and time, his belief that motion and rest were absolute (rather than relative), and his belief in the material or corpuscular nature of everything, including light.

Despite such reservations, however, Newton's synthesis satisfied the search for discoverable and deterministic laws, was mathematically precise, and fit with many empirical observations. Yet the rationalist's and natural theologian's ideal, the search for natural and intelligible *causes*, seemed actually to lose ground with Newton. In the most famous exchange of letters between Newton and Leibniz, which shaped scientific debate for centuries, Leibniz cast doubt on the main concepts of Newton's new physics (absolute time and space, the void, atoms, and gravity as a force that attracts instantaneously at a distance). About the notion of gravitational force, Leibniz had this to say:

> But then, what does he mean when he will have the sun to attract the globe of the earth through an empty space? Is it God himself that per-

> forms this? But this would be a miracle if ever there was any ... Or perhaps are some immaterial substances or some spiritual rays, or some accidents without a substance, or some kind of species intentionalis, or some other I-know-not-what, the means by which this is claimed to be performed? Of which sort of things the author [Newton] seems to have still a good stock in his head, without explaining himself sufficiently. That means of communication, says he, is invisible, intangible, not mechanical. He might as well have added inexplicable, unintelligible, precarious, groundless, and unprecedented.[2]

Strangely enough, when matters got too complicated, Newton had no problem placating his mathematical and materialist explanations with the arbitrary and miraculous powers of an almighty God. In Newton's theology, God stood outside creation as a mighty tyrant to be feared for his absolute power. It was God who had set the initial conditions and absolute laws for the planetary motions (their positions, speeds, and initial masses), which Newton made no attempt to explain.

In stark contrast to Newton's dry and inexplicable clockwork, Kepler and Leibniz imagined an intelligible universe of active substances organized into sets of harmonic, or musical, relations. They searched for the process of self-generation, or becoming, which would account uniquely for the observed patterns in nature, and they did not divorce qualities of mind and subjective feeling (intention, sufficient reason, aesthetics) from their physics.

The deep assumptions of Newton's "System of the World" and the myth of his great genius largely dominated scientific thinking—including the basic concepts of mathematical physics, legitimate methods of scientific practice (strict empiricism, inductionism, and the progressive banning of all metaphysical considerations), and faith in deterministic laws—for the next two hundred years under the names of scientific materialism and reductionism. As a complete world view, both physical and theological, Newton's System of the World provided a new constellation of authoritative analogies (identical to that of Democritus and Epicurus) for social disciplines—especially early economics and utilitarian ethics—to borrow from.

WHITEHEAD'S PROCESS PHILOSOPHY

In 1929, Alfred North Whitehead published *Process and Reality: An Essay in Cosmology*, the most complete exposition of his metaphysical system. The year 1929 is significant, since it marked a turning point in the history of science when the dual revolutions of general relativity and quantum mechanics finally overturned much of the old assumptions contained in Newton's centuries-old System of the World.

During his lifetime, Whitehead was recognized as one of the world's authorities in mathematical logic; the *Principia Mathematica*, coauthored by Whitehead and Bertrand Russell, is one of the most influential works in mathematics of the twentieth century. He was also active in theoretical physics and proposed a theory of universal gravitation that for several decades even rivaled Einstein's theory of general relativity. Both of these elements of his work place Whitehead at the forefront of higher mathematics and modern physics at the time when *Process and Reality* was published. This is important to consider as qualifying background to his abstract and speculative work in metaphysics, cosmology, and theology.

Whitehead's *Process and Reality* is extremely rich in detail and overwhelmingly broad in scope. It is highly rigorous in the interconnectedness and coherence of its concepts, yet it also preserves an imaginative, creative, and poetic quality. The system is beautifully complex, as is our universe, whose essence Whitehead attempts to grasp in its "creative advance." Here, my aim is to describe only a few key elements of Whitehead's complex system of metaphysics and cosmology that will be most relevant to the discussion about ecological economics. Necessarily then, much is left out.

> "The main challenge that ecological economics addresses is the problem of limits to long term economic growth, or limits to macroeconomic scale derived from embededness in a finite biophysical environment...

We can start by comparing Whitehead's cosmological views, as he did, with what he called "the two statements of cosmological theory which have had the chief influence on Western thought"—that is, Plato's *Timaeus* and Newton's *Scholium* (or System of the World). Perhaps provocatively, the author of *Process and Reality* unequivocally sides with the far more

ancient and speculative text of Plato, rather than the more modern and precise text of Newton: "To the modern reader, the *Timaeus*, considered as a statement of scientific details, is in comparison with the *Scholium* simply foolish. But what it lacks in superficial detail, it makes up for by its philosophic depth. ... The penalty of its philosophic deficiency is that the *Scholium* conveys no hint of the limits of its own application."[3]

Whitehead analyzes the shortcomings of Newton's system in light of advances in more recent science, particularly in regard to evolutionary thinking and quantum theory. By being deficient in terms of evolutionary thinking, "the *Scholium* betrays its abstractions by affording no hint of that aspect of self-production, of self-generation which is so prominent in nature. For the *Scholium*, nature is merely and completely there, externally designed and obedient. The full sweep of the modern doctrine of evolution would have confused Newton, but would have enlightened Plato."

The incompatibility between Newtonian mechanics and quantum thinking is another serious problem, and in this regard also Whitehead considered Plato to have been more prescient than Newton. Aside from the evolutionary character of Plato's thought, Whitehead argues,

> there is another side of the *Timaeus* which finds no analogy in the *Scholium*. In general terms this side of the *Timaeus* may be called its *metaphysical* character, that is to say, its endeavour to connect the *behavior* of things with the *formal nature* of things. In the first place, the *Timaeus* connects behavior with the ultimate molecular characters of actual entities. ... Newton could have accepted a molecular theory as easily as Plato, but there is this difference between them: Newton would have been surprised at the modern quantum theory and at the dissolution of quanta into vibrations; Plato would have expected it. While we note the many things said by Plato in the *Timaeus* which are now foolishness, we must also give him credit for that aspect of his teaching in which he was two thousand years ahead of his time. ... Plato accounted for the sharp-cut differences between different kinds of natural things by assuming an approximation of molecules of the fundamental kinds respectively to the mathematical forms of the regular solids. He also assumed that certain qualitative contrasts in occurrences, such as that between musical notes, depended on the participation of these occurrences in some of the simpler ratios between integral numbers. He thus obtained a *reason* why there should be an approximation to sharp-cut differences between kinds of molecules, and why there should be sharp-cut relations of harmony standing out amid dissonance.[4]

In his "process cosmology" or "philosophy of organism," Whitehead will combine these two important characteristics (evolution and quantum theory or sharp-cut relations) into a new modern concept: cosmic evolution by the successive emergence of new epochs of ordered "societies." Whitehead writes:

> The notion of organism is combined with that of process in a two-fold manner. The community of actual things is an organism [it has unity of action]; but it is not a static organism. It is an incompletion in process of production. Thus the expansion of the universe in respect to actual things is the first meaning of "process"; and the universe in any stage of its expansion is the first meaning of "organism". Secondly, each actual entity is itself only describable as an organic process. It repeats in microcosm what the universe is in macrocosm. It is a process proceeding from phase to phase, each phase being the real basis from which its successor proceeds towards the completion of the thing in question.[5]

In the rest of *Process and Reality*, Whitehead develops an abstract conceptual system to describe an evolving universe that, in its scientific and poetic essence, takes on the characteristics of life: creative activity, openness of process and determination, interconnectedness, unified diversity, and even "feeling," "aim," "value," and "self-enjoyment."[6] With its unified concepts of directed process and organic unity, Whitehead's "philosophy of organism" brings together the two important themes of metaphysics mentioned earlier: becoming and being, and unity and diversity.

ECOLOGICAL ECONOMICS AND WHITEHEAD PROCESS THOUGHT

I turn now to the connections between Alfred North Whitehead's process philosophy and the ongoing de-

velopment of an alternative to neoclassical economics in the form of an ethical ecological economics.[7] There are two problems, above all, that plague economic theory today: first, the failure to acknowledge the interconnection between the human economy and our finite natural "environment," and, second, the highly reductionist conception of human nature and the individual economic actor. Whitehead's process theology is sometimes used in ecological economics to address conceptual difficulties that arise when attempting to reintegrate humans and nature. There are other ways, as well, in which Whitehead's ideas may be fruitful in continuing to develop ecological economics.

> "...the core theme animating neoclassical economics is a highly reductionist conception of human nature: an isolated being (homo economicus), mathematically equivalent to an isolated particle-mass moving in space according to a unique optimizing principle.

Ecological economics is a trans-disciplinary field of academic research which seeks to (1) integrate the study of human economics and global ecology as the basis for a sustainable and desirable future, and (2) eventually supplant neoclassical economics as the dominant economic paradigm. It is distinguished from mainstream environmental economics (a branch of neoclassical economics) in that it considers, from the point of view of energy and materials throughput, the human economy to be a *subsystem* of the larger ecosystem (Ecosphere) in which it is embedded.[8]

One of the unique aspects of ecological economics is its particular interest for the laws of physics, and in particular, thermodynamics. Thermodynamics is used in ecological economics as a general framework to set the boundaries of macroeconomic analysis and to define ultimate boundary constraints on very long term economic growth. It also helps in understanding, from a biophysical point of view, irreversible material and energy transformations involved in all agro-industrial transformations, and hence, all economic activity and transactions.[9]

The main challenge that ecological economics addresses is the problem of limits to long term economic growth, or limits to macroeconomic scale derived from embededness in a finite biophysical environment. (Two other policy problems addressed in ecological economics are just distribution of incomes and efficient allocation of resources.) The problem of scale has two aspects: one of intensity of activity at any given time (carrying capacity); the other, of longevity or lifespan.

In ecological economics, the problem of maximum size/intensity is an essential idea. There are biophysical constraints that human economic systems cannot surpass in a finite global environment—especially in terms of continuous growth in size/intensity of energy and materials throughput—without risking inevitable economic, ecological, and population crashes.

The lack of connectedness of economic activity to the biophysical environment in neoclassical economic theory is a problem that did not go unnoticed by Whitehead: "The western world is now suffering from the limited moral outlook of the three previous generations ... The two evils are: one, the ignorance of the true relation of each organism to its environment; and the other, the habit of ignoring the intrinsic worth of the environment which must be allowed its weight in any consideration of final ends."[10]

Similarly, as one of the founders of ecological economics, Nicolas Georgescu-Roegen pointed out, "There are several regrettable consequences of the adoption of the mechanistic epistemology by standard economics. The most important is the complete ignorance of the evolutionary nature of the economic process. Being erected as a sister science of mechanics, the standard theory has no room for irreversibility any more than mechanics has. The standard analysis of the market is all based on complete reversibility from one equilibrium to another."[11]

Georgescu-Roegen adopted two important elements of Whitehead's epistemology and evolutionary thinking. First, as a mathematician of the first rank, he drew attention to a constellation of mathematically precise yet qualitatively false abstractions that cluttered economics, blinding its practitioners to more insightful truths. (Whitehead called this the "fallacy of misplaced concreteness.") Second, he partially adopted elements of Whitehead's theory of innovation and epochal evolution—in particular, novelty and emergence through the combinations of entities into organic wholes.

The founders of neoclassical economics (Jevons, Walras, Edgworth, Pareto, and Fisher) closely patterned their new science of economics on analytical

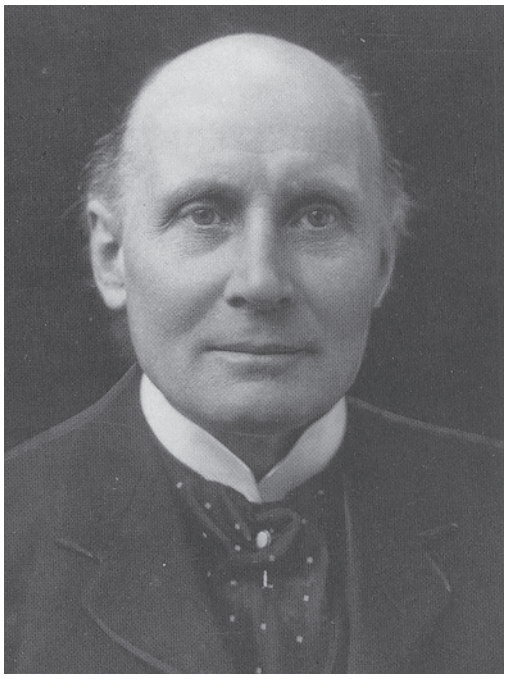
mechanics.[12] They borrowed from it more than just the same idealized axiomatic thinking, analytical methods (infinitesimal calculus, calculus of variation), and perhaps distant analogies. Ultimately, they aspired to reduce complex human subjectivity, morality, and decision-making in general to simple, predictable clockwork. Stanley Jevons wrote, "No apparent limit exists to the success of the scientific method in weighing and measuring, and reducing beneath the sway of law, the phenomena of matter and mind. ... Must not the same inexorable reign of law which is apparent in the motions of brute matter be extended to the human heart?"

> "Whitehead... restored a sense of intellectual confidence and credibility to arguments for the existence of an "ultimate purpose": a moral guide (or lure) to an unfolding universe.

And Jevons was by no means alone among the founders of neoclassical economics in his hopes of reducing human psychology to mechanics and energy optimization principles. Francis Edgeworth carried the rhetorical art to an unsurpassed extreme, to the point of astonishing ridicule. He pushed ahead the translation of these simplistic ideas into ever more precise mathematical language.

> 'Mecanique Sociale' may one day take her place along with 'Mecanique Celeste,' throned each upon the double-sided height of one maximum principle: the supreme pinnacle of moral as of physical science. As the movements of each particle, constrained or loose, in a material cosmos are continually subordinated to one maximum sum-total of accumulated energy, so the movements of each soul, whether selfishly isolated or linked sympathetically, may continually be realizing the maximum energy of pleasure. ... at least the conception of Man as a *pleasure machine* may justify and facilitate the employment of mechanical terms and Mathematical reasoning in social science.[13]

As these passages suggest, the core theme animating neoclassical economics is a highly reductionist conception of human nature: an isolated being (*homo economicus*), mathematically equivalent to an isolated particle-mass moving in space according to a unique optimizing principle. The exact details of this strong analogy changed from author to author, but the general idea was the same: given a continuous field of priced commodities and budgetary constraints, all ideal, rational human atoms will seek out optimal combinations of purchases according to the same law—one that minimizes pain and maximizes pleasure (utility).[14]



A. N. Whitehead

Recourse to Whitehead's naturalistic (process) theology often occurs in the writings of Herman Daly in relation to problems associated with the integration of the study of nature and the study of humanity, as found in both ecology and economics. For Daly, a significant philosophical problem occurs when either pole of this relationship (ecology-economics) attempts to entirely overwhelm and absorb its partner science within its own set of restricted conceptions. This can happen when economists attempt to impose economic-monetary valuation on all natural systems, reducing life and ecosystems to substitutable and exchangeable units of monetized utility. Conversely, it can also happen when certain ecologists, biologists, and physicists attempt to reduce all human motives, emotions, and values to ultimately purposeless and accidental expressions of self-reinforcing chemical reactions, rendered more complex merely by the law of large numbers playing itself out over eons on an insignificant spec of galactic dust.

The frantic denial of the existence of purpose by modern scientific materialists (especially biologists) is something that Whitehead enjoyed making fun of. "Scientists animated by the purpose of proving that they are purposeless constitute an interesting subject for study, " he remarked. Whitehead called the radical divorce of humans (and cognition) from our scientific

conceptions of nature, dating back to Descartes and Newton, "bifurcation." For the author of *Process and Reality*, feeling, aim, mind, and value, in their abstract sense, were just as much a part of modern physical reality as quantized energy flux and four-dimensional space-time. Whitehead's bold work in metaphysics and what became known as "process theology" restored a sense of intellectual confidence and credibility to arguments for the existence of an "ultimate purpose": a moral guide (or lure) to an unfolding universe. This remarkable aspect of Whitehead's work has served as a potent intellectual resource to many ecological economists in search of a middle, or higher, ground in the efforts to reintegrate humans and nature.

> "Modern cosmology and non-equilibrium thermodynamics demonstrate...that we live in a self-developing, self-organizing universe "unfolding" toward higher levels of complexity and social organization...

In practical terms, Daly describes how the recognition of purpose and moral value (non-nihilism) for both humans and living organisms is a philosophical prerequisite for all sane discussions of policy. Of purpose, he writes "unless one recognizes its existence it is meaningless to talk about policy. Indeed, unless one can also distinguish good from bad purposes, better from worse states of the world, it is impossible to talk about policy, since if policy is anything it is a plan for moving the world from a worse to a better state. If there is no such thing as better and worse states of the world then all policy is silly—if indeed 'silliness' any longer has meaning in such a world."[15]

THE FUTURE OF ECOLOGICAL ECONOMICS: A NEW EVOLUTIONARY WORLD VIEW

Four decades ago, Georgescu-Roegen developed an alternative framework for macroeconomics based on two principles of classical thermodynamics applied to the earth-system as a whole. His approach had many advantages over the neoclassical model (circular flow of exchanges). First, it extended the boundaries of analysis of macroeconomics to include a changing environment upon which human economic systems depend. Second, Gerogescu-Roegen's model adopted a provocatively realistic approach by making irreversible evolutionary processes central to very long-term macroeconomic thinking.

Unfortunately, Gerogescu-Roegen associated the entropy law and irreversible processes with only either (1) the immediate decay and gradual destruction of existing complex structures, or (2) the inevitable decrease in the potential to sustain future complex structures. The intellectual grip of the all-encompassing entropy law and grim world view on ecological economics was and remains profound.

Modern cosmology and non-equilibrium thermodynamics demonstrate, on the other hand, that we live in a universe where conditions for higher orders of complexity may actually be increasing discontinuously in time. This view of a self-developing, self-organizing universe "unfolding" toward higher levels of complexity and social organization is much more consistent with Whitehead's process cosmology, or "philosophy of organism."

As the astrophysicist Paul Davies explained, self-organization in non-living systems does not contradict the entropy law, but it certainly challenges it *spirit*, as well as that of the prevalent world view that goes with it, based as it is on the idea that the universe is running down amid spiraling toward entropy:

> The new paradigm will drastically alter the way we view the evolution of the universe. In the Newtonian paradigm the universe is a clockwork, a slave of deterministic forces trapped irretrievably on a predetermined pathway to a unalterable fate. The [nineteenth century] thermodynamic paradigm gives us a universe that has to be started in an unusual state of order, and then degenerates. Its fate is equally inevitable, and uniformly *bad*. ...
>
> The emerging picture of cosmological development is altogether less gloomy. Creation is not instantaneous; it is an ongoing *process*. The universe has a life history. Instead of sliding into featurelessness, it *rises* out of featurelessness, *growing rather than dying*, developing new structures, processes and potentialities all the time, unfolding like a flower.[16]

Today we are witnessing a remarkable change in cosmological paradigm, away from a view of the universe as decaying and dying and toward a view of the universe as alive, self-developing, and flourishing. This shift can be explained by scientific discoveries

in astrophysics and non-equilibrium thermodynamics that occurred in the second half of the twentieth century. It is only beginning to make itself felt in the realm of political economy and in policy areas dealing with conservation, biodiversity, energy, agriculture, water use, and climate change.

Whitehead's great genius, his deep knowledge of mind, mathematics, and meaning, and his cunning wit have all helped to provide inspiration and ammunition (or antidote) to certain brave ecological economists in the final toppling of neoclassical theory. Still, one of the most vital aspects of Whitehead's work has yet to take seed and fully flourish—namely, his prescient vision of the immensity of creative potential that remains to be actualized in humankind and the universe as a whole.

The implications of the coming radical shift in world views in ecological economics—of adopting a more lively, truly Whiteheadian evolutionary cosmology (in contrast to Georgescu-Roegen's)—will undoubtedly be profound. As Whitehead beautifully explained: "The world is thus faced with the paradox that, at least in its highest actualities, it craves for novelty and yet is haunted by terror at the loss of the past, with its familiarities and its loved ones."[17] Though this shift may take several years to untangle and unfold, it is one of the most crucial adventures in ideas that we can undertake in our time.

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NOTES

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2. G.W. Leibniz, *From the Letters Clarke* (1716), quoted in R. Ariew and D. Garber, *G.W. Leibniz: Philosophical Essays* (Cambridge, MA: Hacket Publishing Company, 1989), 345.
3. A.N. Whitehead, *Process and Reality: An Essay in Cosmology,* corrected ed., ed. D.R. Griffin and D.W. Sherburne (1929; repr., New York: The Free Press, 1978), 93.
4. Ibid., 94.
5. Ibid., 215.
6. See A.N. Whitehead, *Reflections on Man and Nature* (PLACE OF PUB.: CITY, YEAR), 14.
7. Briefly, neoclassical economics, the dominant economic paradigm today, refers to a reformulation of classical economics begun in the 1870s–1890s. Three of its main features include: first, a new theory of economic value and prices entirely based on human psychology called marginal utility; second, the introduction of infinitesimal calculus in economic analysis; and third, the claim that economics, following this reform, had now become a hard science, theoretical and empirical, on equal footing with physics or any of the other natural sciences.
8. Ecological economics has its historical intellectual origins in the works of Alfred Lotka, Frederick Soddy, Kenneth E. Boulding, Nicholas Georgescu-Roegen, and H.T. Odum in the 1950s through 1970s. It was organized into an active field of research by Herman Daly, Robert Costanza, and others in the early 1990s. Of these individuals, at least Lotka, Georgescu-Roegen, and Daly were strongly influenced by Whitehead.
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15. H. Daly, *Ecological Economics and the Ecology of Economics* (Northampton, MA: Edward Elgar, 1991), 171.
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17. Whitehead, *Process and Reality,* 340.

Knowing with One's Whole Being

By QI FENG LIN

Our modern consciousness and world view is derived from the Enlightenment period in seventeenth and eighteenth century Europe. The Enlightenment movement and the resulting developments in Europe at that time reorganized society into distinct, interacting spheres: liberal governance based on reason and the interests of the people; capitalist economics as profit-oriented incentives and a market mechanism for meeting human needs and satisfying desires; and science as the primary mode of explaining and understanding the physical environment, and as the foundation of all rational knowledge.

The Enlightenment mentality represents a particular type of epistemology. It is instructive to contrast it with the understandings of knowing and nature found in pre-modern and non-Western culture, and in particular with the indigenous cultures of North America. The world views of these cultures tend to be characterized by a seamless, more unified, and supportive mode of living, or "lifeway," which integrates the human and the natural. In recent times, the writings of Aldo Leopold reflect his desire to incorporate values and ethics into environmental decision-making, which have been dominated by rational, linear thinking. In this article the world view of the Enlightenment and Native American culture will be highlighted as a background to his thought and will concentrate on his views concerning how humans should approach the natural environment with great care and respect.

> "While [a] rational, reductionist scientific approach led to technological advancement and the industrial revolution, it exalts reason in its narrowest sense, leaving out imagination, common sense, and a moral awareness.

WESTERN ENLIGHTENMENT THOUGHT

The Enlightenment movement reoriented life in western Europe by emphasizing individualism and instrumental rationality. However, the movement inherited the world view of the Judeo-Christian tradition, in which Man has dominion over nature. This world view removed any inhibitions to exploiting nature and, coupled with rational thought, led to a modern science and technology that is, as Lynn White, Jr., puts it, "distinctively occidental."[1]

The philosophical foundation of Western science was laid by Francis Bacon and René Descartes, among others. Descartes' philosophy established an influential dichotomy between matter and spirit, body and mind, and human being and the being of the rest of nature. This laid the groundwork for scientists to adopt an external relationship to their objects of knowledge—to study, with a detached, removed perspective, nature as objects. Descartes felt that by pursuing science—what he called "practical philosophy"—and applying it assiduously, humans can render themselves the "masters and possessors of nature." This view was an-

ticipated and shared by Francis Bacon, who wrote that the "end of our foundation [for scientific research] is the knowledge of causes, and secret motions of things; and the enlarging of the bounds of human empire, to the effecting of all things possible." It was not enough to know and to explore—Man had to conquer and subdue nature.[2]

The groundbreaking work of Newton on the laws of gravity and motion—which was viewed as a seemingly complete and universal description of nature until Einstein's work on relativity in the twentieth century—added weight to the argument of Descartes and Bacon that laws exist in nature that are available for people to discover, and that the discovery of these laws would be the basis for an unprecedented type of human control or power. While this rational, reductionist scientific approach led to technological advancement and the industrial revolution, it exalts reason in its narrowest sense, leaving out imagination, common sense, and a moral awareness.[3] As William Blake puts it, the "reductive mental modes of Bacon and Newton have been 'sheathd in dismal steel.'"[4] Occidental science flourished as a reductive, mechanistic mode of thought with a focus on parts. Interest in the relationship between parts grew with the emergence of fields like ecology in the twentieth century.

> "At the heart of each native culture is a central, seamless, organizing orientation, a "lifeway." In this seamless cosmology-cum-economy of Native Americans, demarcations between humans and their habitat are muted.

One of the profound consequences of the Enlightenment movement, with its rational scientific inquiry and political-economic complex, is the diminished role of religions in modern society. As Joseph Campbell puts it, not only is there no hiding place for the gods from the searching telescope and microscope, but the kind of society that the gods once supported no longer exists. "The social unit in modern society," Campbell wrote, "is not a carrier of religious content, but an economic-political organization."[5]

NATIVE AMERICAN CULTURE

The Native Americans in the United States represent a diverse group of indigenous cultures that have existed on the continent for thousands of years. At the heart of each native culture is a central, seamless, organizing orientation, a "lifeway." In this seamless cosmology-cum-economy of Native Americans, demarcations between humans and their habitat are muted. Land, seen as ensouled and enchanted, is an extension of Native American thought and being; kinship is established with the land. The Native Americans have a broad, long-term view that is founded on an equally long experience with the landscape of North America. This is reflected in a metaphor used by the Tewa elders in New Mexico – *pin peye obe*, "look to the mountain." This phrase reminds one to look at things as if one is looking out from the top of a mountain—to consider the long-term perspective in one's interaction with the landscape.[6]

A. Leopold

The lifeway is a creative continuum which Cajete and Pueblo described as "indigenous education." In this education, knowledge is viewed as wisdom.[7] The individual learns about his place in family, tribe, and natural environment and grows increasingly aware of his consciousness, eventually attaining deep understanding, enlightenment, and wisdom. The lifeway facilitates a creative and profound transformation of the self in the individual to "being a complete man or woman in that place Indian people talk about." Central to indigenous culture is the recognition that there is a knowing Center in all human beings that reflects the knowing Center of the land. Coming into contact with one's inner Center is not always pleasant or easily attainable, and to assist the individual in his journey, a variety of ceremonies, rituals, and traditions are developed.

> "Central to indigenous culture is the recognition that there is a knowing Center in all human beings that reflects the knowing Center of the land.

A study of science as an act of understanding and knowing the world among the Yupiaq tribe in southwestern Alaska sheds some light on the differences between indigenous and Western world view.[8] The Yupiaq elders did not have a word for "science," and when asked to define it, gave answers like "trying to know," "trying to understand," and "trying to grasp the origin." Yupiaq science is not abstract and reductionistic; rather, it is based on observation of the natural world coupled with direct experimentation in the natural setting. Perhaps the type of Western science closest to Yupiaq science is the field of ecology, but it lacks spiritual dimension that is crucial to Yupiaq science. For the Yupiaq, knowledge of the universe is not only attained by observing the natural environment but also by observing one's spirit. In Yupiaq culture, scientific knowledge is not segregated from or opposed to the ordinary experience and traditional knowledge transmitted orally from older to younger generations. Science is interspersed with art, storytelling, hunting, and craftsmanship.

But while the lifeway concept among the Yupiaq and in other Native American cultures represents a world view that is in spiritual balance with larger cosmological forces, and while science in these cultures is not set in opposition to other forms of knowing nature, this world view is not static or merely traditionalistic. No less than modern Western culture, the Native American world views are dynamically and creatively accommodating of ongoing environmental, social, economic, and political changes. The challenge is to find a middle path between the traditional mode of living and the modern way of life.

ALDO LEOPOLD

Aldo Leopold graduated from the Yale School of Forestry in 1909 and joined the Forest Service, which was set up just four years before. It did not take him long to realize that the job of a forester requires skills, knowledge, and judgment on issues outside of forestry. He noted that "every day foresters are rendering judgment on fire control, range management, watershed protection, erosion control, game and fish management, and recreation, the effects of which may be felt for centuries." These effects are vital to the well-being of the forest and the nation, yet some of them were only beginning to be "baptized" as subjects for study.[9]

Leopold was at the frontline of environmental decision-making during a time of immense human activity on the land. Forestry as a field of managing forests for timber yield could not be practiced without regard to the ecosystem of which the forests is a part. As a result, Leopold broadened his focus to also include a handful of interconnected fields: game management, wildlife ecology, and eventually land conservation. He saw that the landscape resulting from human action is a reflection of the human mind. "The landscape of any farm," Leopold wrote," is the owner's portrait of himself."[10] Recognizing the indelible nature of human action on the landscape, Leopold felt that a conservationist "is one who is humbly aware that with each stroke he is writing his signature on the face of his land."[11]

> "Faced with the multitude of interrelated conservation issues and the import of environmental decision on the land, Leopold realized the inadequacy of relying on a purely analytical, scientific approach and drew upon the full faculties of his mind.

Faced with the multitude of interrelated conservation issues and the import of environmental deci-

sion on the land, Leopold realized the inadequacy of relying on a purely analytical, scientific approach and drew upon the full faculties of his mind. "Land ecology," he wrote in 1942, "is putting the sciences and arts together for the purpose of understanding our environment."[12] Engaging in philosophical reflection and aesthetic considerations, he questioned the wisdom of human actions based on simple linear thinking, like the culling of wolves to promote deer populations for hunters. Like the Tewa elders, he beseeched us to "think like a mountain," to consider our actions in the grand scheme of things.[13] Leopold felt that humans are operating in the biotic community with insufficient knowledge of the long-term consequences of human actions and a lack of appreciation for life. The Enlightenment movement removed the sacred, spiritual dimension of the natural environment, and Leopold was trying to restore it. "In the long run," he wrote in 1934, "we shall learn that there is no such thing as forestry, no such thing as game management. The only reality is an intelligent respect for, and adjustment to, the inherent tendency of land to produce life."[14]

CONCLUSION

The Enlightenment movement represents the emergence of modern man from ancient ignorance.[15] It diminished the influence of religion, and in the increased secular space in modern life Man, being his own master, operated with fewer scruples. However, observing the devastating impact of human activity on the natural environment, one wonders whether Man knows how to wield the power in his hands; indeed, it is worth asking whether Man has attained mastery over himself.

In contrast, the world view in Native American culture emphasizes the journey of each individual to his or her knowing Center in order to attain knowledge and awareness of one's place in society and in the cosmos. Similarly, Leopold sought to ground the actions of modern individual in ecological reality, and his writing of *A Sand County Almanac* can be seen as an attempt to develop our "perceptive faculty."[16] A common goal in Native American cultures and Leopold's writing is, in the words of Mary Catherine Bateson, "how to know with one's whole being."[17] The challenge for humans today, in the face of dire environmental problems, is to know and to respond with the full measure of our collective being.

Qi Feng Lin is a doctoral student at the McGill University Department of Natural Resource Sciences and School of Environment, and a fellow of the Center for Humans and Nature. For his dissertation he will be examining the concept of the person with respect to forest conservation and will be drawing from the writings of Aldo Leopold, among others.

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3. Ibid., 178.
4. W. Blake,. *The Complete Poetry and Prose of William Blake*, ed. D.V. Erdman and H. Bloom (Berkeley: University of California Press, 1982), 932.
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REVIEWS & REFLECTIONS

ON COMMON GROUND: STORIES OF THE ACE BASIN

By Dana Beach

I'm frequently asked, "How can I see the ACE Basin?" Depending on who is asking, I suggest hiking at the Donnelley Wildlife Management Area or the Hollings ACE Basin National Wildlife Refuge, or canoeing on the Edisto River or on Cuckold's Creek to the Combahee River, or birding on the edge of the ponds at the Bear Island Wildlife Management Area. For the adventurous, I recommend kayaking from Bennett's Point to Otter Island, and for the less energetic, driving down Highway 17 from Jacksonboro to Gardens Corner.

This 350,000-acre Lowcountry landscape of rivers and forests, of swamps and marshes, of history and human settlement defies unified assessment. It has to be appreciated as a collage of impressions, experiences and memories accumulated over time. Everybody who has visited constructs his or her own personal ACE Basin.

So it is with the "story" of the ACE basin. There is no single narrative that objectively or comprehensively captures the last twenty-five years of effort that has permanently protected more than 200,000 acres between Charleston and Beaufort. There are hundreds of stories about the ACE, rife with lessons about how conservation succeeded at a certain time, in a particular place, and with soaring themes about a historical love of land and collaboration among government, non-profits and landowners.

But there are also stories about a county government whose leaders for more than a decade opposed the protection of large properties because they would not be available for industrial and resort development, about local residents convinced that the federal government would trample on private property rights, and about forestry companies fighting conservation in the ACE because they believed it threatened their livelihoods.

So, with no pretense of objectivity or comprehensiveness, here are some of the ACE stories—focusing especially on the early years—that illuminate a remarkable and ongoing effort to insure that this landscape will endure over time, and with it, the gifts of clean water, productive forests, abundant wildlife, healthy soil, and a natural heritage.

"THE ACE WHAT?"

In the beginning, there was no ACE Basin. If you had looked for a watershed named ACE, you might have found an area called the Ashley/Cooper/Edisto drainage. In 1979, Nora Murdock, a US Fish and Wildlife Service biologist, produced a report for her agency in which she used the term "ACE Basin," identifying the Ashepoo, Combahee, and Edisto river system as a "significant wildlife resource area" worthy of a national wildlife refuge.

The title was subsequently embraced by the initiative's informal governing committee—a task force composed of federal and state wildlife agency representatives, non-profit land trusts, and a private landowner. Over time, "the ACE Basin" became one of the effort's most powerful tools—an evocative identity that provided substance and momentum to a young, fragile initiative.

The protection tool of choice in the ACE was the conservation easement. In 1988, Ted Turner granted the first easement on his five thousand acre Hope plantation on the Edisto, followed by the Lane family with an easement on their one thousand acre Willtown Bluff property.

These early achievements attracted the attention of a few entrepreneurial national funders, including the Mary Flagler Cary Charitable Trust in New York, the Turner Foundation in Atlanta, the Merck Family Fund in Boston, and the Chattanooga-based Lyndhurst Foundation, whose early grants provided the operating resources to carry the project forward. In 1992,

REVIEWS & REFLECTIONS

The Nature Conservancy (TNC) sponsored a stunning book of ACE images by South Carolina photographer, Tom Blagden, Jr., which introduced a large audience to the basin's exotic landscapes and wildlife. The ball was beginning to roll.

"WE'RE FROM WASHINGTON AND WE'RE HERE TO HELP YOU"

My first exposure to the ACE Basin, formally constituted, was while I was working for First District Congressman Arthur Ravenel, Jr. In 1988, LaBruce Alexander, then head of the South Carolina chapter of TNC, drove from Columbia to Charleston to seek Ravenel's support for a National Estuarine Research Reserve (NERRS) in the lower part of the ACE. She explained that the NERRS status would allow the state to apply for funding for research and conservation of the barrier islands and marshes that anchored the ACE along the Atlantic.

Ravenel enthusiastically supported the designation and with Senators Hollings and Thurmond's influence it was easily approved. Funding began flowing, like the three rivers, downstream to the estuary. Like most federal conservation programs, NERRS required matching funds to purchase property. That would be forthcoming.

> "Today, the protected ACE, at 208,000 acres, is almost as large as the Francis Marion National Forest on the northern edge of Charleston. The glass is two-thirds full. But about 150,000 acres—an area roughly the size of metropolitan Charleston's urban area—remain unprotected ...

Gaylord and Dorothy Donnelley, Chicagoans who had purchased Ashepoo Plantation in the 1960s as a hunting property, were concerned about the future of the ACE, as the first generation of absentee owners turned increasingly valuable lands over to a second, geographically-dispersed generation with varying levels of interest in the South Carolina Lowcountry. In 1987, the Donnelleys donated Sampson Island to TNC, who then transferred the property to the S.C. Department of Natural Resources (DNR) as an addition to the Bear Island Wildlife Management Area. Then, in 1988, the Donnelleys gave Warren and Big Islands to TNC, who, in turn gave them to DNR. DNR used the properties as the match that allowed the department, collaborating with the National Oceanic and Atmospheric Administration (NOAA), to purchase Ashe and Beet Islands in 1989. These four islands formed the core of the NERRS reserve.

NERRS designation required a series of public hearings to gather public input. The first hearing was in the Colleton County Court House in Walterboro. The NOAA representative from Washington, DC stiffly outlined the process of designation and the benefits. The assembled crowd was generally polite, but not impressed. Many voiced concerns about hunting and fishing restrictions and logging bans. The public debut of the ACE was, essentially, a flop.

"PROTECTING A WAY OF LIFE BY MAINTAINING TRADITIONAL VALUES AND USES"

The task force grappled with this perception problem and developed a slogan that was to be repeated incessantly for the next decade: protecting a way of life by maintaining traditional uses and values (including logging, hunting and fishing). Mike Prevost, with TNC, was one of the most effective and relentless ambassadors for this characterization of the ACE initiative and spent years cajoling, persuading and comforting landowners and residents that the ACE was, in truth, a realization of everything they believed in.

Coy Johnston, with Ducks Unlimited (DU), best expressed the message the task force wanted to convey at a subsequent public hearing. He told the audience that he had taken his grandsons fishing the weekend

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before and that they had marveled at the beauty and solitude of the place. He ended with a statement that left few people in the audience unmoved: "I just don't want to see this lost to my grandsons and their generation."

Still, Colleton County officials argued that the ACE was removing land from the tax roles (even though the federal properties paid a fee in lieu of taxes), reducing tax revenues (in spite of the fact that land values were climbing as a result of the popularity of the area, and that conservation easements had no impact on assessments), and hindering economic development (though never specifying which companies had declined to locate in the ACE).

Loggers aggressively opposed the conservation project, accusing the task force of threatening timber jobs. Intent on blocking the initiative, they hired a consultant from Florida to prove that the damage to the industry would be severe. By the time the report was complete, however, the ACE had gained momentum. The conclusion of the report was, in effect, that the project was a *fait accomplis*.

In the early 1990s, Westvaco (now MeadWestvaco) joined the task force and signed land management agreements on their extensive holdings in the project area. This dampened objections from independent timber operators, but did little to quell opposition from the county. Fortunately, there was virtually nothing the county could do about the ACE initiative, since much of the land protection was accomplished with voluntary conservation easements on private parcels. To objections raised by "property rights" advocates, Charles Lane responded that protecting property in perpetuity was the ultimate expression of a property right.

"FLEXANIMIS IMPUDENTUR"

The task force's goal for the ACE seemed precise—to permanently protect 90,000 of the project area's 350,000 acres. But when 90,000 acres had been protected, almost instantaneously, by 1992, the goal was raised to 150,000 acres. And when that goal was passed in 1997, the task force raised the bar to 250,000.

The project boundaries were similarly protean. Originally, most of Edisto Island lay outside of the project area. But as interest grew on the island and more property was protected, the task force simply redrew the boundaries to include all of Edisto. Today, more than 200,000 acres have been protected, more than double the original target. The "hidden agenda" became clear – protect as much as possible now and, eventually, protect it all.

This operating strategy was memorialized in the task force's unofficial motto, "flexanimus impudentur," which, very loosely translated, means "shamelessly manipulative." A better description, I think, is "visionary opportunism." The task force has never been hobbled by ideological arguments. The vision is ecological and its implementation practical. Whatever works is fine.

The 9,500-acre Mary's Island plantation is in the center of the project area and a case in point. When the owners decided to sell for $9.5 million, the task force scrambled to identify a larger amount of money than had ever been deployed for conservation in the state. Coy Johnston working with Ducks Unlimited had negotiated the sale and borrowed $3 million for the first payment from the Nature Conservancy's national land fund. He then combined funds from the Wild Turkey Federation with grants from the North American Wetland Conservation Act fund (NAWCA) and the National Fish and Wildlife Foundation.

Two plantation-sized parcels were subdivided, eased and sold to private buyers. Even so, the funding fell short of the price tag by roughly $3 million. John Frampton at DNR and Johnston—whose daughter Holly, worked in Senator Thurmond's Washington office—discovered that mitigation funds from the U.S. Army Corps of Engineers for the construction of the Russell dam at Lake Hartwell in the Upstate were

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available. With Senator Thurmond's help, this became the final piece of the financial puzzle. Flexanimus impudentur.

Protecting the 12,500-acre Cheeha-Combahee plantation raised innovation, opportunism, and good luck, to yet another level. This property, which contains more extensive waterfront than any other place in the basin, had been bought in the early 1990s by a developer who had subsequently experienced financial problems. Both Ducks Unlimited and a private buyer had options to purchase the property, but neither had been able to assemble the approximately $10 million needed. Johnston contacted Charles Lane and his brother-in-law, Weldon Schenck, to arrange a visit. Charles's father, Hugh Lane, Sr., happened to be available and went along for the tour.

When the four arrived at the plantation house, Richard Emmett, a former owner who held one of the options on the property, was moving furniture out. Emmett told his visitors that he had only three months left on his option and was not able to find investors to allow him to exercise it. Schenck and the Lanes began contacting hunting friends and within a few weeks found six partners to purchase the property. Ducks Unlimited holds the easement, which allows no more than ten parcels to be subdivided, with no parcel smaller than six hundred acres.

The ACE has been consistently threatened by development over the past twenty years, especially on its boundaries. In the late 1990s, the town of Hollywood revealed plans to extend a sewer line five miles down highway 174 toward Edisto Island in order to serve a proposed mobile home park built on low land along the highway. This was not the first proposal to use public sewer and water lines to stimulate development in the basin. Earlier, a local lawyer had attempted to have the Charleston Commissioners of Public Works build a twenty-mile long water line to Edisto Beach, supporting development on this rural island along the way. As he told the Charleston *Post and Courier*, "Edisto is the last unpicked apple on the East Coast and we need water to develop it."

The task force met to address the threat from Hollywood and decided that the best way to stop the line was to expand the ACE Basin National Wildlife Refuge to the highway and block the path. Within months, the proclamation boundaries of the refuge were extended, a large parcel owned by Westvaco called the Barrelville tract was purchased and added to the refuge, and the line was quashed. As testimony to the transformation at work in the ACE, the lawyer who had promoted the water line to the beach eventually embraced the project and placed an easement on his family's property on Edisto.

One of the earliest and most acute threats to the ACE was the potential development of Prospect Hill plantation, on Edisto Island. This 1,200-acre former cotton plantation, directly across the Edisto from DNR's Bear Island Wildlife Management Area, had been purchased in the mid-1980s by a Chicago businessman who intended to develop a Hilton Head-style golf course resort. The South Carolina Department of Health and Environmental Control issued a permit in 1987 for a 120-slip marina. The permit was appealed and overturned, but the property remained at risk, zoned for three thousand units.

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Over the succeeding ten years, the task force, Mike Prevost with TNC, Charles Lane, and the Donnelley Foundation (because the foundation was based in Chicago), attempted to contact the owner and convince him to sell the proper-

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ty. Eventually, he consented to sell for roughly $6 million. Ducks Unlimited contacted the adjoining property owners at Old Dominion plantation, on which it held an easement, and suggested that they purchase part of Prospect Hill to add to their holdings. Two additional parcels were subdivided, eased, and sold to private owners, including a piece with the ante-bellum house. That left a sizable part of the property to protect.

Meanwhile, the Coastal Conservation League (CCL) had challenged the Charleston County Parks and Recreation Commission's (PRC) spending of a $37-million park bond issue, arguing that they had allocated less than their promotional materials promised for land acquisition. CCL threatened to sue over the breach and the debate had reached an impasse.

When the Prospect Hill opportunity emerged, CCL approached the Parks and Recreation Commission to suggest that it contribute some of the bond funds. If so, that would end the bond challenge. There were no county parks on Edisto, and the commission agreed to what would be the final piece of the funding needed.

Development pressure in the basin has always been most severe on Edisto. The Charleston-based Lowcountry Open Land Trust (LOLT) negotiated early and critical easements on Oak Island Plantation and, in 2000, on Seabrook Plantation. In the early 1990s, LOLT joined the task force. Today their easements protect more than 33,000 acres of the ACE.

The Edisto Island Open Land Trust, founded in 1994, has spearheaded the conservation effort on Edisto during the past decade, often drawing on Charleston County's Greenbelt Bank to fund bargain purchases of easements. The conservation of Prospect Hill and Oak Island set the stage for a collaborative effort that would eventually secure more than half of the island.

THE BEAT GOES ON

Over the succeeding twenty years, one property after another has been eased, purchased with local, state or federal funds, or given to one of the partner land trusts. All told, private easements on 155 parcels perpetually protect 134,000 acres and federal and state agencies own an additional 74,000 acres. Every parcel has its own story.

Today, the protected ACE, at 208,000 acres, is almost as large as the Francis Marion National Forest on the northern edge of Charleston. The glass is two-thirds full. But about 150,000 acres—an area roughly the size of metropolitan Charleston's urban area—remain unprotected. Most of this land is owned by forestry companies, primarily MeadWestvaco, or by private landowners whose livelihood is timber production. On the Charleston side of the Edisto River, MeadWestvaco's 78,000-acre "East Edisto" project is designed to permanently protect almost 60,000 acres. Progress has been frustratingly slow, but it is possible that easements will be signed within the year.

Beyond that, the task force will continue to meet monthly, grinding out practical strategies for conservation, in an economic climate where public funding for land conservation has virtually dried up, just as the over-heated real estate market has collapsed. This is a different world than it was in 1988, when easements fell like ripe fruit from the trees along the rivers and Senators Hollings and Thurmond provided a steady stream for federal funds that protected tens of thousands of acres every year, at prices that today seem surreally low. What has not changed is the visionary opportunism and persistence that drove this group of biologists, hunters, farmers, landowners, birders, and nature lovers to work year after year for a quarter of a century to realize a dream called the ACE Basin.

ON COMMON GROUND

There have been modest efforts to depict the ACE basin effort. The videos have been primarily promotional, with compelling landscape and wildlife images but little substantive information about the effort. *On Common Ground*, sponsored by the Center for Hu-

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mans and Nature and capably produced and written by Bill Bailey, is the first attempt to relate some of the chronology of the ACE. It does an admirable job compressing twenty-five years into fifty-six minutes. Perhaps the most compelling story is the affection the landowners feel for the ACE. The film beautifully expresses that sentiment, as the easement donors and advocates tell their ACE Basin stories.

On Common Ground provides an inspiring perspective on the ACE initiative from many of the people who launched it, kept it on course, and will maintain it into the future. It is an important message in a world that badly needs to hear that there are things worth working for—over ten, twenty, thirty years or longer. As Charles Lane said, the ACE is a project that had a beginning, but it really has no end.

Dana Beach is Executive Director of the Coastal Conservation League in Charlestown, SC.

CHN BOOKSHELF

A regular feature calling attention to important books and articles that CHN staff, board, and collaborating scholars are reading and recommend. *Quot libros, quam breve tempus.*

R. J. Bernstein, *The Pragmatic Turn*. (Polity Press, 2010).

W. Berry, *What matters? Economics for a Renewed Commonwealth*. (Counterpoint, 2010).

L. Ferry, *The New Ecological Order*. (University of Chicago Press, 1995).

J. Goodall, *Hope for Animals and Their World*. (Grand Central Publishing, 2009).

W. Jackson, *Consulting the Genius of the Place: An Ecological Approach to a New Agriculture*. (Counterpoint, 2010).

S. D. Mitchell, *Unsimple Truths: Science, Complexity and Policy*. (University of Chicago, 2009).

S. Parkin, *The Positive Deviant: Sustainability Leadership in a Perverse World*. (Earthscan, 2010).

T. Princen, *Treading Softly: Paths to Ecological Order*. (MIT Press, 2010).

S. R. Sanders, *A Conservationist Manifesto*. (Indiana University Pres, 2009).

J. Stout, *Blessed Are the Organized: Grassroots Democracy in America*. (Princeton University Press, 2010).

R. Westbrook, *Democratic Hope: Pragmatism and the Politics of Truth*. (Cornell University Press, 2005).

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