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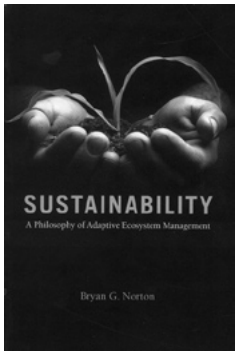

NORTON, B. G., 2005. Sustainability: A Philosophy of Adaptive Ecosystem Management. University of Chicago Press, *xviii* + 607 p., 15 × 23 cm, softcover, US$37.50, ISBN 0-226-59521-8.

Environmental protection has become an accepted, even entrenched part of the middle class expectations of rich nations. Yet dire threats persist: global warming, loss of biodiversity, and, at the root of it all, a human exploitation of nature that is plainly unsustainable but largely unstoppable both in poor countries and wealthy ones. Twenty years ago, a United Nations committee famously proposed that the world commit itself to meeting the needs of the present without compromising the ability of future generations to meet their own needs. As has become clear in the years since, we do not know how to achieve this sustainable development, even though it has become clearer that we must do it.

The environmental philosopher Bryan Norton proposes a way to deal with this paradox of material prosperity. His solution is to embrace a school of philosophy more than a century old, known to academia as pragmatism. Pragmatism emerged from the discussions of a circle of American thinkers led by Charles Saunders Peirce in the last third of the 19th century. Their ideas were then developed and popularized by the scholar and public intellectual John Dewey in the first half of the 20th century. Pragmatism is a body of thought that took shape in nearly exact synchrony with industrialization and the science of ecology. Norton explores in some detail the intersection of pragmatism and the thinking of Aldo Leopold, whose ethical framing of what we now call ecosystem management laid the foundations of environmentalism as a social movement.

Pragmatic philosophy asserts that we should see the world from a human perspective. It is human experience that informs thinking. Accordingly, both the facts that we think of as reality and the values that shape our choices and desires are grounded in experience. A central feature of human experience is social interaction. We are born into communities, and our experience is inevitably shaped by what our communities value and how they interact with reality.

This means, in particular, that the assumption that science can and should be separated from policy is an illusion. Science is a human endeavour, one that searches for reliable knowledge of the world we inhabit. But even where an objective, value-neutral understanding of reality has been discovered, the functional meaning of that knowledge is inescapably value-laden. We choose to create and to use some technologies, while setting aside others; the struggles over genetically modified organisms, nuclear energy, and abortion illustrate the difficulties of these choices. Similarly, values do not exist in a vacuum. The lowering of information transmission costs in the age of the internet has made transparency more important—and threatening—as it has become more affordable.

The search for a sustainable future, Norton argues, needs to embrace the dynamic interaction of factual knowledge and value commitments, to put science and social choice into a continuing democratic dialectic. A community acts by choosing what to do and how to monitor what happens. Then the community reflects: in light of what happened, what really matters? The actions were selected in accord with desires, and the results of action illuminate what is desirable. The back and forth of action and reflection create a working definition of sustainability. As the community acts, knowing that it will have descendants and successors, it learns by experience what combination of precautionary and exploitative actions constitute its legacy.

This is a clear and conceptually coherent approach, and for Norton that is what matters. The frustrations of environmental policy "are most basically due to the lack of an adequate language for integrating environmental science and environmental values" (p. 50). The assertion that clear thinking can solve problems and dissolve conflict goes back, of course, to Socrates and Confucius. Yet this philosopher's claim does not quite fit pragmatism, an approach that is sceptical of ideas except as they are anchored in experience.

First, Norton's analysis lacks adequate calibration. How many species must we drive extinct before the legacy of extirpation becomes troubling? Passenger pigeons darkened the skies when C. S. Peirce began to write, but the last individual of the species perished before Peirce died in 1914. The Endangered Species Act still lay 59 years in the future. The Swedish chemist Svante Arrhenius identified the driving mechanism of global warming in 1896. In the succeeding century, humans have committed to substantial climate change.

Second, as Norton argues compellingly, the policy-making apparatus in the United States (and every other nation except perhaps the Netherlands) is far from grasping the pragmatist vision. It has proved especially difficult to open up social goals to the scientifically informed debate that Norton calls for (as Dewey had done already in his 1927 book *The Public and Its Problems*). If pragmatism is so practical, why have even democratic societies overlooked its virtues?

One can see at least two reasons: institutions and the problematic intersection of science and politics. The historically unprecedented economic success of industrial societies has made them large and complicated. Ever larger and more complicated administrative organizations have been adopted everywhere, along with equally universal complaints that those institutions, both private and public, are inefficient and confuse the interests of their own members with those of the wider society. Norton agrees, describing the US Environmental Protection Agency as a collection of mutually unintelligible regulatory fiefdoms. Yet he offers no cure other than the conceptual clarifications of pragmatism: "Since I can do little to solve the organizational problems at EPA, I have addressed the conceptual and linguistic problems" (pp. 443–444).

Norton is not a policy analyst or political scientist (though he observes that he studied political science as an undergraduate), and it is unfair to demand of him that he provide a solution to the institutional rigidities and conflicts of public life. Yet it is striking that he ignores that reality in his discussion: "If there is adequate trust among parties to allow experimentation, [that] should encourage support for pilot projects and other limited actions" (p. 208). Assuming away a problem of this magnitude is hardly pragmatic.

If institutions and their politics pose a challenge to pragmatism's sweet reason, so does the eroding authority of objective science. At the heart of pragmatism, as noted above, lies a rejection of the separation between facts and values. This means that the assertions of scientists are statements of values. The puzzle is that they are not only statements of values but also statements about the consequences of actions. For decades, coastal scientists have predicted that the erosion of wetlands in southern Louisiana would expose New Orleans to greater risks from hurricanes. Did that make them merely obstructionists to economic development? If the deliberation that Norton advocates is to make use of science as more than statements of values, the role of scientists in those deliberations needs to be spelled out. That is a task left undone in this book.

In 1965 the political scientist Don K. Price argued that scientists should eschew political activism, lest their scientific conclusions be dismissed as mere partisanship. Price's book *The Scientific Estate* argued that there is a "spectrum from truth to power," and that speaking truth to power required the scientist to respect this spectrum and refrain from claiming power directly. This idea has been discussed carefully in the literature of adaptive management, but Norton does not mention it as an impediment to his confident assertion that scientists have values too. They do, of course, but the uneasy relationship between power and science is a problem that cannot be ignored by those who would be pragmatic.

It is worth noting, as well, that Norton uses the term "adaptive management" to mean inclusive democratic planning. When the Canadian ecologist C. S. Holling proposed it in 1978, adaptive management had a narrower, more exacting definition: to use natural resource management decisions as a way to conduct large-scale experiments in ecosystems. Hypotheses were to be identified and a monitoring scheme designed, within a framework that explicitly included controls, replicates, and analysis of the ability of the policy choices to produce measurable impacts on the variables being monitored. In Holling's formulation, an ecosystem model would be used to organize the implementation of policy into a sort of virtual laboratory. The model would also serve as a means to communicate with stakeholders, so that they could participate in the decisions and the consideration of what unfolded thereafter.

Norton similarly emphasizes transparency and participation but foreshortens experimentation into pilot projects and a proposal to select summary indicators for public debate. He argues that such a debate will spur communities to take experience seriously. This abridgment of experimental science is consistent with the insistence that fact and value are inextricably mixed up in the world of experience. And, as noted earlier, what it is that scientists (both natural and social) contribute beyond their values is assumed rather than specified or defended. The phrase "adaptive management" has been muddied by many since Holling and before Norton. But Norton's socially expansive reading continues the oversimplification of the science in adaptive management *sensu* Holling. That does not advance the search for pragmatic ways to carry out this sensible but difficult approach to policy implementation.

Sustainability is a peculiar goal, both logically necessary if society is to survive and so far unattainable in practical terms. In the end, Norton concludes, "Success in sustainable living will occur when, over multiple generations, the pattern of individual choices, even when aggregated to a community scale, maintains the integrity and resilience of the place the community inhabits" (p. 517). The puzzle has been to marshal and then maintain the social and institutional energy needed to achieve this ideal, in the midst of economic, political, and environmental changes that proceed rapidly on a generational time scale. That riddle remains, and the clarity provided in this thoughtful but incomplete book does not quite fulfill the promise implied in the word "pragmatic".

One hopes, nonetheless, that *Sustainability* will gain a readership, particularly among the leaders who might help to create the conditions that Norton identifies as prerequisites for sensible deliberations about sustainable development. *Sustainability* is a repetitious book, however, each chapter beginning with a lengthy reprise of the argument to that point. Readers might do best to read chapters 5–9, which set out the argument in only 250 pages. His systematic approach is commendable, the author's insights are worth considering, and Norton is right to stress the significance of pragmatism as a philosophical framework for sustainable development. Now, to make these ideas practical.

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