

Chapter 2

Business Hears the Call

Abstract The positive response of American business to the demands of environmental sustainability is traced, from the earliest cases where technological sophistication made environmentally-friendly products and processes a major goal of manufacturing through to the new emphasis on “sustainable development.” New paradigms emerge in the relation of business to the natural environment—biomimicry, the preservation of biodiversity, the orientation to “biophilia,” and ultimately William McDonough’s replacement of “cradle to grave” with “cradle to cradle.”

Keywords Corporations • 3M • Green marketing • Niche marketing • Body works • Ben & Jerry’s • Green automobiles • McMansions • Sustainable development • Biomimicry • Biophilia • William McDonough • Cradle to cradle

As the fate of environmental protection had worked out to this point, the major opposition was between corporate business enterprise, with all its claims about providing jobs and stimulating the economy, and the growing environmental movement. The attitude of American business to the natural environment had been until this point one of benevolent exclusion. The corporate leaders loved nature, and encouraged their sons into the Cub Scouts and their wives into the Garden Clubs, but business was business, and the wildflowers don’t pay the rent. They had the proof from Adam Smith that the best thing for the greatest number in the long run was to let business pursue profit wherever it could find profit, with no interference from the State. Most of the battles had been won by business, in the past; recently, environmentalists had won more of them and now the future looked dangerous. A new move began circulating through the business system, one that suggested that profits could be made in alliance with the environment. At first, there were only a few pioneers, but slowly a new vision of American business emerged.

Case 11: The Business Case for Environmental Protection: 3M & NYC

Can we make a case that business will profit if it adapts its business practice to protect the environment? The first part of the business case is that environmentally friendly practices limit the impact of crippling hostile regulation, a real danger after Love Canal, Bhopal, and the Exxon Valdez. But the case continues. As early as the end of the 1970s we had begun to collect the iconic “win-win” cases, where measures taken to improve environmental performance within a company turn out to save money. Among the famous tales of cost-lowering environmental measures is 3M’s success with its Preventing Pollution Pays (3P) program.¹ Begun in 1975 as an attempt to eliminate sources of pollution, 3P turned out to save money—millions in the first year, nearly a billion by 2005. They did it by restructuring their entire manufacturing process, reformulating products and redesigning the equipment, so that every bit of material that came into the plant was used in the product and not piped out the back door. 3M was really just engaging in good process stewardship, and incidentally proving that environmental progress really does pay.² On the public side, New York City, by investing in upstate real estate to surround its water supply, saves itself the \$6 billion filtration plant that would be necessary otherwise to ensure the integrity of its water supply. (Or up to \$7 billion; all writers use this example, and estimates vary.) With the increase of population in both areas, that beautiful solution may not be feasible much longer; as the value of upstate real estate increases, New York City’s payments may not be sufficient. But the principle stands: if we can do something that we have to do cheaper and more efficiently, then the business case is easy to make, with all references to the natural environment only icing on the cake.

Case 12: Green Marketing and the American Consumer

The next part of the case, riding the wave of enthusiasm for all things environmental at the end of the 1970s, came as “green marketing.” As R. Edward Freeman points out, the logic of this shade of green is the old-fashioned rule, give the customer what he wants.³ Consumers turned out to be willing to “buy green,” to pay a premium for products that can be seen as beneficial, or not harmful,

¹ See John Elkington’s account in *Cannibals With Forks: The Triple Bottom Line of 21st Century Business*, pp. 53–54.

² A good description of the 3M project can be obtained from Jim Kotsmith, 3P Program Leader, PO Box 33331, 3M Company, St. Paul, MN 55133-3331.

³ R. Edward Freeman, Jessica Pierce, and Richard H. Dodd, *Environmentalism and the New Logic of Business*, op.cit., p. 14.

to the environment. Corporations who locked into this trend were able to charge premium prices for products whose competitors were spread across the market and competed only in price. Getting out of commodity competition and into a niche market had long been seen as an excellent way of increasing profits; the environment was now a niche. The final stage in this development was the move to organic local food—and the expensive “farmers’ markets” that sprouted all over California and New England (and many other places, too). First level examples from this moment would have to include Anita Roddick’s Body Works, specializing in “natural” products from the rainforest in her cosmetics and body health compounds, formulated without animal testing. (Cosmetics prior to Roddick had routinely been tested for safety by the “Draize Test,” entailing spraying or rubbing the product into the exposed eyes of rabbits, causing pain and sometimes destroying the animal’s eyes.) Roddick was stung by criticism that while her products were not developed with animal tests, some of the components she bought were not so innocent. To preserve the brand, she was forced to look *upstream*, to take responsibility for the practices in her supply chain. In this, she and her critics set a precedent that has emerged as controlling at present: each manufacturer shall be responsible not only for his own products, but also for any ethical or environmental problems that attend the origins of his products’ components.

Roddick and Body Works were not the only examples of the new trend, nor of the new vigilance upstream. Ben & Jerry’s Ice Cream had already fed the supply chain into their marketing: their Rainforest Crunch included Brazil Nuts bought from rainforest cooperatives, their brownie mix ice cream bought brownies from a bakery run by and for the handicapped, and they would only buy cream for their ice cream from cows that had not been treated with rBST—recombinant (artificial) bovine somatotrophin hormones—to increase the milk production.⁴ The next move in green marketing had to do with the established industries who suddenly were asked to look *downstream*: you thought you were environmentally friendly, but why are so many of your products in the landfill? Especially with toxic components? Computers were hit hardest. Suddenly, what you do with your part of the operation is not enough: we must look upstream and downstream to evaluate the effects of the enterprise. Not all of this was accepted at once. But current efforts by the computer industry demonstrate that the cradle-to-grave imperative had got some traction.

Green consumption had spread through the economy in the latter part of the twentieth century, and in small ways continues to take its place as an element in the move to sustainability. It is shot through with ironies, most of which are common knowledge. For example, the Organic Food section is the fastest growing corner in the supermarket, even as Wal-Mart becomes the largest retailer

⁴ Incidentally, the industry is still not happy with the BST fuss; see the Op-Ed piece in The New York Times Friday, June 29, 2007 (Henry I. Miller, Hoover Institution, “Don’t Cry Over rBST Milk”), insisting that milk prices would go so high that poor people would no longer be able to buy milk if rBST were taken out of use.

of food; the “fresh and local” movement that crowds the farmers’ markets in the affluent suburbs has been completely overrun by the contrary move to the globalized food chain.

Sustainability and the Triple Bottom Line

Through the last quarter of the twentieth century, there was slow and steady progress on the ground toward the business case for environmental protection. First, compliance with regulation, even reluctant, saved money in fines, and could be justified as good business; second, product reformulation and process redesign in some of the more polluting industries could save billions (and incidentally help clean up the environment); third, a public increasingly aware of environmental issues might respond to appeals to buy products made in ways that display sensitivity to environmental issues.

In the 1990s, two major developments transformed our approaches to environmental protection. Until that time, the national (and international) dialogue had focused on regulation for health and safety, with special attention to avoiding pollution of the environment. But the Earth Summit in Rio de Janeiro in 1992 focused the world on the environmental agenda much as Earth Day in 1970 had focused the nation, and gave the world the concept of “sustainable development.” The term had first been used in 1980, when the International Union for the Conservation of Nature published its *World Conservation Strategy*. It came into common usage following the 1987 report of the United Nations World Commission on Environment and Development, headed by Gro Harlem Brundtland, Prime Minister of Norway. That Report, entitled *Our Common Future*, defined sustainable development as socio-economic progress that “meets the needs of the present generation without compromising the ability of future generations to meet their own needs.” In that form it was picked up and incorporated into Agenda 21 of the Report of the United Nations Conference on Environment and Development (UNCED), a wide-ranging prescription for protecting the environment into the indefinite future.

By the end of the decade, these reports informed the business ethics literature. If the market system is to survive, the corporation must meet “The Triple Bottom Line,” a concept advanced by John Elkington in a surprisingly well-distributed book called *Cannibals With Forks: The Triple Bottom Line of 21st Century Business* (1998). Elkington’s thesis is that capitalism is not sustainable as capitalism unless it openly adopts environmental goals and strategies, and he provides in that volume a “toolbox” to help businesses get to the point that they need to be.⁵ Along the same lines, but more difficult to apply, was *The Natural Step For Business: Wealth, Ecology and the Evolutionary Corporation*, by Brian Nattrass

⁵ John Elkington, *Cannibals With Forks: The Triple Bottom Line of 21st Century Business*, Gabriola Island: New Society Publishers, 1998.

and Mary Altomare (1999), which also spelled out algorithms for corporations to employ in approaching the desirable condition of environmental sustainability.⁶ The point is not just that these were good books with good ideas. The point is that, even while American free enterprise still floated in the backwash of the ideology of deregulation, corporate officers as well as the rest of us, were talking about the *obligation* to meet the standard of environmental sustainability, without intermediate reference to regulation, savings on process or product formulation, or even making a good impression on the environmentalist public. The notion of sustainability was becoming incorporated into the economic psyche of the American citizen, and that is a very good development.

Case 13: The New Industrial Revolution and the Automobile

One of the key works in this development, written by the founders of Rocky Mountain Institute—Paul Hawken, Amory Lovins and Hunter Lovins—was *Natural Capitalism: The New Industrial Revolution*, which also appeared in 1999.⁷ It was probably not the first work to point out that there were ways of doing our basic work and living which were a quantum leap beyond current practice in terms of efficiency and environmental friendliness. But by the late 1990s, when it appeared, a new paradigm was needed. Environmentalism seemed to have run out of steam. Industries still lobbied for an end to all regulation, Detroit's automobile makers insisting that the mileage requirements for their automotive fleet could not possibly be increased, or they would surely be bankrupt (and all their workers unemployed), but there was no one to push back. President Ronald Reagan ("Government won't solve your problems; government *is* the problem,") and his administration, over the course of the 1980s, had broken the spirit of regulation. Even with an environmentalist in the executive branch, starting in 1992, very little more was expected from government's angle. But from the point of view of profitable business, quite a bit of progress was possible, and *Natural Capitalism* called on business to take profitable advantage of what was already known. Take the American automobile, for instance, mainstay of the twentieth century economy.

The contemporary automobile, after a century of engineering, is embarrassingly inefficient: Of the energy in the fuel it consumes, at least 80 % is lost, mainly in the engine's heat and exhaust, so that at most only 20 % is actually used to turn the wheels. Of the resulting force, 95 % moves the car, while only 5 % moves the driver, in proportion to their respective weights. Five percent of 20 % is one percent—not a gratifying result from American cars that burn their own weight in gasoline every year.⁸

⁶ Brian Nattrass and Mary Altomare, *The Natural Step for Business: Wealth, Ecology and the Evolutionary Corporation*, Gabriola Island: New Society Publishers, 1999.

⁷ *Natural Capitalism: Creating The New Industrial Revolution*, Boston: Little Brown, 1999.

⁸ Id. p. 24.

And the situation is getting much worse. As the twenty-first century opened, Americans wanted more cars per person—all newer houses in suburban neighborhoods have three bays in the garage. The cars are getting much larger—the Sport-Utility Vehicles (SUVs), built on the model of trucks—not to mention the Hummers, built on the model of tanks—competed for a growing market in size and weight, consuming much more gasoline than standard cars, projecting an image of intimidation while compiling a frightening record of rollover deaths. This change adds significantly to the greenhouse gases: while the average American car puts an alarmingly high 10,168 pounds of carbon dioxide into the air yearly, the SUV dumps a disgraceful 11,972 pounds into the atmosphere.⁹ Meanwhile, American habits of consumption are spreading over the rest of the world, especially China and the developing world, ensuring that any gains in prosperity among those nations will quickly be turned against what remains of the natural environment.

Yet there are powerful indications that the automotive industry can change: that technology is now available to make the American car safer while putting much less of a demand on environmental resources. We might start with the size, weight, and materials of the automobile. Following in the footsteps of Henry Ford, the automakers use steel, which is strong, attractive, and very heavy. A typical six-seat Ford Taurus, for instance, weighs about 3,140 pounds. Using lighter but more expensive materials like aluminum and magnesium, concept cars have been shown that are much lighter. But if the whole metal body is replaced by molded composite materials, embedding carbon, Kevlar, glass, and other fibers in molded plastics, we can get the weight down to about 1,300 pounds. A smaller sedan might weigh as little as 1,000 pounds. The lighter car translates into greater efficiency in several ways: since much less power is needed to accelerate the car, the engine can be smaller and lighter; since much less power is needed to stop the car, the brakes can be lighter; and since there is less weight on the tires, they lose less energy in heat.¹⁰ (As the car becomes lighter, some features, like power steering and power brakes, might become completely unnecessary.) Nor is the light car “less safe” than a heavy one, as anyone who has watched the Indianapolis 500 race will appreciate. The race cars are made of ultralight composites, and despite terrible crashes, the race cars’ safety systems usually prevent serious injury to the driver.¹¹ Anything that can keep a driver safe in a head-on crash at 150 miles per hour should be able to keep driver and passengers safe at road speeds. We know that this is possible: Boeing Corporation has a prototype of a lighter airplane, the 787 (launched on 7/8/07), made largely of composites, that will save massive amounts of fuel. Note that its launch was the most successful in aircraft history, selling hundreds of airplanes on the opening day. Prototypes of extra light “hypercars,” that can attain 90 miles per gallon of gasoline, have been with us for decades; why don’t we make them?

⁹ Brian Lavendel, “GreenHouse,” *Audubon* March–April 2001, p. 78.

¹⁰ *Id.* pp. 27–29.

¹¹ *Id.* p. 30.

Case 14: The McMansion

The next great unsustainable in the American landscape, target of environmentalist criticism, is generally the American suburban house. The suburbs themselves are targeted for their dependence on the car; see above. But the freestanding house on the large lot in the suburbs is an independent assault on the environment. On the average, the American single-family home emits 16,522.3 pounds of carbon dioxide from its use of electricity generated in plants that burn fossil fuels. If it burns oil in the furnace, it costs 17,622.0 pounds of carbon dioxide to heat the house (natural gas lowers the amount to 11,094.3 pounds).¹² That's about 30,000 lbs, or 15 short tons, per family. And it's getting worse. The house that now sells best on the American market is the "starter castle," or "McMansion," the outsized house with a ballroom-sized two-storey front hall, an enormous eat-in kitchen plus breakfast room, formal dining room, family room, perfect for entertaining, with room for the two children, the corgis, and the *au pair*. All this room will require more fuel to light, to heat, and to supply electricity for the entertainment centers, computers, fax machines and kitchen appliances. Nor does this total include the amount of gasoline burned in mowing the lawn with power mowers, or blowing leaves into a pile with power-driven leaf blowers so that they can be vacuumed into a truck and driven to the dump.

Our houses, like our cars, like our diets, seem to be controlled by the need to "supersize." While we supersized cheeseburgers and soft drinks, we were supersizing our houses, and going way into mortgage debt in order to do it; there is a strong link among the bubbles—financial, real estate, all the material dreams that popped in the collapse of 2008–2009. Yet houses at least can be sustainable; buildings have been designed (and in some places built) that use much less energy (through superinsulation, efficient heating plants, and double windows). Where photovoltaic panels already available are attached, they can, like a tree, create more energy than they use.¹³ Much more can be realized from the careful design of industrial and office buildings. Universities might very well be the leaders in this development—we make very public buildings, with a lot of freedom to design what we want. There are now new institutions to guide and institutionalize environmental design: Leeds certification, for instance, providing a target and verification for designing and building green buildings. From just the progress reported in 1999, it seems that we could take the entire industrial system of the developed world, wring out the waste, redesign the basics, and make a profit in the process. The technology is there; it is the mind of the technologist that needs changing.

¹² Lavendel, *op.cit.*, p. 78.

¹³ See Tom Zeller, Jr., "Can We Build in a Brighter Shade of Green?" *The New York Times*, Sunday, September 26, 2010, first Business Page.

Case 15: Biomimicry and Beyond

That mind, in the recent past, even before the supersize dysfunction, has been slow to recognize the extraordinary technological sophistication of the natural world. For instance, all of our clean water (not just New York City's) is ultimately the product of a water filtration governed entirely by natural processes; our medicines are derived, often in one step, from the incredible variety of plants in the natural biodiversity of the threatened rainforests.¹⁴ Nature's riches and nature's services do not often make the news until we manage to cripple them somehow; in recent years, we have heard repeated alarms over "colony collapse disorder," destroying our honeybees, the pollinators on which many of our fruit, seed and nut crops depend.¹⁵ If we lost the bees, we have no idea how we might replace them. Could we take Patagonia (an outdoor clothing company that models all its products on nature) rather than the chemicals company 3M as the model, and redesign our activities to conform with nature? Should we adopt the philosophical orientation of belonging to, and working with, the natural world, instead of imposing our designs upon it, we might discover wholly new ways of doing what we wanted to do and doing it profitably. Could Nature teach us how to do things better? We make Kevlar, one of the strongest fabrics we know (used for sails in competitive yacht racing, body armor for the military), in boiling sulfuric acid. Spider silk, which is stronger, is made at room temperature with only natural materials. Can we learn to do that? A new field, Biomimicry, grew up in efforts to find more efficient ways to make and do what we want.¹⁶ To recap our first question, why do we want to preserve the environment? *Because Nature contains resources, and models processes, that we need to use and to know in order to carry on our economic activities.*

The revolutionary approach to industry was not new. As early as 1970, Barry Commoner had pointed out that there was no such place as "away," and that therefore we really didn't throw anything there; what we thought we threw there actually stayed with us, rotting and polluting.¹⁷ What can we do with waste, waste that

¹⁴ For a start at accounting these services, see Gretchen Daily, ed. *Nature's Services: Societal Dependence on Natural Ecosystems*, Washington, DC: Island Press, 1997; also Robert Costanza et al., "The Value of the World's Ecosystems and Natural Capital," *Nature* 387:253-260, 1997.

¹⁵ To quote the entomologists of Cornell University Agricultural School, "Recent reports in the news have highlighted a dramatic loss of honey bee colonies in as many as 24 states, and the number is growing. Honey bees are a critical player in the production of many fruit, vegetable and seed crops grown throughout the country, adding between \$8 and \$12 billion worth of value to US agriculture each year. Substantial losses, such as are currently being experienced, pose a serious threat to crops that rely on bees for pollination and portend diminished profits for growers and higher prices for consumers at the supermarket." <http://www.entomology.cornell.edu/ithacacampus/articles/beecolonycollapse.html>.

¹⁶ Janine M. Benyus, *Biomimicry: Innovation Inspired by Nature*, New York: HarperCollins 2002 (William Morrow 1997).

¹⁷ Barry Commoner, *The Closing Circle: Nature, Man and Technology*, New York, Knopf, 1971.

cannot be thrown “away”? William McDonough, the revolutionary green architect, proclaimed a new paradigm for industry, “waste is food”: The standard model of industrial “throughput,” resources entering at one end of a factory, product exiting at the other end, waste departing to someplace “away” through a pipe or in a truck, had to be abandoned. Adopting the perspective of biomimicry, he pointed out that in the natural world, nothing is lost; every bit of waste from one natural process becomes the raw material for the next life. Our 1970s intolerance for wastes that persist in our environment and eventually endanger our health has led to the requirement that we shepherd our products to some safe end, “cradle to grave.” McDonough’s new prescription insisted that we follow them “cradle to cradle”—from the creation of one product to the resources necessary for the next.¹⁸

Reflection: The Philosophers

What contribution to the ethics of the environment came from the philosophical community? “The owl of Minerva flies only at dusk,” we philosophers say of our field, or in other words, philosophers as usual paid no attention to what was going on in the world while it was going on, and had to play a catch-up ball of Analysis and Reflection at the end. The battle is nearly over before the philosophers show up, and they are not the ones that lead the next phase.

They started from the basics, adopting the orientation of Jeremy Bentham. Consider, they suggested, the wild animals, living before and away from humans. They too have values, along the lines of all humans. They seek the necessities of life, food, warmth, and the opportunity to reproduce, and for them life is good when that necessity is satisfied; they seek pleasure and avoid pain; they have lives that can go better or worse for them. As Holmes Rolston III put it,

There is no better evidence of non-human values and valuers than spontaneous wild life, born free and on its own. Animals hunt and howl, find shelter, seek out their habitats and mates, care for their young, and flee from threats. They suffer injury and lick their wounds. Animals maintain a valued self-identity as they cope through the world. They defend their own lives because they have a good of their own. There is somebody there behind the fur or feathers.¹⁹

Animals value their own lives, and things in their world, their own lives intrinsically and their resources instrumentally. If those facts are enough to recommend

¹⁸ William McDonough and Michael Braungart, *Cradle to Cradle: Remaking the Way We Make Things*, Farrar Straus Giroux 2005. One of the more prominent adherents of this new wave is Ray Anderson, founder and CEO of Interface, Inc., which has developed furnishings that are completely sustainable—using only dyes that are biodegradable and non-toxic, materials that can be recycled, and minimizing the use of fossil fuels. See his *Mid-Course Correction*, Distributed by Chelsea Green in White River Junction, Vermont.

¹⁹ Holmes Rolston III. “Environmental Ethics”, in *The Blackwell Companion to Philosophy*, 2nd ed., ed. Nicholas Bunnin and E.P. Tsui-James, Oxford: Blackwell Publishing, 2003, pp. 517-530.

a valuing of human life and flourishing in our world, it should be enough for the animals. So there can and ought to be an animal welfare ethic; or, some prefer to say, an animal rights ethic.

How can we deny that the same moral imperatives apply to them as to us? Consider Jeremy Bentham's conclusions:

The day may come when the rest of the animal creation may acquire those rights which never could have been withholden from them but by the hand of tyranny... What... is it that should trace the insuperable line [between human and brute]? Is it the faculty of reason, or perhaps the faculty of discourse? But a full-grown horse or dog is beyond comparison a more rational, as well as a more conversable animal, than an infant of a day, or a week, or even a month, old. But suppose they were otherwise, what would it avail? The question is not, Can they reason? Nor Can they *talk*? But, *Can they suffer?*²⁰

Bentham was not taken seriously, then or now, because of our pervasive certainty that no matter how logical his argument, it was perfectly clear that humans were above nature, and possessed a value all their own. Yet the same kind of reasoning that made "beneficence" a moral imperative leads to the conclusions that over this range at least, the higher animals at least are very like us, and if we have in some sense a "right" to life and to the means to preserve it, then so do they. (Those who argue for some "special creation" for humans should remember that chimpanzees were created, by the same God, with 98.5 % of their DNA identical with ours. And don't get too excited about that 1.5 %; it has to do with our ability to lock our knees.)

Humans are in radical disagreement on the status of even the highest of the animals. We may find it easy to identify with animals like ourselves (the great apes, for instance), but others of our species treat them as "just animals" and cheerfully shoot them for the cooking pot. As far as that goes, humans have practiced cannibalism into modern times, simply asserting that people of other tribes were the equivalent of "just animals." The numerous "nature" programs on television, portraying animals sympathetically, testify at several levels to a human propensity to identify with animals: that TV producers with a finger on the public pulse think such programs will sell, that naturalists, photographers and narrators dedicate their lives to studying and understanding and representing the beasts they portray, and that large numbers of viewers find such portrayals attractive.

Shall we grant "rights" to the animals? There is a powerful movement within philosophy to accord basic rights to at least the higher animals. What rights would be appropriate to accord? Most obviously, the right to life—at least, the right not to be hunted or slaughtered for food, and there goes the larger part of the world's diet, and a huge profitable industry in the U.S. It's the kind of conclusion that environmentalists love, for whether or not you are a vegetarian, you'll probably recognize that eating closer to the land will save the environment.

Then shall we grant rights to the plants? Ecocentric ethics requires respect toward all living things, not only the chimpanzees and horses and dogs of our

²⁰ *Introduction to the Principles of Morals and Legislation*, Chap. XVII, note 1. Hafner Library of Classics, #6, Hafner Pub. Co., New York, 1948, p. 311.

experience, but Monarch butterflies and the California redwoods. The vast majority of biological organisms are left out of the “animal rights” agenda—the snails, insects, microbes, and plants, for instance. As Holmes Rolston reminds us, “Over 96 per cent of species are invertebrates or plants; only a tiny fraction of individual organisms are sentient animals.”²¹ A plant is certainly a life-form, arising spontaneously in nature, responding to stimuli (turning to face the sun, for instance), able to sense certain events (like the attack of a predator) and within limits respond—often by producing a poison to get rid of it. It eats, digests, excretes waste, grows, repairs wounds, maintains its identity and reproduces its kind. Clearly its state of existence, its life, is of value to it, however inarticulate it may be in expressing that value.

An ethical problem haunts the extension of rights to non-human species: it is irresistible to the philosophers, to lump this move with the civil rights movement generally. First only white males were accorded rights; then nonwhite males; then females; then chimpanzees; then horses; then dogwoods; etc. We steadily expand the bounds of the rights holders, becoming more inclusive with each move. All of this is good. But there has to be a difference between including human beings, formerly enslaved, in the privileged group, and including even the higher animals. Humans should never have been enslaved, should never have held a status less than full humanity; their inclusion was dictated by justice. There are excellent reasons to exclude animals of all kinds from full rights holder status—just no reason to inflict pain on them. That’s a difference for which we have yet to account.

Value does not lie only in the satisfaction of human preferences or desires. Value lies in life, in the whole interrelated world, in the entire realm of what we call Nature. We can divide it as we like, as its protection seems most convenient. Saving the individual organism is almost never first priority (exceptions for the last remaining tortoise of its species). The smallest unit worthy of protection is probably the ecosystem, a local community of rocks, streams, plants, and animals, living in interrelationship, interdependent, destruction of any part of which will severely compromise the rest. The ecosystem is an organism in itself, like our bodies, and any insult received by one sector will be felt throughout. It has been suggested that the Endangered Species Act should be supplemented by the Endangered Habitat Act, since it makes little sense to go to desperate measures to protect the last members of a species, if we continue to destroy the habitat that the species needs. Ultimately, the unit of protection is the biosphere itself, the entire realm of living beings.

Biodiversity

But must we pay attention to how many different kinds of organisms we organize to protect? There is no doubt that “biodiversity” is a value in environmental philosophy. We referred to it briefly among the critiques of Norman

²¹ Rolston op.cit. p. 521.

Borlaug—protection of the variety of species is one of the goals of environmental protection. But why? Edward O. Wilson, the Harvard biologist who pioneered this subject, suggests the following:

Biological diversity—“biodiversity” in the new parlance—is the key to the maintenance of the world as we know it. Life in a local site struck down by a passing storm springs back quickly because enough diversity still exists.

Opportunistic species evolved for just such an occasion rush into fill the spaces. They entrain the succession that circles back to something resembling the original state of the environment. This is the assembly of life that took a billion years to evolve. It has eaten the storms—folded them into its genes—and created the world that created us. It holds the world steady....²²

The complexity of the system, that gives it its resilience and versatility, can be found in the smallest and most basic samples of biological life, in a handful of soil scooped up from the woods.

The black earth is alive with a riot of algae, fungi, nematodes, mites, springtails, enchytraeid worms, thousands of species of bacteria. The handful may be only a tiny fragment of one ecosystem, but because of the genetic codes of its residents it holds more order than can be found on the surfaces of all the planets combined. It is a sample of the living force that runs the earth—and will continue to do so with or without us.²³

He goes on to cite the rate of extinction of species occurring right now: hundreds, thousands of times higher than before humans arrived on earth. “They cannot be balanced by new evolution in any period of time that has meaning for the human race.” But does it matter? Wilson restates the classic arguments for attention to biodiversity:

[If we allow many of the species of the earth to disappear,] New sources of scientific information will be lost. Vast potential biological wealth will be destroyed. Still undeveloped medicines, crops, pharmaceuticals, timber, fibers, pulp, soil-restoring vegetation, petroleum substitutes, and other products and amenities will never come to light. It is fashionable in some quarters to wave aside the small and obscure, the bugs and weeds, forgetting that an obscure moth from Latin America saved Australia’s pastureland from overgrowth by cactus, that the rosy periwinkle provided the cure for Hodgkin’s disease and childhood lymphocytic leukemia, that the bark of the Pacific Yew offers hope for victims of ovarian and breast cancer, that a chemical from the saliva of leeches dissolves blood clots during surgery, and so on down a roster already grown long and illustrious despite the limited research addressed to it.²⁴

Most of Wilson’s argument can be summed up as a particularly profound prudence: over a large range, we don’t know what species really do in the world, either for us directly, or in their role in their own ecosystems. We dare not fool with systems we do not understand. “We should judge every scrap of biodiversity while we learn to use it and come to understand what it means to humanity. We should not knowingly allow any species or race to go extinct. And let us go

²² E. O. Wilson, *The Diversity of Life*, Cambridge, MA: Harvard University Press, 1992, p. 15.

²³ *Ibid.* p. 24.

²⁴ Loc.cit.

beyond mere salvage to begin the restoration of natural environments, in order to enlarge wild populations and stanch the hemorrhaging of biological wealth.”²⁵

Case 16: Biophilia? Circling Toward Home

Many of the most interesting new imperatives for American society were put there by you and me. The “green marketing” literature is all about our taste in consumption, possibly a passing fad. But that literature has been supplemented by some interesting studies that suggested that the link between green life, plants and woodlands, might be considerably stronger than we had thought. The phenomenon known as “biophilia,” a natural bond with all living things that guides our choices in life whether or not we are aware of it, may not be scientifically demonstrable, but it seems to account for the fact that we heal from illness better if we can see out of doors, and that we thrive when we are surrounded by living things—green ones and furry ones. Biophilia may very well underlie the appeal of green marketing, and the new awareness of the consumer.

More importantly, it suggests that at a near distance, humans recognize their kinship with nature, and are entirely capable of bonding with, loving, parts of the natural world beyond the human—and beyond the personal back yard, the local park and the community garden, which are already infused with human meanings and symbolic importance.

Reflection: Deep Ecology and the Justification of Monkey Wrenching

In 1973 a new initiative arose in environmental ethics, from a paper by Arne Naess—“The Shallow and the Deep, Long-Range Ecology Movement.”²⁶ The essential distinction referenced in the title of the paper is between anthropocentric environmentalism, preserving the environment for the sake of human safety, welfare or pleasure, and ecocentric environmentalism, preserving the environment for its own sake. In subsequent discussions, it has often been difficult to pin down just what Deep Ecology’s core beliefs are, but that initial distinction remains: Nature exists for its own sake, and humans are, and must be, no more than part of Nature. Where human interests oppose the interests of the ecosystem or the larger ecosystem, our tendency is to let the human interests trump the environmental interests; in deep ecology, the resolution is always in favor of nature. Humans must

²⁵ Loc.cit.

²⁶ Arne Naess, “The Shallow and the Deep, Long-Range, Ecology Movement: A Summary,” *Inquiry* 16, p. 95.

regard themselves as organs within the larger body of the earth (or of Gaia, the entire ecosphere of the earth, named for the goddess of the earth, in some formulations). The turbulent history of the earth has resulted in significant die-offs of many of its species, without completely losing the species (usually), and without losing the resilience of the ecosystem, which can continue to nurture other species in their turn. We apparently have found these die-offs acceptable, even when we ourselves have caused them. The deep ecologist will simply point out that what would do the earth the most good right now would be a significant die-off of human beings. (There may have been some in the past, accounting for the fact that humans lived in harmony with the earth's limitations for several million years at least.) One reason that "deep ecology" has been difficult to pin down is that it is disorienting to recommend that 90 % of humans are surplus, and damaging to the welfare of the whole, without going on to specify what kind of "Second Amendment Remedy," as we now call such proposals, it would be reasonable to adopt to address this disproportion. The similarity of humans to a cancer in the earth has been acknowledged, see below; the remedy for cancer is to destroy it, or at least enough of it so it does not threaten its host. The discussion of such remedies, where human beings are concerned, is not tolerated in civilized society, and the deep ecologists are civilized. But such thinking did lead to a new environmental tactic in the woods of the Pacific Northwest that draws on the fundamental convictions of Deep Ecology. Seeing the powerful machinery of the logging companies chewing up the redwood forests, even when laws and court decisions forbade their activities, some of the environmentalists took up "monkey-wrenching," disabling the machinery (without hurting the loggers), throwing a monkey wrench into the next day's work. It was against the law, of course, to damage property; but often the loggers were working in defiance of the law or of court decisions, so the young vandals did not feel as guilty as they might have otherwise. The lumber companies hired better security guards, and the practice faded away (the logging did not, and continues to this day). But a profound ethical question remains: in a nation ruled by law, what law takes precedence in such cases? We may agree that to save human life, it is permissible to damage property. But to save the trees?

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