

EARTH IN MIND

On Education, Environment,
and the Human Prospect



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CHAPTER SEVEN

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Reflections on Water and Oil

THE MEANING of water might best be approached in comparison with that other liquid to which we in the twentieth century are beholden: oil. Water as rain, ice, lakes, rivers, and seas has shaped our landscape. But oil has shaped the modern mindscape, with its fascination and addiction to speed and accumulation. The modern world is in some ways a dialogue between oil and water. Water makes life possible, while oil is toxic to most life. Water in its pure state is clear; oil is dark. Water dissolves; oil congeals. Water has inspired great poetry and literature. Our language is full of allusions to springs, depths, currents, rivers, seas, rain, mist, dew, and snowfall. To a great extent our language is about water and people in relation to water. We think of time flowing like a river. We cry oceans of tears. We ponder the wellsprings of thought. Oil, on the contrary, has had no such effect on our language. To my knowledge, it has given rise to no poetry, hymns, or great literature, and probably to no flights of imagination other than those of pecuniary accumulation.

Our relation to water is fundamentally somatic, which is to say it is experienced bodily. The brain literally floats on a cushion of water. The body consists mostly of water. We play in water, fish in it, bathe in it, and drink it. Some of us were baptized in it. We like the feel of salt spray in our faces and the smell of rain that ends a dry summer heat wave. The sound of mountain water heals what hurts. We are mostly water and have an affinity for it that transcends our ability to describe it in mere words.

Oil and water have had contrary effects on our minds. Water, I think, lies at the origin of language. It is certainly a large part of the beauty of language. Water has also given rise to some of our most elegant technologies: water clocks, sailing ships, and waterwheels. The wise use of water

is quite possibly the truest indicator of human intelligence, measurable by what we are smart enough to keep out of it, including oil, soil, toxics, and old tires. The most intelligent thing we could have done with oil was to have left it in the ground or to have used it very slowly over many centuries. Oil came to western civilization as a great temptation to binge, devil take the hindmost. Our resistance had already been lowered by the intellectual viruses introduced by the likes of Galileo, Bacon, and Descartes. We were in no condition to fend off those introduced by John D. Rockefeller, Henry Ford, and Alfred P. Sloan that promised speed, mobility, sexual adventure, and personal identity. Oil has undermined intelligence in at least six ways.

First, oil eroded our ability to think intelligently about community and the possibility of cooperation. Its nature is what game theorists call zero-sum: You have it or someone else does; you burn it or they do. Its possession set those who had it against those who did not: states against states; regions against regions; nations against nations; and the interests of one generation against those of generations to follow. Cheap oil and the automobile pitted community against community, suburban commuters against city neighborhoods. Money made from oil and oil-based technologies corrupted our politics, while our growing dependency corrupted our sense of proportion and scale. To guarantee our access to Middle Eastern oil we have declared our willingness to initiate Armageddon. We are now spending billions in fulfillment of this pledge even though a fraction of this annual bill would eliminate the need for oil imports altogether. The characteristics of oil and the way we have used it and have grown overly dependent on it have helped shape a mind-set that cannot rise above competition.

Second, oil has undermined our land intelligence by increasing the speed with which we move on it or fly over it. We no longer experience the landscape as a vital reality. Compare a trip by interstate highway from Pennsylvania to Florida with that taken by William Bartram in the eighteenth century. Where Bartram saw wonders and had the time to observe them carefully and be instructed and moved by them, modern travelers experience only a succession of homogenized images and sounds moving through an engineered landscape all tailored to the requirements of speed and convenience. As a result, our contact with land is increasingly abstract, measured as lapsed time and experienced as the dull exhaustion that accompanies jet lag or close confinement.

Third, oil has made us dumber by making the world more compli-

cated but less complex. An Iowa cornfield is a complicated human contrivance resulting from imported oil, supertankers, pipelines, commodity markets, banks and interest rates, federal agencies, futures markets, machinery, spare parts supply systems, and agribusiness companies that sell seeds, fertilizers, herbicides, and pesticides. In contrast, the forest or prairie that once existed in that place was complex, a highly resilient system consisting of a diversity of life forms, ecological relationships, and energy flows. Complicatedness is the result of high energy use that destroys genetic and cultural information. With complicatedness has come specialization of knowledge and the "expert." Exit the generalist and the renaissance person. The result is a society and economy that no one comprehends, indeed, one that is beyond human comprehension. Complicatedness gives rise to unending novelty, surprise, and unforeseen consequences. As the possibility of foresight declines, the idea of responsibility also declines. People cannot be held accountable for the effects of actions that cannot be foreseen. Moreover, a high-energy society undermines our sense of meaning and our belief that our own lives can have meaning. It leads us to despair and to disparage the very possibility of intelligence.

Fourth, cheap oil and the automobile are responsible, in large measure, for the urban sprawl that has conditioned us to think that ugliness and disorder are normal or at least economically necessary. Where fossil energy was cheap and abundant the idea of a land ethic based on the "integrity, stability, and beauty of the biotic community" has never taken firm hold. This is not just a problem of ethics; it is a deeper problem that has to do with how poorly we think about economics. Sprawling megalopolitan areas are not only an aesthetic affront; they are sure signs of an unsustainable economy dominated by absentee corporations that vandalize distant places for "resources" and other places to discard wastes. A mind conditioned to think of ecological, aesthetic, and social disorder as normal, which is to say a mind in which the categories of harmony and beauty have atrophied, is to that extent impoverished. It is rather like being able to see only half of the color spectrum. On the other hand, intelligence, I think, grows as the mind is drawn to the possibilities of creating order, harmony, beauty, stability, and permanence.

Fifth, oil has undermined intelligence by devaluing handwork and craftsmanship. To a great extent the history of high-energy civilization can be described by the shift in the ratio between labor and energy. Economic development is the process of substituting energy for labor, moving

people from farms into cities and from craft professions into factories and eventually into "the service sector." This is not simply a matter of economic efficiency as some argue; it is a problem of human intelligence. Thinking, doing, and making exist in a complex symbiotic relationship. The price we pay for the convenience and affluence of a service economy may well be paid in the coin of intelligence. The drift of high-energy civilization is to make the world steadily less amenable to the kind of thought that results from the friction of an alert mind's grappling with real materials toward the goal of work well done. To the modern mind, with its ghettos of costs and benefits, expertness, efficiency, built-in obsolescence, and celebration of technology that replaces manual skill, any alternative sounds hopelessly naive. However, we may find reason to reconsider, on the grounds of a larger efficiency and higher rationality, the reality that we are in fact "homo faber" whose identity is defined by the close interplay of thought and making.

Finally, oil has undermined intelligence because it requires technologies that we are smart enough to build but not smart enough to use safely. This is the gap between knowing how to do something and knowing what one should do. Cheap oil has divided our capabilities from our sense of obligation, care, and long-term responsibility. Oil used at the rate of millions of barrels each day cannot be used responsibly. The *Exxon Valdez* oil spill in Prince William Sound, and the dozens of other large oil spills like it, are not accidents but the logical result of a system that operates on a scale that can only produce catastrophes. Our mistake is compounded by the belief that the catastrophe occurred only because oil was spilled. It would have been an equal, if more diffuse catastrophe, had the *Exxon Valdez* made it safely to port and its cargo burned in car engines, proceeding thence into the atmosphere where its contents would have contributed to air pollution and global warming. Oil has reduced our intelligence by dividing us between what we take to be realistic imperatives of economy and the commands of ethical stewardship. As a result we have become far less adept at thinking and acting ethically and far more adept at rationalizing and denying.

If oil has made us dumber, might water make us smarter about more things over a longer term? I think so. To this end, I suggest several things beginning with an examination of contemporary curriculum to identify those parts that are based on the assumption of the permanence and blessedness of cheap energy. How much of the curriculum would stand if this assumption were removed? Education has generally prepared the

young to live in a high-energy world. We have shaped whole disciplines around such assumptions without stopping to inquire about their validity or their larger effects. The belief in the permanence and felicity of high-energy civilization is found at the heart of most of contemporary economics, with its practice of discounting, development theory, marketing, business, political science, and sociology. The natural sciences have been largely directed toward manipulation of the natural world without any comparable effort to study impacts of doing so or alternative kinds of knowledge that work with natural systems. Behind a great deal of this is the belief that we can make an end run around nature and get away with it.

Second, water should be a part of every school curriculum. I would include, for example, Karl Wittfogel's (1956) study of the relationship between water management and despotic government, Donald Worster's (1985) study of the politics of water in the American West, and Charles Bowden's (1985) study of the relationship between water and the Papago people of Arizona. Water as part of our mythology, history, politics, culture, and society should be woven throughout curriculum, K through PhD.

Third, water should be the keystone in a new science of ecological design. John Todd's (1991) *Living Machines* is a working example of ecological design. Education in ecological design would have to be transdisciplinary, aiming to integrate a broad range of disciplines and design principles of resilience, flexibility, appropriate scale, and durability. Todd's work, as an example, is instructive in part because he has combined good engineering with ecology and vision.

Fourth, water and water purification should be built into the architecture and the landscape of educational institutions. The very institutions that purport to induct the young into responsible adulthood often behave like vandals. This need not be. Institutional waste streams offer a good place to begin to teach applied (as opposed to theoretical) responsibility. Solar aquatic waste systems and similar approaches offer a way to teach the techniques of waste water purification, biology, and closed loop design. *There are many reasons to regard resource and waste flows as a useful part of the curriculum, not merely a nuisance.*

Finally, I propose that restoration be made a part of the educational agenda. Every public school, college, and university is within easy reach of streams, rivers, and lakes that are in need of restoration. The act of restoration is an opportunity to move education beyond the classroom

and laboratory to the outdoors, from theory to application and from indifference to healing. My proposal is for institutions to adopt streams or entire watersheds and make their full health an educational objective as important as, say, capital funds campaigns to build new administration buildings or athletic facilities.

What is the meaning of water? One might as well ask, "What does it mean to be human?" The answer may be found in our relation to water, the mother of life. When the waters again run clear and their life is restored we might see ourselves reflected whole.

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