

## Toward a Sustainable Tomorrow

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### Introduction

In his provocative novel *Ishmael*, Daniel Quinn argues that about ten thousand years ago, a new kind of Taker civilization emerged, one based on the idea of dominion over the earth. The Takers developed agricultural technologies that gave them the ability to produce more food than they needed, thereby expanding the population. The alternative hunter-gatherer and herder cultures Quinn refers to as Leavers, indicate the way in which they allow nature to limit their population and guide their choice of food and other resources: “the Takers systematically destroy their competitors’ food to make room for their own. Nothing like this occurs in the natural community. The rule there is: Take what you need, and leave the rest alone.”<sup>1</sup>

For Quinn, any attempt to promote sustainable development without a change in Taker attitudes would be a failure. What is needed is for human beings to change the fundamental myth or story on which most of the civilized world operates: “The old horror of Man Supreme, wiping out everything on this planet that doesn’t serve his needs directly or indirectly.”<sup>2</sup>

Quinn believes in creating virtuous people by altering the story most of us live by—once we have internalized a new myth, we will know how to share resources, not just with other human beings but also with other species. Quinn’s example suggests the importance of another factor in sustainable development: moral imagination.

According to Patricia Werhane, moral imagination involves “at least four things: (1) that one disengage oneself from one’s role, one’s partic-

ular situation, or context; (2) that one become aware of the kind of scheme one has adopted and/or that is operating in a particular kind of context; (3) that one creatively envision new possibilities, possibilities for fresh ways to frame experiences and new solutions to present dilemmas; and (4) that one evaluate the old context, the scope or range of the conceptual schemes at work, and new possibilities.”<sup>3</sup>

Quinn’s “story we live by” is equivalent to a higher-order schema that dictates a whole complex of attitudes or actions. Consider someone who operates on Taker assumptions. These views will not seem like assumptions. They will simply appear to be a reflection of reality: “The earth belongs to the human species. We are special, unique—our intelligence and technological process give us the right to expand, grow, multiply and use the Earth in a way that satisfies our needs.” The first step in moral imagination is to see that this so-called right is in fact a view, that other views are possible.

Moral imagination needs to be exercised by those who take Leaver assumptions for granted as well:

The problem is that man’s conquest of the world has itself devastated the world. And in spite of the mastery we’ve attained, we don’t have enough mastery to *stop* devastating the world—or to repair the devastation we’ve already wrought. We’ve poured our poisons into the world as though it was a bottomless pit—and we *go on* pouring our poisons into the world. We’ve gobbled up irreplaceable resources as though they could never run out—and we *go on* gobbling them up. . . . Only one thing can save us. We have to *increase* our mastery of the world . . . *go on* conquering it until our rule is *absolute*. Then, when we’re in *complete* control, everything will be fine. All the life processes of this planet will be where they belong—where the Gods meant them to be—in our hands. And we’ll manipulate them the way a programmer manipulates a computer.<sup>4</sup>

Paul Hawken expresses this “Leaver” philosophy “in terms of an economic golden rule for the restorative economy: Leave the world better than you found it, take no more than you need, try not to harm life or the environment, make amends if you do.”<sup>5</sup>

This assumption that control and mastery are always bad is also a view that needs to be analyzed critically. There is substantial evidence that technological progress can reduce pollution<sup>6</sup> and that growth can even be beneficial for the environment, in some situations. One should not hold either a Leaver or Taker position dogmatically. Moral imagination is a tool for combating dogma and for recognizing that there are different ethical perspectives that can be applied to a problem.

One place to begin is the corporation. Government policies should be changed to encourage responsible corporate practices; such changes

would include making prices reflect environmental costs, taxes on natural resources, and allowing resource companies to form utilities. But even if such radical changes in our current system of taxation and regulation cannot be implemented, imaginative business leaders can push ahead toward sustainability. Ray Anderson, the CEO of Interface, learned from Hawken that “business and industry, the largest, wealthiest, most pervasive institution on earth, must take the lead in saving the earth from man-made collapse.”<sup>7</sup> One option is The Natural Step (TNS), a set of principles first proposed by Dr. Karl-Henrik Robèrt in 1989. The purpose of TNS is to develop and share a framework of scientifically based principles (as the first and second laws of thermodynamics) that can serve as a compass to guide society to a sustainable future. Today, TNS is used by companies like Interface, which became the first company in the United States to commit to TNS principles. TNS and William McDonough share a basic metaphor: the closed-loop cycle. McDonough refers to this in his principle “waste equals food,” where he calls for the design of closed-loop systems for eliminating the concept of waste. TNS refers to the closed-loop metaphor by using the first and second laws of thermodynamics.

In chapter 15 of this volume, McDonough describes DesignTex and Rohner Textil,<sup>8</sup> two companies directly influenced by McDonough’s principle, “waste equals food.” This case demonstrates that it is possible to articulate a philosophy for sustainable development and translate it into a schema that can be used to guide practical solutions. In the case of an environmentally intelligent fabric, the schema was William McDonough’s. Albin Kälin and Susan Lyons were prepared to understand and adopt this schema: in the course of developing the product, they had to recruit others into a network of suppliers, backers, and buyers. Part of this recruitment involved creating scripts for accomplishing sustainable goals; however, it was not sufficient to teach scripts—at least some of the other members of the network had to acquire the overall schema and exercise a great deal of moral imagination to “translate” that schema into a sustainable, economically viable, and beautiful product. In what follows we describe a second case that takes us into the developing world and concerns the principle, “work from current solar income.”

### **Solar Electric Light Fund**

The Solar Electric Light Fund (SELF) was founded to help provide rural areas in the developing world with photovoltaic power, an energy source that poses minimal environmental threats. Working first in areas of rural China and South Africa, SELF’s founder, Neville Williams, understood

that it was inevitable that electricity would come to such areas. The important question is not whether the developing world will be electrified, but in what manner. What will the consequences of such electrification be? Will environmental externalities be the norm? Williams notes that “the first person to show up with electricity wins!” Eager for power, the developing world jumps at any opportunity afforded to it. Yet, if the developing world follows the path of the West by extending grid extensions backed by fossil fuels, the environment will be headed toward catastrophe. Williams notes that “even if they [the developing world] could afford to run the wires out from power plants, which is not economically feasible—we would pollute the world beyond imagination.” (Currently, the developing world consumes approximately 1,000 million tons of oil equivalent per year, an amount threefold that of the energy of coal mined in Europe and twofold that in the United States.)

Williams set out to demonstrate that technological change, improved standards of living, and environmental respect are realizable and consistent goals, not merely utopian ideals. By using photovoltaic technology (PV), which harnesses the sun’s rays and converts them into energy, Williams was attempting to avoid the mistakes that the West encountered from its technological revolution: “If the Third World develops in the way we did,” declares Williams, “the world would be a wreck. The biggest threat to global warming and to greenhouse gases in the future is the unbridled development of the Third World because 70 to 80 percent of the people in developing countries don’t even have electricity.”

SELF’s method is simple. It first convinces individuals that photovoltaic power (power generated by solar cells) works by donating some units either to specific families or to local community centers. Then it provides them with financial mechanisms to enable the purchase of their own units—it is no easy task convincing a rural farmer to forgo approximately one-half of his \$500 annual income for a solar unit that he has never used before. Not only does SELF endeavor to electrify the developing world in an environmentally safe manner, it requires that individuals who receive that power pay for it themselves.

The typical photovoltaic system that SELF uses supplies between twenty and sixty watts peak of output per unit and is composed of a rechargeable battery for energy storage, a battery charge controller, lights, an outlet for low power-consuming appliances (e.g., television or radio), switches, interconnecting wires, and mounting hardware. Such units have proven to be more than adequate in meeting the needs of users, many of whom are experiencing power for the first time. Unlike coal, batteries, or kerosene, the Department of Energy’s National Renewable Energy Laboratory classifies PV as “one of the most benign forms of electricity generation available.” PV units pose only a small

environmental impact that comes from disposal of the batteries that store energy for the units. Otherwise, PV units provide safe, environmentally clean energy.

The PV units are the perfect matches for rural villagers. The units are relatively cheap, providing twenty years' worth of power for under \$500. Additionally, they require little skill in maintaining them and have very few mechanical problems. Of more importance is their relatively low threat to the environment.

SELF is not a charitable organization; they seek only paying customers. SELF promotes individual responsibility for two other important reasons: to both ensure that the units are properly cared for and to give individuals in the developing world a sense of pride that comes from ownership of goods. SELF's efforts have demonstrated that when individuals have to use their own scarce resources to pay for PV units, they use them efficiently. Individuals have too few resources to misuse or not care for such a precious investment. Maintenance of the unit is also performed with responsibility, as the owner takes pride in his investment, enjoying a sense of social prestige.

While SELF does not dole out technology, it does provide assistance. However, that assistance is not financial per se; rather, it comes in the form of helping individuals afford the technology by providing loans using concessionary financing. The process is quite simple but has proven to be remarkably successful. SELF makes an initial contribution to a "solar fund" (usually from a grant) to allow for capital used to provide loans to persons wishing to buy a PV unit. SELF collects a down payment from the purchaser and places the payment into a "solar bank." Monthly payments on the loans are also recycled into a solar bank. The solar bank is then used to lend funds to more individuals wishing to buy their own PV units. Similarly, their down payments and monthly installments are recycled, enabling even more families to receive units. The fund thus becomes revolving, using previous payments to finance future loans.<sup>9</sup>

SELF was not inspired directly by McDonough, but it does illustrate the principle "work from current solar income." It also illustrates how sustainability can be made to work in the developing world, which is now going through an enormous industrial revolution. Integral to SELF's philosophy is getting locals to own and take responsibility for the technology. In this case, they do not have to buy into the sustainable schema—they just have to want power. In the future, as photovoltaics spread into areas where there are alternatives for power, it will become important to persuade others to adopt a sustainable schema. Even more than in the DesignTex and Rohner case, costs will be crucial: most peo-

ple in the developing world cannot afford to pay a large premium for adopting sustainable ideas.

What remains to be seen is whether the fabric created by DesignTex and Rohner Textil will become an international model for the design of other, similar products, and whether SELF can help create larger private enterprises that will spread solar technology throughout rural areas of the developing world. If these and other efforts are successful, it will demonstrate that moral imagination can be translated into schemata and scripts that will make technology a factor in reducing environmental impacts instead of contributing to them.

### Notes

1. Daniel Quinn, *Ishmael: An Adventure of the Mind and Spirit* (New York: Bantam/Turner, 1992), 127.
2. Quinn, *Ishmael*, 249.
3. Patricia H. Werhane, "Moral Imagination and Management Decision-Making," *Business Ethics Quarterly*, Ruffin Lecture Series, 8 (1998), forthcoming.
4. Quinn, 80–81.
5. Paul Hawken, *The Ecology of Commerce* (New York: HarperCollins, 1993).
6. J. L. Bast, P. J. Hill, and R. C. Rue, *Eco-Sanity: A Common-Sense Guide to Environmentalism* (Lanham, MD: Madison Books, 1994).
7. R. C. Anderson, *The Journey from There to Here: The Eco-Odyssey of a CEO* (Big Sky, MT: U.S. Green Building Council, 1995).
8. For different perspectives on DesignTex and Rohner Textil see Matthew Mehalik, M. Gorman and P. Werhane, "DesignTex, Inc. (A) and (B)," UVA-E-0099, *Darden Case Bibliography* (Charlottesville, VA: Colgate-Darden School of Business, 1996); Matthew Mehalik, M. Gorman and P. Werhane, "Rohner Textil AG (A), (B), (C), (D), (E)," UVA-E-0107, *Darden Case Bibliography* (Charlottesville, VA: Colgate-Darden School of Business, 1997); and Michael E. Gorman, *Transforming Nature: Ethics, Invention and Discovery* (Boston: Kluwer Academic Publishers, 1998), 237–75.
9. Scott Sonenshein, Michael Gorman, and Patricia H. Werhane, "Solar Electric Light Fund," UVA-E-0112, *Darden Case Bibliography* (Charlottesville, VA: Colgate-Darden School of Business, 1997).