

Introduction

It takes me only five minutes to drive from our home in the city of Troy, New York, to open country of farms, rolling hills, and hardwood forests. The robust trees and lush growth I see on century-old abandoned potato farms indicate fertile soil and an abundance of life's blood—water. Such images make it seem more than reasonable to believe that we have resources and land to spread out on for a long time to come.

When I am hungry for a bagel, I go to Bruegger's Bagel shop downtown and have a selection of seventeen types of bagels with a choice of thirteen toppings. My wife, Mary, and I can see a movie at one of a dozen local theaters almost anytime. We can drive our car to visit friends and relatives or to go hiking in the nearby Adirondack, Catskill, or Green Mountains on a moment's notice.

Truly, life offers a cornucopia of endless choices for some of us in the industrialized world. Of course, living is a bit more crowded in places like New York City, London, or Tokyo, but there, too, choices abound. For the right price all imaginable types of entertainment, shops, and restaurants cater to every possible desire. This abundance tells part of me that "everything is just fine." Our culture gives us the message that a satisfying existence is only a question of money and, of course, of keeping the economy growing so that people have jobs and money to spend.

In spite of this good life, the availability of bagels with lots of toppings is not a particularly accurate predictor of the future. Notwithstanding the allure of the bountiful lifestyles we see, envisioning the

future requires we look at the health of the fundamental biological and physical processes that underlie our successes, rather than the successes themselves. How can we do this when it is so easy to be blinded, and then seduced, by that which surrounds us?

I have spent the better part of my adult life struggling to resolve this question. On the one hand, as a recipient of the abounding wealth provided in the industrialized world, it seems that hard work, responsible planning, and opportunism—along with a bit of luck—are the basic ingredients to attain the good life. On the other hand, the major trends in population growth, biological diversity loss, climate change, degradation of resources like soil and water, and the long-term consequences of these trends leave no doubt that our current “good life” is tenuous. It is tenuous because we in Western culture have championed our successes and projected them into the future with little consideration of the fact that we are part of an interdependent biological enterprise whose principles and basic character will ultimately dictate success, and failure, for all life.

The Greek myth of the craftsman and inventor Daedalus and his son, Icarus, is a warning. King Minos imprisoned Daedalus and Icarus on the island of Crete in the labyrinth that Daedalus had designed. With escape by land and sea blocked, Daedalus fashioned wings of feathers and wax for both of them. Daedalus warned his son not to fly too high because the sun would melt the wax holding the wings together. As they flew from Crete, Icarus was enchanted with his new power. Ignoring Daedalus’s advice and persistent warnings, Icarus flew higher and higher toward the hot sun. As he rose, the wax binding his wings melted, and Icarus fell to his death. The grieving Daedalus, whose advice had gone unheeded, flew on to Sicily.

Warnings are many and everywhere, yet we fly ever higher. The human population has increased from 1 billion to over 6 billion in the last two hundred years and is now globally 100 times denser than the population of any similar-sized animal in the history of Earth—truly an ecological anomaly. Humans use, directly or indirectly, about 25 percent of life’s global energy flow, thereby impoverishing the rest of

life. Ecosystems and species are being lost at a rate approaching that of the mass die off 65 million years ago when the dinosaurs went extinct. The carbon dioxide concentration in the atmosphere has increased by over 30 percent in the last century, and the decade of the 1990s was the hottest on record. Half of the world's forests have been cut down, while at least three-quarters of the major ocean fisheries are either fished out or in decline. Human activities use over half of the planet's readily available fresh water; many aquifers, such as the Ogallala aquifer under the Great Plains of the United States, are being mined with no possibility of recharge. Nitrogen and phosphorous have been the limiting nutrients in many ecosystems, but human activities in the last one hundred years have doubled the availability of these elements globally, causing chaotic perturbations of organismal relationships within numerous ecosystems. Human-created compounds like DDT, PCBs, dioxin, and furans are not only toxins but also hormone mimics that raise havoc in animal development and disrupt homeostasis, the balanced physiological state of a healthy organism. And these toxins are everywhere, even in distant and "pristine" places such as the Arctic. Rates of soil erosion in the United States are higher than they were during the dust bowl era of the 1930s, and the global loss of cropland to soil exhaustion, erosion, salinization, and waterlogging is 4 percent per decade. Well over half of the world's rangeland has been degraded. The stratospheric ozone layer continues to be reduced by chlorofluorocarbons and other human-generated compounds, resulting in increasing ultraviolet light at Earth's surface. And acid rain has increased substantially on all northern continents, threatening the health of forests and freshwater communities.

This list of environmental woes is familiar to anyone who reads the newspaper. Students of history know that cultural disintegration follows quickly on the heels of ecological collapse. Thus, despite our inability to predict with certainty specific outcomes, the broad patterns we see now do not bode well for global civilization. If the magnitude and character of the environmental changes experienced during the twentieth century are repeated in the twenty-first century, Earth's

support systems will be overwhelmed, thereby radically impoverishing life and human existence.

While history enables us to perceive the overall consequences of how various peoples have lived, science unveils the underlying bases for these consequences. We are far from possessing a complete knowledge of the causes of all phenomena, but we know enough to provide for human well-being and to preserve a healthy planet for future generations. The question is: will we?

I don't know the answer, but I do know that many people have dedicated their lives to the belief that they can participate in creating just, ecologically centered patterns of living that are compatible with human nature. Thinking ecologically is not a passing fad or the venue of a special interest group; rather it is an emerging belief that all may share and that benefits everyone. It is a perspective that places us in appropriate relation with the rest of life. The ecological revolution is the next big idea in Western culture and has been in the making for more than a century. Religious, political, and economic freedom have been the big ideas that liberated Western culture, propelling it to become the dominant civilizing force of the past several centuries, but the successes of these big ideas have met the limits imposed by biological principles on a finite planet.

A small group of insightful people has perceived the biological and physical constraints now bearing down on humanity, and they have acted on their perceptions. I tell the stories of eight of them, each of whom has taken on a major environmental challenge that appears impossible to address effectively. Each story provides a window onto a different aspect of our environmental conundrum, while together the views from all these windows form a full picture of our unsustainable ways of life. At the same time, these visionaries' own lives, like innumerable others scattered around the world, are an inspiration. These men and women enable the rest of us to believe that answers to the challenges we face can be found. The narratives of these visionaries collectively give us hope, and their stories suggest to us ways to create a brighter future for all life.