



Preface to *Ecological Literacy*

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How Nature Sustains the Web of Life

by **Fritjof Capra**

The term “sustainable” has recently been so overused, and so often misused, that it is important to state clearly how we understand it at the Center for Ecoliteracy, and how we use it in this book. A sustainable community is usually defined as “one that is able to satisfy its needs and aspirations without diminishing the chances of future generations.” This is an important moral exhortation. It reminds us of our responsibility to pass on to our children and grandchildren a world with as many opportunities as the ones we inherited. However, this definition does not tell us anything about how to build a sustainable community. What we need is an operational definition of ecological sustainability.

The key to such an operational definition, and the good news for anyone committed to sustainability, is the realization that we do not need to invent sustainable human communities from scratch. We can model them after nature’s ecosystems, which are sustainable communities of plants, animals, and microorganisms. Since the outstanding characteristic of the biosphere is its inherent ability to sustain life, a sustainable human community must be designed in such a manner that its ways of life, technologies, and social institutions honor, support, and cooperate with nature’s inherent ability to sustain life.

A first step in this endeavor must be to understand in some detail how nature sustains the web of life. How have ecosystems organized themselves to sustain the basic life processes over billions of years of evolution? How can they flourish with an abundance of energy and without waste? How does nature manufacture surfaces (in abalone shells) that are harder than our hardest high-tech ceramics, and silk threads (spun by spiders) that, ounce for ounce, are five times stronger than steel? And how are these miracle materials produced silently, at ambient temperatures, and without any toxic by-products?

Education for sustainable living—the subject of the present book—is a pedagogy that facilitates this understanding by teaching the basic principles of ecology, and with them a profound respect for living nature, through an experiential, participatory, and multidisciplinary approach.

The systemic understanding of life that is now emerging at the forefront of science is based on three fundamental insights: life's basic pattern of organization is the network; matter cycles continually through the web of life; all ecological cycles are sustained by the continual flow of energy from the sun. These three basic phenomena—the web of life, the cycles of nature, and the flow of energy—are exactly the phenomena that children experience, explore, and understand through direct experiences in the natural world.

Through these experiences, we also become aware of how we ourselves are part of the web of life, and over time the experience of ecology in nature gives us a sense of place. We become aware of how we are embedded in an ecosystem; in a landscape with a particular flora and fauna; in a particular social system and culture.

There are many ways to experience nature and learn from her wisdom. Among the projects supported by the Center for Ecoliteracy and described in this book are stream restoration, watershed exploration, art and poetry, lunch programs built around fresh food, partnerships between farms and schools, and urban environmental justice.

One “classroom” that we have found to be especially appropriate for children is the school garden, which reconnects children to the fundamentals of food—indeed, to the fundamentals of life—while integrating and enriching virtually every activity that takes place at a school. When school gardens are made part of the curriculum, for instance, we learn about food cycles and we integrate the natural food cycles into our cycles of planting, growing, harvesting, composting, and recycling. Through this practice, we also learn that the garden as a whole is embedded in larger systems that are again living networks with their own cycles. The food cycles intersect with these larger cycles—the water cycle, the cycle of the seasons, and so on—all of which are links in the planetary web of life.

In the garden, we learn that a fertile soil is a living soil containing billions of living organisms in every cubic centimeter. These soil bacteria carry out various chemical transformations that are essential to sustain life on Earth. Because of the basic nature of the living soil, we need to preserve the integrity of the great ecological cycles in our practice of gardening and agriculture. This principle is embodied in traditional farming methods, based on a profound respect for life, which are now being rediscovered in a worldwide renaissance of organic farming. The school garden is the ideal place to teach the merits of organic farming to children.

For children, most importantly, being in the garden is something magical. As one of our teachers put it, “one of the most exciting things about the garden is that we are creating a magical childhood place for children who would not have such a place otherwise, who would not be in touch with the Earth and the things that grow. You can teach all you want, but being out there, growing and cooking and eating, that's an ecology that touches their hearts and will remain important to them throughout their lives.”

Education for sustainable living fosters both an intellectual understanding of ecology and emotional bonds with nature that make it more likely that our children will grow into responsible citizens who truly care about sustaining life, and develop a passion for applying their ecological understanding to the fundamental redesign of our technologies and social institutions, so as to bridge the current gap between human design and the ecologically sustainable systems of nature.