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The Search for a Livable World

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CONTENTS

LIST OF FIGURES AND TABLES *xi*
SERIES EDITOR'S PREFACE by Roger S. Gottlieb *xiii*
ACKNOWLEDGMENTS *xvii*

INTRODUCTION: WHAT IS RADICAL ECOLOGY? **1**

Self in Society 1
Society in Self 4
Self Versus Society 6
Radical Ecology 7

I PROBLEMS

1 THE GLOBAL ECOLOGICAL CRISIS **17**

Air 18
Water 20
Soils 21
Biota 21
Population 24
Globalization 30
Roots of Globalization 32
Natural Capitalism 35
Steady-State Economics 36
Conclusion 37
Further Reading 38

2 SCIENCE AND WORLDVIEWS 41

The Organic Worldview 41
The Rise of Capitalism 43
Experimental Science 45
The Mechanistic Worldview 47
The Domination of Nature 53
Newtonian Science 54
Biotechnology 56
The Precautionary Principle 60
Conclusion 61
Further Reading 62

3 ENVIRONMENTAL ETHICS AND POLITICAL CONFLICT 63

Egocentric Ethics 64
Homocentric Ethics 72
Ecocentric Ethics 75
Multicultural Environmental Ethics 81
Partnership Ethics 83
Conclusion 87
Further Reading 87

II THOUGHT

4 DEEP ECOLOGY 91

Principles of Deep Ecology 92
Scientific Roots of Deep Ecology 99
Ecology and Gaia 104
Eastern Philosophy 107
Critiques of Deep Ecology 109
Reconstructive Science 111
Conclusion 113
Further Reading 114

5 SPIRITUAL ECOLOGY 117

The Council of All Beings 118
Nature Spirituality 120
The Old Religion 124
Native American Land Wisdom 127
Mainstream Religions 129
Ecological Creation Spirituality 131
Ecological Process Theology 133
World Religions and Ecology 135
Conclusion 136
Further Reading 137

6 SOCIAL ECOLOGY 139

Progressive Ecology: Marx Meets Muir 140
Marx and Engels on Ecology 141
Anarchist Social Ecology 148
Socialist Ecology 152
Dialectical Biology 157
Critiques of Social Ecology 159
Conclusion 160
Further Reading 161

III MOVEMENTS

7 GREEN POLITICS 165

The Group of Ten 166
The Anti-Toxics Movement 169
Environmental Justice 170
The Greens 176
North American Greens 178
Global Greens 180
Earth First! 181
Greenpeace 185
Direct Action 186
Conclusion 189
Further Reading 190

8 ECOFEMINISM **193**

The Emergence of Ecofeminism 194
Ecofeminist Ethics 195
Liberal Ecofeminism 200
Cultural Ecofeminism 201
Social Ecofeminism 205
Socialist Ecofeminism 208
Socialist Ecofeminism and Production 209
Socialist Ecofeminism and Reproduction 210
Women and Development 212
Ecofeminism and Globalization 218
Conclusion 220
Further Reading 221

9 ANTI-GLOBALIZATION AND SUSTAINABILITY **223**

The Anti-Globalization Movement 223
Sustainable Development 226
Sustainable Agriculture 231
Biological Control 235
Restoration Ecology 236
Bioregionalism 237
Indigenous Peoples and Sustainability 241
Conclusion 245
Further Reading 246

CONCLUSION: THE RADICAL ECOLOGY MOVEMENT **249**

Contributions of Radical Theorists 249
Contributions of Radical Activists 250

NOTES *255*
INDEX *275*

LIST OF FIGURES AND TABLES

Figure I.1	Conceptual Framework for Interpreting Ecological Revolutions	10
Figure 1.1	World Population: 1950–2050	25
Figure 1.2	World Population Growth Rate: 1950–2050	29
Table 3.1	Grounds for Environmental Ethics	66
Table 4.1	Arne Naess' Principles of Deep Ecology	92
Table 4.2	Arne Naess' Eight-Point Deep Ecology Platform	94
Table 4.3	Environmental Paradigms	96
Figure 4.1	Exponential and Logistic Growth Models	98
Figure 6.1	Marxist Framework of Social Analysis	147
Figure 6.2	Socialist Ecology	154
Table 7.1	Principles of Environmental Justice	174
Table 8.1	Feminism and the Environment	198
Table 9.1	Perspectives within the Environmental Sustainability Movement	227
Table 9.2	Where You At? A Bioregional Quiz	238
Table 9.3	The Bioregional Paradigm and the Industrial Scientific Paradigm	239

Plumwood, Val. *Feminism and the Mastery of Nature*. New York: Routledge, 1993.
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9

ANTI-GLOBALIZATION AND SUSTAINABILITY

Cancun, Mexico, September 13, 2003. One hundred women—young, old, indigenous, Mexican, African, American, and European—with bolt cutters begin dismantling security walls surrounding the World Trade Organization (WTO) talks. Koreans attach 4-inch thick ropes to the tops of the walls. Thousands of protesters join together to pull the walls down, coming face to face with thousands of riot control police. Suddenly, the Koreans on the front line turn their backs to the police. The protesters sit on the ground. Hundreds of flowers appear and a memorial service for Korean farmer Lee Kyung Hae begins. A short time later, the protesters receive word that the talks have collapsed. Third World Nations have joined together, refusing to follow the lead of the European Union and the United States.[1]

THE ANTI-GLOBALIZATION MOVEMENT

On September 10, 2003 the Fifth Ministerial of the WTO opened its negotiations to great fanfare in lavish surroundings. On that day Lee Kyung Hae, head of the Korean Federation of Advanced Farmers Association, climbed the fence at Kilometer Zero and took his life with a knife to his heart. He was wearing a sign: The WTO Kills Farmers. His sacrifice in the name of small farmers around the world galvanized WTO opponents. Here are his words:

I am 56 years old, a farmer from South Korea who has strived to solve our problems with the great hope in the ways to organize farmers' unions.... Since (massive importing) we small farmers have never been paid over our production costs.... Once I went to a house where a farmer abandoned his life by drinking a toxic chemical because of his uncontrollable debts. I could do nothing but listen to the howling of his wife....

Widely paved roads lead to large apartments, buildings, and factories in Korea. Those lands paved now were mostly rice paddies built by generations over thousands of years. They provided the daily food and materials in the past. Now the ecological and hydrological functions of paddies are even more crucial....

My warning goes out to all citizens that human beings are in an endangered situation. The uncontrolled multinational corporations and a small number of big WTO members are leading an undesirable globalization that is inhumane, environmentally degrading, farmer-killing, and undemocratic. It should be stopped immediately. Otherwise the false logic of neoliberalism will wipe out the diversity of global agriculture and be disastrous to all human beings.[2]

For WTO critics, Lee's plight and sacrifice symbolized the costs of corporate globalization on the land, lives, and labor of millions of ordinary people around the world, destroying their hopes for a better life. Lee had studied agricultural science at the university in Seoul, had created a model farm on his family's land, used it as a teaching college for live-in students, and was a leader in South Korea's largest farmers' organization. But when the government opened the market to imports and provided cheap loans, Lee went into debt losing his herds and land. Radicalized by the experience, he engaged in demonstrations, staged hunger strikes, and joined WTO protests in Europe. His final message of desperation in Cancun aroused millions.[3]

Created in 1995 following the Uruguay Round of the General Agreement on Tariffs and Trade (GATT), the WTO moved beyond promoting tariffs that benefit corporations to promoting free trade itself—the relatively free movement of capital, goods, and services across national boundaries. The WTO regulates corporate products, such as genetically modified seeds and software copyrights, rather than the processes by which they are produced, such as sweatshops and air polluting factories. It also protects the property rights of corporations, including intellectual property (such as patents on plants, drugs, and software), and establishes an international body for resolving trade disputes. It thus protects property at the cost of process, critics

argue. The labor, environmental, and consumer movements of the past several decades have all achieved gains by regulating the processes by which products are made. Fair wages, safe working-conditions, and environmental regulations have contributed to healthier foods and a cleaner environment. Placing dispute regulation in the hands of an unaccountable international body undercuts national environmental and labor regulations that are accountable to democratic processes. The market and democracy are thus at odds. This fundamental conflict between capitalism and democracy lies at the heart of the anti-globalization movement.[4]

Grassroots globalization targets corporate globalization. The anti-globalization movement that burst on the world stage with the "Battle of Seattle" has grown. Activist protests over international environmental issues and the global corporate power exhibited by the WTO, World Bank, and IMF have included:

- *Seattle, Washington, 1999.* Fifty thousand labor and environmental activists shut down WTO talks for one day. The talks later collapse.
- *Davos, Switzerland, 2000.* Thousands gather to protest World Economic Forum talks by corporate CEOs and world leaders.
- *Washington, DC, 2000.* Twenty thousand people engage in non-violent protests against the World Bank and IMF.
- *Melbourne, Australia, 2000.* Thousands stage a blockade of the World Economic Forum.
- *The Hague, Netherlands, 2000.* Five thousand demonstrators call for international action on Global Climate Change.
- *Europe, 2000–2001.* Protestors uproot genetically engineered crops in Europe, India, and Brazil.
- *Florence, Italy, 2002.* One half million people converge to protest the privatization of public services (education, health, water, energy, and transportation) at the first European Social Forum (ESF).
- *Cancun, Mexico, 2003.* Thousands protest WTO talks. Representatives of developing nations walk out of the meeting. The talks collapse.
- *Miami, Florida, 2003.* Thousands of people from all over the Americas pour into Miami to protest talks to establish a Free Trade Area of the Americas (FTAA), an expansion of the North American Free Trade Agreement (NAFTA). The talks fail to create the full agreement.[5]

Such actions exemplify a new, coordinated level of environmental activism. As environmental gains have been undercut by corporate globalization, grassroots environmental protests have also globalized. While some protest groups wish to make the WTO more transparent, democratic, and responsive to the concerns of labor and the environment, other groups wish to abolish the WTO altogether and to create a global solidarity movement to achieve social and environmental justice. Anti-globalization, however, is flip side of the coin of sustainable development and the creation of sustainable livelihoods. Like anti-globalization, achieving sustainability can take many pathways having different ultimate goals. Common to all, however, is a response to social injustice and the global ecological crisis through a variety of approaches.

SUSTAINABLE DEVELOPMENT

Mainstream sustainable development (to some people a contradiction in terms), as exemplified by the 1987 United Nations (Brundtland) report, *Our Common Future*, is homocentric and utilitarian in its approach.[6] The Sustainable Development (SD) movement is informed by both ecological science and deep ecological theory. Unlike green politics and ecofeminism, which act to resolve the contradiction between production and reproduction, the sustainability movement attempts to resolve the contradiction between production and ecology by making production ecologically sustainable. Like the green and ecofeminist movements, however, the SD movement is diverse, containing within it a spectrum of political approaches and ethical orientations (see Tables 9.1 and 3.1).

In 1983, the United Nations formed the World Commission on Environment and Development and charged it with preparing "a global agenda for change." Headed by Norwegian Prime Minister, Gro Harlem Brundtland, who had reached her position through years of political struggle as an environmental minister, it produced a major report, *Our Common Future,* in 1987. The commission, comprising world leaders from some twenty-two countries, sought wide input from organizations and individuals around the world. Its report discussed issues of population, food, species preservation, energy, industry, urbanization, and peace. It called for a new form of economic development that would sustain the resource base.

Table 9.1

Perspectives within the Environmental Sustainability Movement

Issues/Aspects	Ecological/Scientific Environmentalism	Social Ecology/Radical Environmentalism
a. View of nature and ecology	Strict preservation; ecocentrism Nature/wildlife protectionism	Natural resources as basis of production Ecology/nature is often linked to indigenous culture (or sometimes spiritual phenomena)
b. Theory and explanation of problems	Functionalist or technical analysis; science prevails; Causes often attributed to greed; poor education; overpopulation; inappropriate technology	Structural analysis Root causes are generally viewed as socio-political in nature Capital exploits nature
c. Ethics/ideology on human- nature	Biological determinism, "life-boat" ethics	Equality, social justice, non-exploitation
d. Political views	Liberal to conservative	Progressive/leftist to radical
e. View of people and population	Perceived superiority of educated scientists; Tendency to believe in Malthusian theory	Emphasis on inequitable distribution of wealth and exploitation of poor Anti-Malthusian views
f. Main topics of concern	Habitat, wilderness, biodiversity and animal species extinction, population, carrying capacity	Human rights and environment, environmental justice, toxic waste, worker health, food consumption/ inequities
g. Patterns of participation	Scientists, private sector, and state policy-makers decide on problem solving	Grassroots mobilization Empowerment of communities and disenfranchised
h. View of energy problems/issues	Insufficiency and poor technology and strict limits	Capitalist relations and corporate control create disparities and aggravate dependency on oil
i. Strategies to overcome "environmental" problems	Consciousness-raising; Nature Preservation/Protection Agency regulations; technocracy Appropriate technology Education, training Expand birth control Scientists provide fixes	Structural changes; break down corporate control that leads to natural and human degradation Social and community organizing, labor movements; political action; social equity Feminist and/or indigenous values; justice in resource distribution; human rights

Source: Lori Ann Thrupp, "The Political Economy of the Sustainable Development Crusade: From Elite Protectionism to Social Justice," presented at the 1990 Annual Meeting of the Association of American Geographers, Toronto, April, 1990, printed by permission of the author, revised/edited in 2004 by author.

"Humanity has the ability to make development sustainable," declared the Brundtland Report, "to ensure that it meets the needs of the present without compromising the ability of future generations to meet their needs.... Sustainable development requires meeting the basic needs of all and extending to all the opportunity to fulfill their aspirations for a better life." To do this, population and growth must harmonize with the potentials and constraints of the ecosystem. Sustainable development will be the result of difficult choices, policies, institutions, and political will.[7]

The commission argued that beneficial economic growth will depend on two conditions: (1) the sustainability of the ecosystems involved in exchange, and (2) equity and an end to dominance in the basis for exchange. Sustainable growth in developing countries has been prevented by the debt burdens of Third World countries, whose trade profits must service debt rather than development, and by international projects that have brought short term profits while causing environmental destruction. World Bank and International Development Association projects should support long-term social goals and environmentally sound projects. Development assistance should be directed toward small projects with grassroots cooperation such as: sustainable-regenerative—rather than chemically-dependent—agriculture, reforestation, fuelwood development, watershed protection, soil conservation, agroforestry, rehabilitation of irrigation projects, small-scale agriculture, and low-cost sanitation measures.

Along with its recommendations in such areas as population, food, and energy, the commission made a number of specific recommendations on how to achieve sustainable economic growth. International commodity trade agreements could be improved in several crucial respects:

1. Larger sums for compensatory financing to even out economic shocks would help to mitigate overproduction of commodities where production is close to the limits of environmental sustainability.
2. More assistance should be given to diversification from single-crop production and for promoting resource regeneration and conservation.
3. More of the environmental and resource costs associated with production should be reflected in the prices of goods produced in developing countries.

4. When transnational corporations introduce new technologies, plants, processes, or joint ventures into developing countries, they should adhere to codes that deal explicitly with the objectives of environmentally sustainable development.
5. Mission-oriented cooperative research ventures in developing countries should be focused on technologies that apply to dry land agriculture, tropical forestry, pollution control, and low-cost housing.[8]

While the Brundtland report has received much praise for its comprehensive examination of global environmental problems, its emphasis on a growth-oriented industrial model of development has been criticized by some developing countries. For example, a group of non-governmental organizations (NGOs) in Paraguay concluded that it emphasized the scientific knowledge of the West over indigenous forms of knowledge and did not appreciate the fact that research funded by the industrialized nations and multinational corporations would tend to favor their own interests rather than those of developing peoples. It proposed instead that development proposals should be judged according to three criteria: (1) improvement of people's lives in both quantitative and qualitative terms, (2) protection of the ecological and cultural heritage of a region, (3) helping the growth of citizens' organizations. Rather than aiming for a higher level of economic well-being for all, the world's rich should settle for smaller incomes so that the material conditions of the poor could improve.

A group of Latin American representatives who met in Mexico in October 1987 to evaluate the report agreed that the Brundtland Commission preferred the cultural and economic perspectives of the industrialized nations. They recommended that new models of industrial development be considered and that the United Nations Environmental Program give priority to regional programs.[9]

The Canadian Green Web newsletter went even further. In criticizing the growth-oriented perspective of the report, it argued that a true sustainable development would call for "a massive global transfer of wealth and the cancellation of Third-World debts.... Environmental protection also means an internal redistribution of productive wealth.... We live in a global ecological commons, and the solutions to the rapidly developing disaster we all face have to be global in nature." It criticized the report's human-centered perspective

that advocated conscious choices to save or eliminate particular species. The report's "resourcist" worldview implied that "other species do not have intrinsic value in their own right, but are considered 'resources' for human use."[10]

Lester Brown, founder of the Worldwatch Institute in Washington, D.C., envisions the sustainable society of 2030. If sustainability means "the capacity to satisfy current needs without jeopardizing the prospects of future generations," this entails: "protecting the ozone layer, stabilizing climate, conserving soils, stabilizing forests and population." By 2030, either sustainability will have been achieved or society will be in a process of continuing disintegration. Existing technologies and energy efficiency are Brown's keys to stabilizing environmental deterioration. Energy will be based on a solar-powered economy in which neither fossil fuels nor nuclear power play a major role—solar panels will be on every rooftop for water heating, and electricity will be supplied by solar power, hydropower, geothermal power, and wind energy. All products will be extraordinarily energy efficient; mass transit and bicycles will be the major transportation methods; agroforestry and small-scale farms will conserve soil; waste reduction and recycling will apply to *all* materials and will replace garbage disposal and land fills. New solar-based and recycling jobs will supersede fossil-fuel based jobs. Global population will have stabilized by 2030 at about eight billion. Values will be based less on material goods and more on fulfillment of human potentials. A transition to sustainability would require a major mobilization of policies, funding, and human energy, but the current global awareness makes that achievement possible.[11]

Both development-oriented and technological approaches to sustainability have been criticized. Economist Lori Ann Thrupp, sees the sustainability movement as split into two main camps (Table 9.1). The dominant group includes northern hemisphere scientists and protectionists who are primarily white, male, upper-middle class, educated professionals and who are employed by well-endowed mainstream environmental organizations, development agencies, banks, private consulting-firms, and universities. These groups are strongly oriented toward wilderness and species preservation, technological solutions, and population control. They tend to devalue social problems such as poverty, lack of housing, garbage and toxic waste disposal in poor areas and Third World countries, and worker health issues. The second group comprises First and Third World grassroots groups, indigenous peoples' movements, anti-establishment greens, urban minority groups, and

a few academics, all of whom stress social justice in land, health, education, and quality of life.

To both sides sustainable development (SD) has taken on the characteristics of a crusade, with SD replacing and encompassing 1970s nomenclatures such as appropriate technology, ecodevelopment, integrative rural development, and soft energy paths. Thrupp criticizes the mainstream SD movement as proposing well-intentioned, but over-simplified panaceas such as Third World park preserves, debt-for-nature swaps, population controls, and resettlement of peoples from fragile to less fragile ecozones, rather than addressing northern hemisphere causes such as exploitative investments, over-consumption, trickle-down fund and technology transfers, and lack of law enforcement. Instead she proposes progressive strategies that hear and empower poor majorities, grassroots groups, and indigenous peoples and support diversity in agroecosystems, economic products, and institutions. These should not be idealized or romanticized, but be directly supported through funds and material resources. At the top, centralized institutions can halt the fetishism of economic growth based on conventional economic indicators and GNP, introduce qualitative dimensions into development models, stop subsidizing resource-exploiting sectors, and enforce long-term conservation investments.[12]

Rather than sustainable development, which reinforces dominant approaches to development, women's environmental groups, and many other NGOs, have substituted the term "sustainable livelihood." Sustainable livelihood is a people's oriented approach that emphasizes the fulfillment of basic needs, health, employment, and old-age security, the elimination of poverty, and women's control over their own bodies, methods of contraception, and resources.[13] Such approaches are exemplified by localized sustainable agriculture, bioregionalism, and indigenous approaches to sustainability.

SUSTAINABLE AGRICULTURE

Don Jose Jesus Mendoza leans on his spade and surveys his plot of land. "People thought I was crazy, " he muses, "when they saw me mixing weeds with manure, water, and dirt. But when they saw I doubled my harvest last year, then they wanted to know how I did it." Mendoza is a sixty-year-old Nicaraguan farmer, carpenter, and poet who is part of an active *Campesino*

to *Campesino* (farmers teaching farmers) movement in Central America. An inventive, enthusiastic teacher, he tells his fellow farmers, "*Compañeros*, this course begins with two words and ends with two words: 'Organic Matter' and 'Organic Matter.'"[14]

Sustainable agriculture is oriented to converting ecologically destructive production into environmentally sound production. Most organic farmers, ecological restorationists, and bioregionalists see humans as one part of an ecological web and implicitly employ an ecocentric land ethic.

Sustainable agriculture, as practiced by Nicaragua's Don Jose Mendoza, is an ecologically based form of farm management. Soil is a living thing. Feeding the soil, rather than feeding the plant alone, builds long-lasting fertility. Using biological processes maintains and improves the soil, whereas pesticides and herbicides degrade it. Synthetic fertilizers may serve the fertilizer industry rather than the soil. Excessive use of chemical inputs contaminates ground water. Instead, intensive management by the farmer working in harmony with nature optimizes yields. Compost, crop rotations, diversification, polycultures, cover crops, and careful selection of varieties lead to better tasting, nutritious products. Crops are selected for local markets, rather than for resistance to shipping damage, and for local climate and soil conditions, rather than for standardized green revolution seeds and technologies.

Before using sustainable agriculture, Nicaraguan peasants had employed the age-old method of slash and burn. They cleared land with fire and planted crops for two or three years in the nutrient rich soil. But as more people needed more land there was not enough to let the land lie fallow for the ten to twenty years needed to recover its fertility. They farmed the same soil without fertilizing or protecting it and dreamed of owning large amounts of land. "Now I know how to work the land," says Mendoza, "I'm just fine with my seven *manzanas* (approximately 12 acres)."

Mendoza's course is part of a Central American program in which farmers teach each other new sustainable methods of agriculture. Local agencies send their best campesino promoters and agricultural technicians to Campesino Development Centers to share knowledge and practices with each other. They then help to teach the techniques to their comrades back home. Because the campesino to campesino program is low-cost, and labor-intensive, it works well in agrarian communities where farmers have access to small plots of land.[15]

Sustainable agriculture is posited in opposition to industrialized agriculture, which is based on optimizing purchased inputs to produce outputs at the least cost. The "evolution from labor intensive to energy and capital intensive farming," says Miguel Altieri of the University of California at Berkeley, "was not influenced by rational decisions based on ecological considerations, but mainly by the low cost of energy inputs." In contrast, the ecological approach is based on principles that conserve the renewable resource base and reduce the need for external technological inputs. Scientists argue that sustainability can be achieved through ecological methods that incorporate the wisdom of traditional peoples.

According to Gordon Douglass of Pomona College in southern California, the principles of sustainable agriculture include:

1. The optimization of farm output over a much longer time period than is usual in industrial farming activities.
2. The promotion and maintenance of diversified agroecosystems whose living components perform complementary functions.
3. The building up of soil fertility with organic matter and the protection of nutrients from leaching.
4. The promotion of continuous cover and the extensive use of legume-based rotations, cover crops, and green manures.
5. The limiting of imported fertilizer applications and pesticide uses.[16]

In achieving sustainability, a systems approach is needed. A particular cover crop may add nitrogen and keep down dust and insects, but encourage nematodes in the soil. By retaining water, it may lower the temperature of an orchard or field and add to frost risk. Thus each change in the transition from high chemical inputs to natural methods needs to be evaluated in the context of the whole agroecosystem, rather than through a reductionist single component approach.[17]

Sustainable agriculture can be further extended to integrate the human community with the agroecosystem. "This holistic approach to farming communities," Douglass points out, "draws attention to interactions not only within [and] among farming families and other human member[s] of rural communities, but also between non-human components such as crops with crops, crops with animals, soil conditions and fertility with insects, and disease

in crops and livestock." Sustainable agriculture is thus based on an ecocentric ethic of management in which the land is considered as a whole, its human components being only one element. Policy decisions must be based on considerations of what is best for the soil, vegetation, and animals (including humans) on the farm as well as outside sources of water, air, and energy. As a result, humans and the land can be sustained together.[18]

Permaculture, as envisioned by Australians David Holmgren and Bill Mollison, carries sustainability a step further. This method of agriculture imitates ecosystem evolution toward climax states through perennial plant and animal crop interactions. In contrast to monocultural agriculture, permaculture uses several stories of trees, shrubs, vines, and perennial ground crops to absorb more light and nutrients, increasing the total yield. Plants and animals coexist in separate niches that reduce competition and promote symbiosis among species. Complexity not only helps to ward off catastrophes, but increases the variety of foods produced. External energy and physical labor decrease as perennials mature, so that energy needs are provided from within the system. Permaculture is highly adaptable and is applicable to a spectrum of habitats from tropical rainforests in Malaysia to arid deserts in Africa.[19]

In Salina, Kansas, Wes Jackson devotes his Land Institute to research and experimentation on perennial grains. Horrified by the loss of soil in the most productive lands of the United States, he sees in perennials the hope of saving soil, energy, and time in the fields. The goal is to find and breed perennial grasses that can produce high yields each year, and be planted in polycultures that reduce insects, pathogens, and weeds, and renew soil fertility, especially nitrogen and carbon. Researchers have planted four thousand wild relatives of annual grains in order to isolate hardy high yielding varieties that can be developed through further cross breeding. While the research is still experimental, a few promising grasses and legumes have emerged that could lead to sustainable ecosystem-based agriculture.[20]

Sustainable agriculture is a growing worldwide movement. It is supported by international research and funding efforts, through university research and cooperative extension programs, and by local farmers. Yet sustainable agriculture must also be integrated with farmworker rights that promote social justice and protection from exposure to pesticides and herbicides.

BIOLOGICAL CONTROL

The biological control of insects is a related example of sustainable management. Using ecological guidelines, natural insect enemies are introduced into the ecosystem to control population levels of pests. Uncultivated land surrounding fields harbors birds and pest enemies. Flowers along roadsides and fences are especially attractive to beneficial insects. Diversity in crops and surroundings and arrangements of beneficial plants mimic natural conditions. This makes crops less visible to insect enemies and acts as a barrier to the spread of pests.

The technique was pioneered in California in 1888. The cottony-cushion scale, introduced from Australia, was destroying citrus groves in southern California. Albert Koebele traveled to Australia and brought back the vedalia, a lady beetle that fed on the scale. One thousand beetles soon cleared acres of orange groves, saving the industry. This ecological strategy was vindicated in the 1940s when DDT killed so many of the vedalia that a resurgence of the scale occurred.[21]

The assumptions that underlie biological control and its related strategy, integrated pest management (IPM), are ecologically grounded. They contrast with chemical control, which assumes that humans are above nature and can legitimately use pesticides to obliterate insects for human benefit. "Biological control, together with plant resistance," writes IPM founder Carl Huffaker of the University of California, "are the core around which pest control in crops and forests should be built." Ecology provides the model for insect control. According to biologist Ray Smith, "we must understand Nature's methods of regulating populations and maximize their application."[22]

Biological control and IPM assume that humans are only one part of an interrelated ecological complex and that insects and humans must coexist. Insect populations will not be totally obliterated, but their numbers can be controlled so that humans may harvest crops. Reservoirs of insect pests, however, will continue to exist. This ecological interdependence implies that all organic and inorganic parts of the ecosystem have intrinsic value. Biological control is based therefore on an ecocentric ethic. This contrasts with the homocentric ethic of chemical-control techniques to manage insects. Chemical control assumes that humans are the most important parts of a

complex social and natural world and can manipulate that world for the good of society.[23]

RESTORATION ECOLOGY

A parking lot in California teams with blue-jeaned, tee-shirted volunteers. Shovels, buckets, trash containers, and day packs are scattered on the ground as they listen to the instructions of an ecologist. They have come together for a weekend outing to help restore a parkland newly purchased by the state. They enrich the soil with redwood chips and remove debris and the remnants of an old lumber operation. Guided by ecological principles, they plant young trees, ferns, huckleberries, and ground cover. Their plantings reintroduce the native species that will promote the ecological conditions under which insect, mammal, and bird communities can regenerate themselves. A new whole is created, helping to recreate the major elements of the presettlement ecosystem.[24]

Restoration is the process of restoring human-disturbed ecosystems to earlier pristine forms. It is the active reconstruction of pristine ecosystems (such as prairies, grasslands, rivers, and lakes). By studying and mimicking natural patterns, the wisdom inherent in evolution can be reestablished.

Using ecological guidelines, species are planted according to their original distributions in close proximity to each other. Over time a process occurs in which synergistic relationships are reestablished among soils, plants, insect pollinators, and animals to recreate the prairie ecosystem. Like a doctor healing a patient or a helmsperson steering a boat, restoration is a process of synthesis in which humans put nonhuman nature back together again. It contrasts with the mechanistic model in which nature is like a clock that can be taken apart through analysis and repaired through external intervention. Restoration presents the dilemma of what historical period marks the benchmark for the process, but it nonetheless offers the hope of living symbiotically within the whole.[25]

But restoration need not apply just to parks and natural areas. Forests, deserts, wetlands, and even cities can be rehabilitated to be ecologically compatible with human uses. Biological principles are used to select fruits and nuts that can be harvested from rainforests allowing economic sustainability. Wetlands can be reconstructed by engineers and replanted by biologists.

Indigenous trees and succulents can restore human-created deserts to human-sustainable biosystems. Even cities can become ecocities by uncovering underground creeks and rehabilitating shorelines, marshes, and springs. Urban gardening in backyards and on rooftops, greenbelt areas for wildlife, and forest/meadow and water/land border zones can be created.

BIOREGIONALISM

Bioregionalists are local caretakers. Dedicated to the concept of living-in-place, they espouse "watershed consciousness." They urge that everyone know the source of their local water—where it comes from and were it goes, the hills and valleys into which it flows, and the creeks that lead it to rivers. How many people, rural and urban alike, know the type of soil on which their home is built, the names of even a few native plants and birds, and the mating seasons of local wild animals? How many know the way of life of the tribal peoples that preceded them, how they used the land, and what they gave back to it? Yet passing the bioregional quiz (Table 9.2) with a respectable score, is only the beginning of bioregional consciousness.

"Bioregions," writes Peter Berg (to whom the term is credited), "are geographic areas having common characteristics of soil, watersheds, climate, and native plants and animals that exist within the whole planetary biosphere as unique and intrinsic contributive parts." But beyond the geographical terrain is a terrain of consciousness—ideas that have developed over time about how to live in a given place. Bioregionalism differs from a regional politics of place in its emphasis on natural systems. It includes all the interdependent forms and processes of life, along with humans and human consciousness. "Bioregionalism," observes Jim Dodge, "is simply biological realism; in natural systems we find the physical truth of our being, the real obvious stuff like the need for oxygen as well as the more subtle need for moonlight, and perhaps other truths beyond those."[26]

The roots of bioregionalism go back to the early ecological concept of the biome system of classification, developed by Frederic Clements and Victor Shelford in the 1930s. Biomes were natural habitats such as grasslands, deserts, rainforests, and coniferous forests shaped by climate. Particular soils, vegetation, and animal life developed in each climatic region in accordance with rainfall, temperature, and weather patterns. In the 1970s, Raymond Dasmann,

Table 9.2

Where You At? A Bioregional Quiz

What follows is a self-scoring test on basic environmental perception of place. Scoring is done on the honor system, so if you fudge, cheat, or elude, you also get an idea of where you're at. The quiz is culture-bound, favoring those people who live in the country over city dwellers, and scores can be adjusted accordingly. Most of the questions, however, are of such a basic nature that undue allowances are not necessary.

1. Trace the water you drink from precipitation to tap.
2. How many days till the moon is full? (Slack of two days allowed.)
3. What soil series are you standing on?
4. What was the total rainfall in your area last year (July—June)? (Slack: 1" for every 20".)
5. When was the last time a fire burned in your area?
6. What were the primary subsistence techniques of the culture that lived in your area before you?
7. Name five native edible plants in your region and their season(s) of availability?
8. From what direction do winter storms generally come in your region?
9. Where does your garbage go?
10. How long is the growing season where you live?
11. On what day of the year are the shadows the shortest where you live?
12. When do the deer rut in your region, and when are the young born?
13. Name five grasses in your area. Are any of them native?
14. Name five resident and five migratory birds in your area.
15. What is the land-use history of where you live?
16. What primary event/process influenced the land form where you live? (Bonus special: what's the evidence?
17. What species have become extinct in your area?
18. What are the major plant associations in your region?
19. From where you're reading this, point north.
20. What spring wildflower is consistently among the first to bloom where you live?

Scoring

0–3	You have your head in a hole.
4–7	It's hard to be in two places at once when you're not anywhere at all.
8–12	A fairly firm grasp of the obvious.
13–16	You're paying attention.
17–19	You know where you're at.
20	You not only know where you're at, you know where it's at.

Source: Leonard Charles, Jim Dodge, Lynn Milliman, and Victoria Stockley. *Co-Evolution Quarterly*, Winter 1991, (subsequently known as the *Whole Earth Review*).

one of the founders of the bioregional movement, helped to redraw the global map in terms of its biotic provinces for the purposes of conservation of plants and animals. He then went on to distinguish between ecosystem people, who for millennia lived within and were dependent on the local ecosystem for survival, and modern biosphere people, who exploit the entire globe for trade in products, breaking down watershed and ecosystem constraints.[27]

Bioregionalists advocate a new ecological politics of place. It starts with "bundles" of materials describing a bioregion and its history—maps, native species lists, ecological studies, histories, stories, poems, and celebrations of the inhabitants' ways of life. From its roots in the Planet Drum Foundation in San Francisco in the 1970s, bioregionalism has grown to some 70–100 local North American groups whose addresses are their own bioregions. Annual gatherings in different watersheds around the country bring people together to develop and share strategies for change.

Knowing the land, learning the lore, developing the potential, and liberating the self are the tasks of the would-be bioregionalist as seen by Kirkpatrick Sale. Using the human and natural resources of a place entails ecological constraints. The local community is the best body to keep development within the guidelines of human–nature reciprocity. Through this participatory process, one draws closer to other members of the human community. The values inherent in the industrial-scientific paradigm and the bioregional paradigm stand in marked contrast (Table 9.3). The industrial model is neither timely nor sane, but outdated and irrelevant. The bioregional project is neither romantic, utopian, nor nostalgic, but realistic. The problems of moving from the former to the latter are both ecological and political. The changes will be

Table 9.3

The Bioregional Paradigm and the Industrial Scientific Paradigm

	Bioregional paradigm	Industrial scientific paradigm
Scale	Region Community	State Nation/World
Economy	Conservation Stability Self-sufficiency Cooperation	Exploitation Change/Progress World Economy Competition
Polity	Decentralization Complementarity Diversity	Centralization Hierarchy Uniformity
Society	Symbiosis Evolution Division	Polarization Growth/Violence Monoculture

Source: Kirkpatrick Sale, *Dwellers in the Land: The Bioregional Vision*, Philadelphia, PA: New Society Publishers, 1991, 50, reprinted by permission.

gradual, rather than sudden and revolutionary. They will depend on education, organization, and activism. But if carefully planned, introduced, and implemented, they will be steady, continuous, and truly transformative.[28]

Living within the resources of the local bioregion is one platform in the new politics of place. Using local water and energy sources, bioregional communities attempt to grow their own food and distribute it locally. Dovetailing with the restoration movement, they reconstruct rivers and creeks to support fish runs and clean up and restock lakes. Green city projects attempt to establish reciprocal relations between downstream consumer-dependent cities and upstream rural-producing farmlands and forests. City meetings bring together garbage collectors, industrial scrap companies, and recycling centers with park planners, neighborhood associations, and poets.[29]

The truly bioregional city, Sale argues, must be truly ecological. "The city would have to be as fully rooted in the earth, as close to the natural processes, as the farm and the village." This means growing food in community gardens and farmbelts, producing energy from solar collectors and wind generators, recycling solid and organic wastes, planting trees for producing oxygen and absorbing noise and dust, using mass transit systems, bicycles, and feet, and constructing buildings and homes out of local materials. It means returning organic composts and wastes to farms for reuse and bringing farm products back to the city for sale.[30]

But bioregionalism has its skeptics. Focusing on the neighborhood may preclude seeing the global context; emphasizing the native may obliterate the significance of the introduced, including humans. Ignoring the aquaducts that bring in water and the sewers that carry it away, the air systems that link one city's wastes to another's illnesses, and the imported plants and animals from all parts of the globe oversimplifies the real-world life-equation. "The truth is," lampoons critic Walter Truett Anderson, "that any concept of a 'natural' ecosystem is only a snapshot of how things were at some arbitrarily-chosen point of time. And if you do begin to pay attention to the artificial and new and exotic aspects of your environment, then you have opened yourself up to the contemplation of a world that is much, much more complex than the bioregionalists would have us believe. This is the real world, the world we live in now and are going to have to understand and deal with wisely." Despite such criticism, bioregionalism offers a program of change toward a sustainable way of life. As such it shares many of the goals of indigenous peoples.[31]

INDIGENOUS PEOPLES AND SUSTAINABILITY

Native peoples around the world are drawing on the concept of sustainable management as they attempt to preserve their ways of life. The indigenous Maori of New Zealand are both defending their land from environmental assaults and moving toward a sustainable form of land use. Their movement draws meaning from their traditional origin story of the earth mother and the forest:

> In the beginning there was the Nothingness. Then the Sky Father was joined by the Earth Mother and they had many children who in the darkness between their parents, craved for light....Tane-mahuta god of the forests [said], 'It is better to tear them apart so that we may live with our Mother the Earth and be a stranger to our Father the Sky'.... So with sorrow and with tears he tore them apart, and with tears and sorrow heard their lamentations that he, their son, was destroying their great love. But Tane-mahuta was growth, and none could stay him until he had thrust the sky his Father far above; and there he stayed. And to this day, when you see the mists rise from the valleys, you will know that the Earth Mother still sighs for her lost love, while in the still morning his tears fall as the gentle dew.[32]

Today the Maori traditions are represented by the Maori Secretariat, in the Ministry for the Environment. The name of their movement, *Maruwhenua*, comes from the traditional Maori land ethic of human responsibility for shielding the land. The name reflects the saying, "People perish, but the land endures."

The Maori approach to sustainability begins with the following observations:

> Maori people have been denied the authority to influence decisions affecting them regarding resource use. Environmental degradation has seen Maori men and women often the worst affected....The western industrialized approach has brought some good things to the world, but now a number of people are saying that the benefits have not been evaluated in terms of what's been lost... our heritage, language, and relationship between us and the land....To address these global issues by starting at home, we need a strong contribution from Maori...one that reflects the cultural and spiritual values of the [land].[33]

In the rainforests of Sarawak, Malaysia, Penan gatherer-hunters are engaged in a desperate struggle to retain their way of life. Over five million

hectares of rainforest have been licensed for logging for export. Rainforest products are used for paper bags, toilet paper, shipping crates, and furniture by Northern Hemisphere consumers, who are unaware that each throwaway carton and each roll of toilet paper represents a violation of human and environmental rights in the Southern Hemisphere. Intensive logging in the Penan lands began during the 1980s, when logging activities shifted from peninsular Malaysia to the states of Sarawak and Sabah, formerly part of the British colony of Borneo, which joined the Malaysian federation in 1963. Timber concessions were given to politicians and ex-civil servants who became wealthy beneficiaries of the political economy of timber.

Occupying the upper tributaries of the Big Baram River (which flows into the South China Sea near the Sarawak town of Miri), the 9,000 Penan, traditionally nomadic gatherer-hunters are now mainly semi-settled shifting cultivators. Penan society is gentle and egalitarian. Women and men are equal participants in production, using the forest for sago palm, fruits, bearded pig, deer, monkey, fish, and rattan, all maintained for sustainable use. But logging has disrupted patterns of stewardship, destroying sago, fruit, and rattan patches, food sources for pig and monkey, and fishing rivers. Eroded hillsides, muddied rivers, compacted soil, and barren clearings form huge scars on the land.

After several years of failure to retain their lands through negotiation, the Penan gathered together in 1987 to stop the bulldozers and loggers from further advance. Men, breast-feeding mothers, and children walked across the mountains for days to join in creating roadblocks across logging routes. The blockades, which continued at regular intervals through the 1990s and 2000s and were supported internationally by rainforest action groups, disrupted logging for years. Most Penan, unable to support their families with traditional means of subsistence and despairing of government assistance are now cultivating tapioca and eating pond fish to supplement their diets. As the market economy encroaches on their subsistence economy, the Penan people are being transformed from independent communities to wage laborers in the logging industry and objects of curiosity for the tourist industry in Sarawak's Mulu National Park.

The Penan are supported by rainforest action groups who are trying to pass legislation in First World countries such as Japan, Australia, and the United States to ban imports of rainforest timbers from nonsustainable,

primary, and unlogged tropical forests. Second, rainforest groups have urged consumers not to purchase furniture, construction materials, chopsticks, and other products made of rainforest timbers such as *meranti*, or Pacific maple. Third, they have asked for support for rainforest people so that they may establish sustainable, environmentally and economically sound industries and new farming methods based on permaculture and sustainable agriculture. Fourth, a United Nations Biosphere Reserve has been proposed for the area. Clearly, development in regions such as Sarawak will continue. Whether that development is environmentally sustainable and respectful of the rights and wishes of people such as the Penan is an issue that requires new forms of cooperation and negotiation among indigenous peoples, industries, governments, and environmentalists.[34]

Similarly, Amazonian forest peoples are trying to show that development can respect the way of life of traditional peoples without destroying nature. Until his murder in December 1988 by rainforest clearcutters, Chico Mendes had worked to organize Amazonian rubber tappers. Taught to read newspapers and listen to the radio in the depths of the forest, Mendes led a struggle for social justice. In 1976 he and other rubber tappers marched into the forest and joined hands to stop crews from clearing the rubber trees. Women and children joined in the stand-off. "On at least four occasions we were arrested and forced to lie on the ground with them beating on us." he said. "They threw our bodies, covered in blood, into a truck. We got to the police station and we were a hundred people. They didn't have enough room to keep us there so in the end they had to let us go free." By 1989 the tappers estimated that they had saved some three million acres of rubber trees through the stand-off movement.[35]

Realizing the long-term limitations of the stand-off movement, the tappers began to press for a new legal status for the lands as "extractive reserves." The lands would be given use rights and collective long term leases by the state. Having obtained legal status, people could then organize schools, health clinics, and rubber processing stations. The movement for sustainable management was joined by native Indians who had historically been enemies of the tappers.

The Indigenous People's Union, founded in 1980, began lobbying for Amazonian Indian rights. They demanded that they participate in any development decisions on their lands. They put forward ways to sustain their lands

and ways of life. They protested the construction of two dams that would destroy the livelihoods of the Indians along with those of fishers and forest products extractors.

Together, the Alliance of Forest Peoples and the National Rubber Tappers' Council called for a role in designating areas of rubber and Brazil nut trees for development without destruction. They argued that the tropical forests could be used as extractive reserves for commercial products without cutting them down or degrading them. The reserves would be under the direct control of the users. Beyond this they called for resettlement of their native lands, an end to rent payments, and the rehabilitation of degraded lands.

By 1992, Brazil had established nine Amazonian reserves covering over two million hectares and an additional twenty-one state reserves in Rondônia, with long-term extractive rights for rubber tappers and Indians. As areas in which logging is prohibited, they are being used for extracting nuts, roots, oils, fruits, and pigments. Most of the products are marketed to companies in North America and Europe which use the nuts and oils in rainforest products. The products include new consumer items such as assai-flavored sherbet, cupuacu yogurt, babacu oil, patchouli-root soap, copaiba shampoo, priprioca perfume, and Amazonian latex condoms. The areas are estimated to be twice as profitable per hectare as cattle ranching and the soils will not degrade from clear-cutting.[36]

In Hawaii, the ancient volcanic goddess, Madame Pele is being defended by native Hawaiians who hope to preserve the United States' last tropical rainforest. Pele is active nature, both giver and taker of land. Her violent eruptions expand the island; her lava flows take back the soil from settlers. Hawaiian priests and priestesses gave her fruit and flowers. Hawaiians still offer her the first fruits of the *'ohelo* berries that grow on high lava fields. In the Polynesian origin story, the earth mother and sky father were united. From them the gods were born—the male gods of the ocean, of humans, and of agriculture and healing, and the female goddesses of fertility, of women's works and of humans. People and all living things were related. Mana, the energy of the world, descended from the godly ancestry to human families. Pele, who seduced her older sister's husband, was driven out of her homeland and crossed the sea to Hawaii, guided by her older brother in the form of a great shark. She went down the Hawaiian chain until she finally made her home in Kilauea volcano on the big island of Hawaii.[37]

In 1990, the Puna Geothermal Venture began drilling holes on the Big Island's Kiluea volcano for a geothermal power plant, enabling the Hawaiian Electric Company to harness steam to produce electricity for Hawaii's future development. Native Hawaiians who formed the Pele Defense Fund argued that the drilling violated their goddess Pele's sacred sanctuary. "Drilling is...a sacrilege, no different than trashing a Christian cathedral," said Palikapu Dedman, president of the Pele Defense Fund. The roads, power plants, and transmission line swaths, they claim, will ultimately destroy the delicate ecology of one of the last large tropical rainforests in the United States. Moreover, residents of the nearby Puna district argue that the hydrogen sulfide has made them ill with dizziness, vomiting, diarrhea, and sleeplessness. Geothermal advocates, on the other hand, point to the greater harm of oil burning power plants and the need to free the Hawaiian islands of dependence on foreign oil.[38]

As an alternative to using the land for geothermal development, the Rainforest Action Network proposes energy conservation. They argue that this is a cheaper method with far less impact on the land. If the state became an active participant in the efficiency revolution, it would be five times cheaper than the proposed geothermal plant and would save twice as much electricity. Improved lighting using compact fluorescent lamps, solar water heaters, more efficient refrigerators, and water-saving shower heads could save 68 percent of the energy used by private residences. Imported oil is refined primarily for use in jet airplanes (42 percent) and automobiles (20 percent), rather than for electricity (34 percent). Establishing strong building codes for future development will prevent further energy leaks in an already leaky energy tub. Energy efficiency combined with solar and wind energy would be adequate to meet the state's future energy needs.[39]

CONCLUSION

The anti-globalization and sustainability movements encompass mainstream and grassroots environmental organizations, scientists and political activists, and First and Third World concerns and peoples. Anti-globalization pushes for change and accountability of global economic organizations, while sustainability presses for on the ground ecological wisdom and social transformation. The anti-globalization movement seeks a more equitable economic system,

while the sustainability movement has the potential for transforming the conditions of production to make them more ecologically viable. Do these movements present viable options for meaningful transormation? The answer will depend in large part on the extent to which policies, labor, and funding are redirected toward progressive economic and politial prioities.

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6

SOCIAL ECOLOGY

Picture a group of eight or ten intense, younger middle-aged men and women dressed indifferently in jeans and slogan-bearing T-shirts, sitting around a cracked Formica™ table under harsh fluorescent light....The remains of corned-beef-on-rye sandwiches are shoved to one side. Political posters dot the dingy walls. The group is discussing the best strategy to use to mobilize dock workers to support a solidarity strike—to refuse to unload grapes, melons, and cherries grown in Pinochet's Chile. Through the grimy window panes, the sullen outlines of warehouses and factories are visible in the San Francisco fog.

Now picture a group—about the same size—of men and women—about the same age—gathered around a Warm Morning woodburning stove. Under the turned-up sleeves of their Pendleton shirts protrude the men's waffle-weave long underwear....The women are wearing brightly patterned blouses and long skirts or sweaters and cross-country ski knickers....A potluck supper of brown rice, lentil soup, and steamed vegetables simmers on the cook stove. They are discussing what crops to plant in their cooperative fields and. . . how best to present the economic advantages of organic agriculture....Through the tilted panes of the passive solar herbarium, the snow-covered rolling Wisconsin fields sparkle in the mid-afternoon February sun.[1]