

REGENERATIVE FOOD SYSTEMS

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Summary

Since the 1920s, a number of approaches have emerged in the search for alternatives to the fundamental weaknesses of industrial agriculture. By the 1980s, the term sustainable agriculture had become the umbrella label covering these different approaches. As the idea of sustainability was then applied to development, its larger societal dimensions also came into agricultural debates. As a concept and approach, regenerative food system has emphasized a nested hierarchy of agriculture, food systems, and societies operating within the larger framework of “socionatural systems.” The latter is an interdisciplinary approach that integrates natural, social, and applied sciences with the humanities. Examining different scale systems that operate over different time horizons and within different socionatural contexts greatly aids the identification of societal and food system uncertainties. After reviewing major climatic, resource, and socio-technological structures and uncertainties, the various considerations needed to move societies towards more sustainable and regenerative food systems are outlined. Local and regional food systems are a key part of this. Important processes, principles, and

strategies for rebuilding and regenerating local and regional food systems are reviewed. These include visioning processes and contextual assessments of key structures, institutions, trends, needs, goals, and priorities. Citizens, policy makers, and managers all need to be engaged in this so that appropriate and effective policies and management practices can be crafted and implemented. Without these, a non-catastrophic transition from industrial to post fossil fuel societies will be more difficult, if not impossible.

1. Development of the Concept of Regenerative Food Systems

1.1. The Search for Alternatives to Unsustainable Industrial Agriculture

The concept of regenerative food systems emerged from the search for alternatives to the fundamental weaknesses of industrial agriculture. From the 1920s to the 1980s, a number of different schools of thought and practice developed, each with its own focus and concepts. Originally, advocates of these various alternative approaches to agriculture primarily argued the virtues of their particular approach. Some, like organic farming, stressed specific farming and composting practices aimed at creating and maintaining healthy soils. Others, like biodynamic agriculture and agroecology stressed systems approaches that derived from philosophical and/or ecological theories. Their primary focus was on agriculture. Although each has its own name and focus, all have seen industrial agriculture as fundamentally flawed and unsustainable over the longer term. With the rapid increase of agricultural industrialization after World War II, these alternative schools increasingly stressed this. They also worked hard to broaden the adoption of their alternative approaches. Given the diversity of these approaches, the default umbrella term for those seeking basic changes in agriculture became “sustainable agriculture.”

Organic farming and biodynamic agriculture were the earliest and most widespread examples of practice-based alternative approaches, although each has philosophical roots as well. The development of organic farming (sometimes called ecological or biological) drew heavily on books by two British agronomists. F. H. King's *Farmers of Forty Centuries*, which emphasized farming systems, came out in 1927. Sir Albert Howard's *An Agricultural Testament*, with its emphasis on the importance of humus and composting, was published in 1940. Biodynamic agriculture drew on scientist and philosopher Rudolf Steiner's holistic analysis of plant population interactions.

Up through the 1980s, agricultural establishments in the United States and Europe dismissed these approaches as being unscientific and/or retrograde. For their part, organic and biodynamic farmers and advocates were highly critical of the promoters of modern industrial agriculture because of the environmental and social disruptions they attributed to it. Long-term scientific studies of organic farming funded by Robert Rodale, one of its leading U.S. proponents and publisher of *Organic Gardening*, gave organic farming and its advocates increased credibility. The U.S. farm crises of the mid 1980s also increased interest in alternatives among farmers and the USDA.

In the environmental and post-oil-embargo era of the 1970s, new critiques and approaches emerged as part of broader debates about the cultural roots industrial society. There is a vast literature here, but little of it focuses on agriculture. There are

two notable exceptions. One, from a Western cultural perspective, is Wendell Berry, whose 1977 book *The Unsettling of America: Culture and Agriculture*, argues that the crisis of U.S. agriculture is a crisis of culture - an industrial culture where exploitation and specialization dominate. The other, from an Asian cultural perspective, is Masanobu Fukuoka, whose 1978 book, *One Straw Revolution*, describes his search for ways to simultaneously heal the land and purify the human spirit. Both men - who had professional lives before returning to farming - reject industrial agriculture and seek sustainable farming alternatives based in their local environments and in revitalized cultural traditions.

In terms of more agricultural and food systems oriented approaches, alternatives emerged that drew heavily on ecological approaches and systems theories as well as concerns about the many social problems created in the Third World (as it was then known) by the export of industrial agriculture there through the Green Revolution. These were agroecology, permaculture, and regenerative agriculture.

Agroecology - as the name suggests - seeks to combine ecology with agriculture. It began with dual concerns in the Third World: the loss of biodiversity from the expansion of industrial farming, ranching, and forestry and the consequent search for more ecologically-based alternatives. The assumption was that farming systems that operate in harmony with their ecosystems will be more sustainable. Some researchers, like Miguel Altieri, sought to understand how traditional and indigenous Mexican and Central American agricultural systems achieved sustainability through social, economic, and technological adaptations to the local environment. Others, like Steven Gliessman and Gordon Conway sought to research and analyze ways to understand and promote new forms of ecologically harmonious farming as part of the expanding interest in sustainable development. Agroecology continues to have ecology as its basis and a focus on farm, village level, and bioregional systems. Over time, it has sought to include broader and more interdisciplinary concerns, such as analyses of how land tenure, market and trade structures, and social inequalities interact with farming systems.

Permaculture - originally developed in Australia by Bill Mollison - combines ecosystems-based models with landscape design processes to develop farm-level systems that integrate household systems with multistory and genetically diverse tree, shrub, and ground crops, as well as aquacultural systems. Rather than seeking to extract the ecological and social wisdom of long-existing systems as agroecology does, it seeks to design and create new ecosystems-based, and contextually adapted household and farm-size integrated production and recycling systems. Systematic assessments of the local topography, water and air resources, native flora, fauna, and local economic conditions are a basic part of the design process.

1.2. From Regenerative Agriculture to Regenerative Food Systems.

Regenerative agriculture was named in 1983 by Robert Rodale. He then publicly championed it and later established a "Regeneration Project" which encouraged both farmers and communities to pursue regenerative approaches. Others developed the concept's theoretical dimensions by adding a broadened concept of hierarchy theory as found in ecology to include social and technological systems. Regenerative approaches

seek to understand how to reinstate and regenerate over the long term not only local cropping systems and farm families, but also rural communities, landscapes, and regions. In the early 1990s, this approach became a major element of the emerging concept of food systems - which include not only agricultural production, but food processing, preservation, distribution, access, preparation, use, preservation, composting or re-use, and disposal.

Agroecology and regenerative food systems have also sought to examine the larger setting of agriculture and food systems, including the analysis of how trade, aid, and technology have generated disparities between rich and poor countries, and the role that governments and corporate influence play in this. The search for alternatives in agriculture and the development of food systems approaches did not occur in a vacuum. While they preceded the larger social debate about the unsustainability of industrial society, they also interacted with it - both in practical and theoretical terms. The publication of the 1972 report, *The Limits to Growth*, set off an ongoing debate about the long-term viability of industrial society. As in agriculture, the term *sustainable* emerged as the default label for those seeking a new direction and reforms. And as with other new concepts and movements that pointed to real problems - like *environment*, *women's issues*, and *appropriate technology* - its popularization led to its title being adopted, and often coopted, by national and international agencies - typically in very diluted forms.

In international development circles, *sustainable development* took on great prominence as a result of its use as a key concept in the World Commission on Environment and Development report, *Our Common Future*. This 1987 report widely broadcast the term. The next year, the World Bank's Consultative Group on International Agricultural Research (CGIAR) followed with a report, published by the UN Food and Agriculture Organization on "sustainable agriculture." These international imprimaturs have given *sustainability* the status of an officially recognized concept, thus opening a major debate regarding its meaning and implications. The basic questions relating to sustainability are: What is to be sustained? How is it to be sustained? For how long? At what cost? Who benefits and which natural systems benefit and/or lose? While generally there has been a broadening and deepening of answers by all parties, alternative agriculturalists' answer to the first question is that the entire complex set of systems that are involved in agriculture need to be sustained - the farm fields, soils, aquifers, habitats, peasant and farm families and their rural villages, local indigenous knowledge, crop and animal germplasm, and the local and regional biodiversity and cultural heritages that are at their base. Governmental and international agencies often use similar language, but in practice are hobbled conceptually and operationally by functionally specialized organizational patterns - e.g., specialized departments and agencies. Also, the rich countries and large multinational corporations often place much higher priority on international trade and economic issues to the cost and detriment of programs seeking more sustainable food and agricultural systems.

1.3. Regenerative Approaches and Analysis

As a term, "regenerative" has several advantages over "sustainable." It points more directly to the need to regenerate both natural and social systems over time. It suggests

the need for systems thinking at multiple levels and over multiple decades. It requires a shift from a narrow focus on production systems to an examination of complete food and fiber systems. It calls for the inclusion of issues of social justice, intergenerational equity, and inter-species balance. It is for these reasons that those working on regenerative approaches have chosen to use human evolutionary theories and a socionatural framework to describe “the grand transitions” and to analyze the changing role of food systems over the millennia. The socionatural framework can also be used to analyze multi-century processes.

In general terms, regenerative food systems are best understood in terms of *process and context*, wherein their capacity to co-adapt in specific natural and cultural environments enables them to provide human and other populations with their basic food and fiber needs over multiple generations.

To better capture processes of co-adaptation in specific contexts, the approach of contextual analysis has been developed to complement the broader analyses of the socionatural framework. It seeks to describe at each relevant level of analysis the real-world distribution of phenomena in space and time. This is in contrast to universal/generalization models which do not conceptually sort out phenomena by levels and time frames/horizons and generally aggregate and average data. Such aggregation and averaging typically masks crucial contextual variables, patterns, and processes. Contextual analysis involves several important dimensions: 1) sensitivity to the time-frames and scales employed; 2) use of systems approaches; 3) use of different levels of analysis; and 4) inclusion of externalities and the informal sectors of society.

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Biographical Sketch

Kenneth A. Dahlberg is Professor Emeritus of Political Science and Environmental Studies at Western Michigan University. He received his B.A. from Northwestern University, his M.A. from Stanford University, and his Ph.D. from the University of Colorado. He has written or edited four books and a special journal issue, *The Restructuring of Food Systems*. Special issue of *Agriculture and Human Values* (1999); *New Directions for Agriculture and Agricultural Research* (1986); *Natural Resources and People: Conceptual Issues in Interdisciplinary Research* (1986); *Environment and the Global Arena* (1985); and *Beyond the Green Revolution: The Ecology and Politics of Global Agricultural Development* (1979); plus many articles. Besides his ongoing critiques of the green revolution and industrial agriculture, his research and writings have focused on the development of alternatives, particularly regenerative agriculture and food systems. He has also written on natural resources, the conservation of biological and cultural diversity, appropriate technologies, and democratic institutions. In recent years, his work has emphasized food systems - at all levels from the local to the international. He has also done extensive research on local food policy councils in the US, Canada, and Australia.

He was elected a Fellow of the American Association for the Advancement of Science in 1982. He served as Chair of the Advisory Committee for the Office of Technology Assessment report, *Technologies to Maintain Biological Diversity* (1987). He was an elected Member of the Commission on Environmental Strategy and Planning of IUCN (the International Union for the Conservation of Nature and Natural Resources), 1986-96. He helped found the Agriculture, Food, and Human Values Society and served as President for the 1999-2000 term.