CHAPTER 1

Garden Farming

New and old at the same time, garden farming has historical antecedents and contemporary examples all over the world. At its simplest it is no more than the efforts of people to provide for their own needs from their immediate surroundings, work that connects us directly to our Neolithic ancestors. Dressed up in the patriotic colors of Victory Gardens during World War II, garden farming grew 40% of America's produce.[1] Small farms are still the pattern in Japan, Korea, Taiwan, Poland, Slovenia and many other developed Asian and central European countries.

In the Soviet Union, where the state-run collective farms were notoriously inefficient and food shops were often empty or offered limited supplies, the Russian people learned to supplement their diet from produce grown at their *dachas*, small summer cottages just beyond the urban fringe. When the Soviet Union collapsed in 1991, these peri-urban garden farms were a lifeline that prevented mass hunger. People simply planted extra rows of potatoes and cabbages, and when they couldn't get fuel to drive out to the country, took the bus or rode a bike. Private allotments surrounding cottages today grow 50% of the country's vegetables, fruits and dairy on 7% of the land.[2]

These and other examples throughout this *Permaculture Handbook* will show that much of garden farming is about meeting household needs — what in permaculture is called self-reliance — a term that I distinguish from the more commonly used phrase, self-sufficiency. *Self-sufficiency* implies not needing any supplies from outside. Many 19th and early 20th century farms in Europe and the US were self-sufficient, buying only salt, tea or yard goods and other luxuries. *Self-reliance*, on the other hand, is about taking responsibility for one's own household needs as part of a resilient local economy. Trade and barter will be important components of a self-reliant economy. In the US, Amish communities produce a great deal of their own food, clothing, tools and household goods locally, but they are also involved in a great deal of trade. Where there is no local source for some items, they are purchased by mail order from other Amish producers or even "English" neighbors or commercial concerns.

Building Self-Reliance

Self-reliance is an aim of the permaculture design system. At the household and community level it increases security and independence, thus *resilience*, or the ability to absorb shocks and disturbances and to recover quickly from them. Self-reliance reduces dependence on distant sources and suppliers and thus reduces the energy intensity of food and other essentials, shrinking our ecological footprint. By meeting most of our own needs, we minimize the damage and dependency caused by global trade, more easily regulate our consumption and conserve resources. We also bolster our own capacity for survival and prosperity as well as our ability to aid others around us. Self-reliance is not about isolation, nor is it a dogma; rather it describes a rational hierarchy of independence and interdependence from which we can make ethical decisions about what we consume…and what we produce.

My own permaculture teacher, Lea Harrison, told a story that has remained with me about self-reliance. When visting the flat lowlands of Nepal in the 1980s to teach permaculture, she saw — in an area called the Terai — many small farms with neat fields of millet, mustard, wheat and lentils, but there were few trees. As her hosts showed her around one village, she spotted a woodland across the valley which seemed to be of a very different character from the farms surrounding it, so she asked if they could take a look. It turned out to be the home compound of Mrs. Rai, a woman who ran a school for neighborhood children. Welcomed as a foreign dignitary, Lea was shown the grounds, which featured edible and economic species of every type; the children were pursuing their studies out-of-doors, under the tree canopy. Lea asked her Nepali host how she had come to this place, and why it was so different from all the farms around it. Mrs. Rai laughed and replied, "Well, you see, if I needed it, I planted it. And this is what happened," explaining that her method was to grow everything that she and her students would use for food, fiber and medicine. The result was a food forest of the sort that Lea had been teaching her own students how to plant and cultivate. As we have learned time and again, no one has a monopoly on good ideas.

We each begin our journey toward self-reliance with the most essential elements and those we can supply most easily, and we continue replacing things we consume with things we produce (or eliminating consumption of needless items altogether), until it ceases to be economically sensible or practical to do so. For example, our southern Indiana household is unlikely anytime soon to grow tea or lemons, or to forge our own wrenches or strike our own nails. We haven't turned off the water from the public system, but we use very little of it and should the need arise, we could supply our own for many months (or indefinitely) from roofwater caught and stored in tanks. We continue to shop in local markets, but we have food put by and we grow a lot of our own. Each year we increase the amount we grow and the amount we store, as well as the amount and variety of things we sell or trade. We are well started on the path to self-reliance, and I hope this book will encourage and empower you to set out on that path — and to make great strides along it.

Self-reliance is an important aim for any society that hopes to endure the challenges of the coming decades. When I visited Slovenia in 2005, I saw a small nation of small communities. The capital Ljubljana has the population size of Madison, Wisconsin, or Windsor, Ontario, while the whole nation is about as big as New Hampshire. It has a temperate climate somewhat similar to that of eastern Pennsylvania, stretching between a narrow coastline on the Adriatic Sea and the Julian Alps. Throughout the countryside and in small towns, almost every house seemed to have a garden. Up the hills behind the houses were rows of grapevines, which my friends

told me enabled most households to make their own wine.

Slovenia is a prosperous nation of two million people, a former Yugoslav republic that has become a member of the European Union. When we visited, the roads, rail lines and other infrastructure of the country were in good shape, and the markets and shops seemed to be full of a wide variety of goods. There were many cars in use, most of them fairly new or in good condition. The food we ate was of good quality and served to us in generous amounts. The people looked trim and healthy. There was little evidence of environmental contamination or pollution. By any standard, Slovenians enjoy a good quality of life, but the nation also demonstrates a high level of self-reliance at the household level.

Feeding the Cities

The idea that our towns and cities could feed themselves with a little help from the suburbs and the countryside nearby may strike most observers as preposterous, but, as this book attempts to show, the present state of agriculture and energy supply is so unstable that food security for town and country alike depends on our willingness to undertake self-reliance. There is no shortage of examples to inspire us. Hong Kong, one of the most densely settled territories on Earth, still managed during 2010 to grow a considerable amount of the poultry required by its inhabitants on land within the tiny enclave.[3] Havana today, as a result of changes in post-Soviet Cuban agriculture, has over 35,000 urban gardens producing about half the fresh food consumed in that city of two million, plus a market selling local produce in each one of its 2,000 neighborhoods.[4]

Tenochtitlan, a pre-Columbian city of 200,000 on the site of modern Mexico City, was substantially fed from intensively cultivated water gardens nearby. Historically, food from these gardens traveled to market by canoe.[5] Remnants of the gardens, called

Land is meticulously cared for in Slovenia, and domestic self-reliance is high: only single trees or small patches of forest are cut. Stacks of lumber can be seen curing throughout the countryside. Drying hay is roofed, and the flowers of elder and other perennials are harvested for home use and market. [Credit: Peter Bane]

Canals in the shallow lakes provide boat access to *chinampas* in Xochimilco, south of Mexico City. [Credit: Scott Horton]

chinampas, persist today and are grown on raised beds in the shallow lakes.

New York at the turn of the 19th century was fed by a complex and productive garden agriculture on Long Island and from small farms up the Hudson Valley and in New Jersey. The term *truck farming* comes from the practice of trucking produce from farm to city markets, a matter of a few hours travel by horse-drawn wagon.[6]

Nor is the practice of self-reliance remote from us in either time or space. Today in North America, the fastest growing forms of agriculture are small peri-urban farms of less than 20 acres growing vegetables for market.[7] Much of this movement is driven by a demand for local and organic food stemming from concerns about personal and ecosystem health. And quite a bit of it is off the official radar. North Americans are learning to be discerning food consumers, and farmers markets are burgeoning.[8] This also means that many more people are choosing to start farming than at anytime since World War II.[9]

A New Sustenance

When the history of the 20th century is written two hundred years from now, one of the things I imagine writers will recognize as contributing the most to human evolution is the emergence of what is loosely termed *organic agriculture*. By that I do not mean the codification of certain practices under sanction of the US Department of Agriculture, but a broad movement that preceded and gave rise to that codification and which is likely to outlast that august but deeply corrupt agency. Rather, I point to forms of farming and gardening that generate soil fertility as well as crops for market and consumption — farming that can regenerate landscapes, ecosystems and even whole societies. Humans have practiced agriculture for 10,000 years without understanding why it works, and as a consequence most long-term agricultural practices and the civilizations built on them have collapsed from one or another failure to maintain ecological balance. Again and again, soils became exhausted, salted from irriga-

Faster than almost any other civilization, North Americans have destroyed their soils by plowing, poisoning and salting with fertilizer and irrigation. [Credit: erjkprunczyk via Flickr]

tion, eroded because of plowing; the climate changed because too many trees had been cut or the population increased beyond the ability of farmers to provide food.

To understand the profound importance of regenerative agriculture, the kind of farming that builds natural capital, we need to see it not as a fringe or retrograde activity — "unable to feed the world," as conventional agronomists would claim — but as a heroic and undersung achievement in the face of overwhelming institutional neglect, cultural dissipation, economic monopolies and dire ecological challenges from chemical, nuclear and genetic pollution, climate change and an eroding resource base in the land and in society. Tracing the threads of progressive agriculture and ecology against the backdrop of the rise of a consolidated industrial food system will, I hope, show how the former carry a true populist mandate which we must now champion to reclaim the common wealth of the earth itself and to secure a future for ourselves and our descendants.

Oil Turns the Tables

The end of World War II brought about a transformation of the US economy. The enormous productive capacities of wartime industry were shifted to provide housing, transportation, consumer goods and new machinery for agriculture. Chemical factories which had been turning out munitions and synthetics for the war switched to fertilizer and pesticide production, while the government through agricultural extension, centered at the research universities and bolstered by a triumphant chemical science, promoted the model of industrial farming. Forty-acres-and-a-mule was now out, and every John Doe farmer was urged to buy a John Deere tractor, a combine and a sprayer. The logic of Fordism gained the upper hand, and by the 1970s, Nixon's Secretary of Agriculture, Earl Butz, a brilliant but benighted agronomist from Purdue University, was announcing to American farmers the new national policy, "Get big or get out."[10]

Food growing shifted from regional economies to a national system of increasingly specialized producers and processors. The Interstate and Defense Highway System, initiated under Eisenhower in 1957 as a make-work guarantee against another depression, enabled trucking to displace rail delivery of many cargoes, but especially it enabled large California and Florida growers to exploit their long-season advantage to capture most of the nation's market for fruits and vegetables, leaving a hollowed-out agriculture through the Corn Belt hanging onto beef, hogs, corn, soybeans and some small grains and hay as the basis of a shrinking farm sector. First poultry processing, and later pork and beef production, were consolidated by a few large meat-packers, while the profitability of small, mixed farming was eviscerated. More and more farms went under the auctioneer's call, their impoverished and depressed former proprietors remaindered to fill low-end jobs in a booming industrial economy.

Even as local truck and dairy farms disappeared under suburban sprawl, organic gardening began to gain traction through the publishing and research efforts of J. I. Rodale and the stimulus of best-selling Connecticut author Ruth Stout, whose books on mulch gardening promoted a lazy approach.[11] Get spoiled hay from the farm down the road, she wrote: pile it on your garden and plant into it, and you'll never have to weed. Millions were inspired to try, even if the scientific basis was still obscure. Stout's work was important too in being an early urban critique of agricultural dogma, and an important call for differentiation between farming — with all its connotations of peasant drudgery — and gardening, which was blithe, sophisticated and smart. Stout was a *bon vivant* who enjoyed the company of New York's literati. She wanted her garden to flourish, but she didn't want it to rule her life. Home gardening and organic

Small-scale seed exchanges and wider networks are helping to maintain crop diversity in the face of corporate seed control and monoculture farming. [Credit: Soren Holt]

methods got a further boost when Rachel Carson exposed the dangers of pesticides, vaunted by industry and government then and since as the guarantor of abundant food surpluses.[12]

The bigger-is-better thread of this story continued to unfold in ways that are increasingly familiar and deeply tragic. Industrial agriculture, striving for ever-greater economies of scale, grew hand-in-hand with food processing industries that consolidated many thousands of smaller producers into gigantic and increasingly multinational conglomerates. The Green Revolution, funded by the Rockefeller and Ford Foundations, exported the DNA of industrial agriculture to India, Mexico, the Philippines and Indonesia, major centers of both traditional farming and agricultural diversity.[13] Environmental contamination continued to increase, much of it driven by agrochemicals, pharmaceuticals and the industrial processing and packaging of food for transport. These industries, whose roots run through the death camps of Nazi Germany and the laboratories of the nuclear and munitions complex of war and empire, eventually consolidated into a global oligopoly enclosing food, medicine and seeds, and vernacularly called Big Pharma. By 1970, the components of this cartel had already begun lobbying for patent protection for plant breeding to ensure the commercial viability of hybrid seeds; subsequently they would argue and connive for genetic manipulation of plants and animals to increase their control over the world's food supply.[14]

The popular response to this rising tide of industrial pollution and social sabotage erupted in 1970 with the environmental movement, but early legislative victories in the establishment of the Environmental Protection Agency, and the adoption of the Clean Water Act and Endangered Species Act among other landmark laws, had mixed results. US rivers and streams got cleaner, but coal-powered plants continued to evade smokestack regulation, so acid rain and mercury pollution spread further. The Reagan-Thatcher worldwide reaction against the progressive measures of the 1970s rolled out a program of corporate theft and upward concentration of wealth in the name of deregulation, "free" trade and other abominations of Milton Friedman's economic theology. With the installation of George W. Bush as Decider-in-Chief in the United States, a concerted rollback of progressive laws (such as the Bill of Rights) and a subverting of environmental regulation and oversight became the agenda of the national government in the US. Since 2008 we have seen the crash of this conceit, if not yet a cleanup of the wreckage or a thorough prosecution of the perpetrators.

It must be pointed out that none of this economic concentration would have been possible without a massive application of petroleum-based energy. Like fish in the sea, North Americans have swum in the ocean of

cheap hydrocarbons for so long that we have almost no frame of reference for thinking about a world without them. Not everyone, however, has been so blinkered.

Another Way

Mostly outside the lens of the mass media, the twinned thread of a resurgent popular sovereignty has gathered resources, asserting that another world is not only possible but necessary. Contesting complex and multi-dimensional issues in obscure global forums, the political activism of smallholders has been little understood by North Americans living in the cocoon of empire. As patent protection, intellectual property rights in plant breeding and later genetic engineering began to enclose the world's common heritage of crop diversity for private profit, seed-saving groups and networks sprang up around the world.

Indian nuclear physicist Vandana Shiva was an early and incisive voice against the destructive enclosure of agriculture. Her 1991 address to the International Permaculture Conference in Nepal was an important element in my own education about the politics of diversity.[15]

By the 1970s, the leisure pursuits of gardening, combined with concerns about food safety and a cultural wave of back-to-the-land reaction against industrial excess and soulless work led to an explosion of small-scale experiments in organic farming. *Mother Earth News*, *Harrowsmith Magazine* and *Acres U.S.A.* emerged as voices for this nascent eco-agriculture and chroniclers of the growth of renewable energies and other cultural and technical innovations supporting a new agrarianism. *Mother* and *Harrowsmith* aimed at new homesteaders, while *Acres* publisher Charles Walters marketed his papers to those trying to make a living in farming. *Acres* led the call for rural regeneration with a populist critique of big government agriculture policy and wed this to alternative scientific views of health taken in a variety of slices: through soils, pasture plants, animal nutrition and of course into food, the human body and an environmental paradigm of medicine.[16]

Poet and Kentucky farmer Wendell Berry became a prophet of this new movement with the publication of his 1976 book, *The Unsettling of America.*[17] It was a call for a renewal of the agrarian roots of the country. Agronomist and Methodist lay preacher Wes Jackson entered the fray in 1980 with his collection of essays, *New Roots for Agriculture.* Jackson has continued and deepened his researches into a new ecological basis for agriculture at the Land Institute, arguably now Kansas's greatest cultural offering to the world.[18]

Farmers of the upper Midwest, reacting to the agricultural depression and dispossession of the early 1980s, banded together as the National Farmer's Organization to protest agricultural policy, but soon turned these political impulses into economic traction by founding the Coulee Region Organic Producers and Packers, a cooperative which has grown into the largest marketer of organic farm produce in the nation, doing business as "Organic Valley."™ Other marketing innovations helped the increasing number of small organic farmers who were experiencing productive success find outlets for their crops. In 1981, Robyn Van En of Indian Line Farm in Massachusetts helped pioneer in North America the Community Supported Agriculture (CSA) model of subscription farming that had originated in Switzerland and Japan in the late 1970s.[19] By linking food consumers directly with food producers, CSA reduced costs, spread the considerable risk of farming widely, helped small and new farmers get into business and flourish and built local economic connections that formed the basis of new communities of place. Over 12,500 CSAs are now operating through the US and more than 500 in Canada. Bob and Bonnie Gregson described this movement through their own experience on two acres outside Seattle in a small 1996 booklet.[20] They boasted

of a comfortable middle-class income from half their land supplying city families with vegetables, small fruits and eggs eight months a year, with time in the winter for knitting, repairs, crafts and other leisurely or cash pursuits. They predicted that a torrent of others would follow in their wake, and indeed many tens of thousands have.

Not all the lines that now converge on garden farming began on tiny plots. The intensive grazing management insights of Frenchman Andre Voisin[21] were picked up by Alan Savory, who carried the grazing message wrapped in a broad systemic theory called "Holistic Management" to mostly larger farmers and ranchers in Australia, New Zealand and the western US. These ideas, which exploit the possibilities of movable electric fencing and portable watering systems to enable graziers to condense animals into compact areas of pasture and move them frequently, mimicked the impacts and outcomes of predator-herd interactions in nature that Voisin had written of and that Savory had seen in Africa. The resulting agricultural savannas were many times more productive than traditional pasture management and grew far healthier animals and meat than confinement feedlot operations. When entrepreneurs such as Joel Salatin, whose family had tried innovative farming methods in Venezuela in the 1950s before returning to Virginia in 1961, bred the direct-to-consumer marketing model with the productive power of rotational grazing, then backcrossed the offspring with a line of pure polyculture, a breakout champion was born.[22] Salatin has made the rounds of farm conferences across the continent and has leapt out of his self-described box as "a Christian, libertarian environmentalist" into avant garde circles through permaculture courses and even the eco-entrepreneurs' summit Bioneers conference in wealthy Marin County, California. More recently, perennial agricultural writer Gene Logsdon has described his own smaller-scale rotational grazing on a 32-acre garden farm in Ohio.[23] He predicted that millions could adopt his pasture practices on spreads as small as five acres.

Descending the Energy Mountain

In the paragraphs above I have sketched the emergence of small-scale and regenerative farming as a viable alternative to the juggernaut of industrial agriculture and Big Pharma. The hope of the former is that it can survive and prosper through the continuing aggressive expansion and ultimate collapse of the latter. The growth of industrial agriculture and the emergence of global monopolies combining seed, food processing, chemical manufacture and pharmaceuticals track well with the increase in application of fossil energy to human purposes. How these immense aggregations of capital and power unwind cannot be entirely foreseen, though sudden collapse is a distinct possibility. That they have grown fat on an empire of oil, that their fortunes are tied to it and that the empire is now well into its final decades of decline is a central presumption of this book and a fact well enough established by others that I shall not argue it here.[24]

We are not going to eat food grown in test tubes, no matter how many science fiction novels have been published. We will continue to need to cultivate the soil of the Earth. But with changing and unstable climate everywhere, and in the wake of modernity's massive dislocation of traditions, we find ourselves in utterly novel and not entirely friendly territory. The familiar is no guide to the future, and in any case is being swept away before our very eyes.

The global monopolists are right about one thing: we do need a system. How else can seven billion people figure out how to live on a rapidly evolving (or devolving) planet? But we don't want a system that imposes one solution on everyone and everything. That's death. We need a system that offers us an unchanging reference point in a world of continual

change — a system that is accessible to all human beings in all cultures and all places, and that empowers each of us to continue to unfold its mysteries. We call this empirical exploration and systematization of the self-organizing and phenomenal world *science*, and its growth is one of the great gifts of our plunge into the corrupting cesspit of fossil energy.

We cannot expect, however, to continue for long increasing our knowledge of the world by splitting atoms at great cost and peril, or by launching rockets into deep space, though these things are wondrous. The word science comes from a Latin root that means to split or cut, and most of the early and powerful discoveries of science came from cutting things apart into their pieces and discovering the relationship of those pieces to other pieces. The world, as a result, is pretty well blown up and is quite in danger of coming apart in great chunks if human beings don't quickly learn how to knit things together gracefully again. Fortunately, out of the ramifications of scientific exploration came the science of ecology which, unlike most fields of science until quite recently, began and continues as an integrative discipline (geography and anthropology are two similar fields that come to mind).

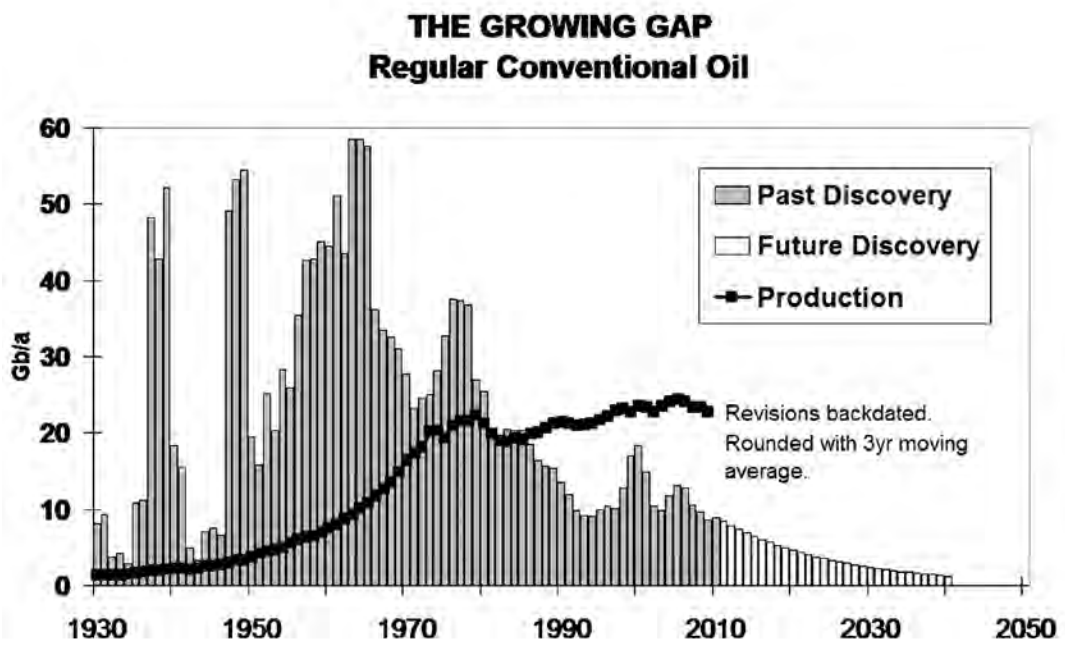
A New Science of Holism

Like many branches of science, *ecology* is the study of relationships, but unlike most scientific disciplines, it is the study not of one element to another, but of all to all systematically. Ecology looks at living communities or assemblages of many species of plants, animals, microbes and the landscapes they inhabit to assess the quantity and quality of information and resources that flow within the system. It can identify system boundaries and can see where information is missing and when it is critically threatened (as, for example, when a key species goes extinct and an important function of the whole system consequently fails). And like the novel discipline of systems analysis with which it shares a common intellectual structure, ecology is the study of feedback loops and their consequences. In other words, it looks at how living communities relate within and without.

Ecology operates with a novel kind of logic and solves problems differently than most disciplines. Ecological thinking is the fundamental tool for regenerative agriculture and for garden farming. It underpins permaculture design. The problems of ecosystems, or indeed of biology, like the problems of business or cities or politics or farming, are problems of *organized complexity*: that is, they have many elements, but not an infinite number, and all the elements within the system affect all the others. The problems of ecology are not like the problems science began to untangle in the 19th century when mass phenomena came into our awareness: elections in which millions voted, the organization of telephone exchanges or the marketing of consumer goods. These kinds of problems involve *unorganized complexity*, in which there are often literally millions of elements, none of which is in any dependent relation to the others, but which systems nonetheless display regular patterns of behavior and which can be studied and understood using tools such as statistical analysis.[25]

The problem-solving methods of ecology involve a kind of thinking we now call holistic. They require that we think about wholes and their relationships to other wholes. Each element has its own integrity and, if alive, is self-regulating as well, yet each is also related to others within the system, influenced by feedback.

Holism is the paradigm of the age we have recently entered. It erupted in the mass mind about four decades ago and has been accepted and integrated into the various intellectual disciplines and arenas of culture at different rates. In the monocultural paradigm of conventional agriculture, when a crop is



Worldwide oil consumption has outpaced discovery for over 40 years, reaching ratios of 5:1 in the last decade. [Credit: Colin Campbell]

"attacked" by an insect "pest," the farmer calls in the cavalry to rout the bad bugs, just as in movie westerns. He (usually he) sprays a chemical to kill the insect. The crop is saved, the dollar cost of the chemical is justified by the much greater value of the crop preserved for sale at market, and great industries have arisen on these insights. Seen from holistic perspective, however, the chemical causes illness in workers at the factory, illness in farmers on the land, accumulates in the crops grown and thus reaches consumers invisibly, may drift to the neighbors, stay in the soil or run off in the waters, and it kills not only the pest organism, but 50 other kinds of insects, some of which were predators of the pest, a part of the biological information feedback of the ecosystem. The pest organism, which breeds by the millions and evolves rapidly, is now set back, but some of its population survive to breed greater resistance to the temporarily effective but permanently damaging chemical. The cycle repeats. From 1940 to 1984, crop losses to insects in the US rose from 7% to 13%.[26] The incidence rate of all cancers rose 1.1% per year from 1973 (the first year statistics were collected nationally in the US) to 1996, a massive increase. Approximately 400 cases of cancer occur every year per 100,000 persons, up from about 300 a generation ago.[27] Similarly, operating on the "bad-bug" theory of medicine, hospitals have become a major source of antibiotic-resistant pathogens.[28] But the small magic tricks of conventional medicine and agriculture are failing in the face of nature's much greater laws of balance. The "problems" that the monocultural mind sees as "pests" or "pathogens" are, in the holistic framework, forces or organisms trying to clean up or rebalance a failing system, indicators of ill health to be treated not by adding to the burden of death and morbidity, but by nurturing more and greater life.

Permaculture Envisions a New Commons

It was the genius of Australians David Holmgren and Bill Mollison to seize on the critique of industrial civilization offered by the 1972 Club of Rome report, *The Limits to Growth*—which first brought systems analysis and computer modeling to the resource and energy flows underpinning the world economy—and marry it to practical applications of ecological theory.[29] They took seriously the book's predictions of resource and energy shortages by

the early 21st century, saw all around them the wreckage of societies driven by centralized institutions and crafted a set of memes for tunneling out of the trap. The resulting analysis provided an intellectual foundation and direct guidance for many of the world's most promising cultural and agricultural experiments.

Holmgren and Mollison fused the subtitle of J. Russell Smith's 1929 book, *Tree Crops: A Permanent Agriculture*,[30] into a single word: Permaculture. Collaborating on a revision and expansion of David's undergraduate thesis in ecological design, bringing to bear Bill's long years of observing nature as a wildlife biologist, they authored and published *Permaculture I* in 1978, postulating that people could design synergistic assemblies of plants, animals and structures that served human needs but adhered to nature's logic.[31]

Permaculture was much influenced by the writings of H.T. Odum, who had illuminated the economic conundrum of modern society, dependent as it was on the continued extraction of fossil fuels.[32] *Permaculture I* and *Permaculture II* — authored by Mollison solo the following year — sketched out an ecological design system for smallholders that Permaculture's coauthors believed could be useful in all climates and cultures.[33] It drew on traditional knowledge, which Mollison as an indigenous Tasmanian fisherman, farmer and hunter/biologist had derived in considerable degree from his own family and local traditions as well as contact with aboriginal Australians. Permaculture connected many streams of the world's traditional knowledge with modern forms of science and urged ordinary people everywhere to continue that lineage of empirical investigation. The books were a prospectus for a worldwide distributed experiment in ecological subsistence agriculture for the post-industrial world.

That experiment is now over 30 years old, and I will argue that its fruits are abundant and that results have validated the original thesis well enough that we should expect it to meet the needs of a new generation of garden farmers whether they be former pastoralists settled into towns in Botswana or industrial workers made redundant by energy descent in Boston. In Chapters 3 and 4, I will introduce permaculture principles and ethics and their ecological underpinnings, which form the basis of the design system, while Chapters 5 and 6 examine permaculture practice and vision. But before we go there, we have to look at a largely unrecognized cultural phenomenon and answer the question posed by Chapter 2: who am I to farm?