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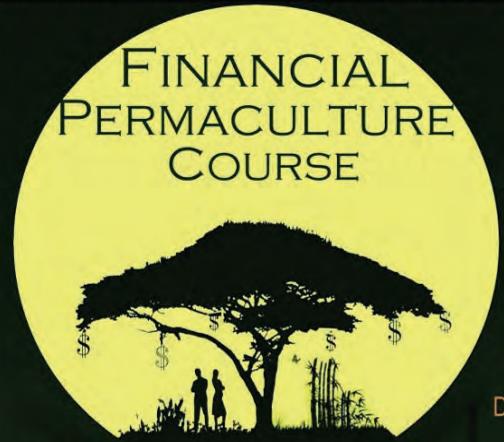
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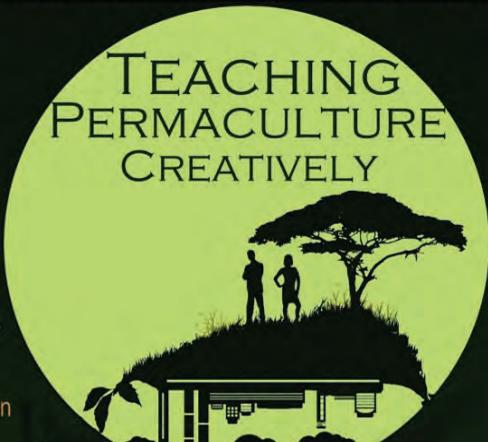
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Upcoming Issues, Themes & Deadlines

#78	Water	September 1
#79	The Urban Frontier	December 1
#80	Design for Disaster	March 1

Permaculture is a holistic system of DESIGN, based on direct observation of nature, learning from traditional knowledge, and the findings of modern science. Embodying a philosophy of positive action and grassroots education, Permaculture aims to restructure society by returning control of resources for living: food, water, shelter, and the means of livelihood, to ordinary people in their communities, as the only antidote to centralized power. For 30 years Pc has combined top-down thinking with bottom-up action to make a world of difference in over 100 countries. We are everywhere.

Editor's Edge

Economics and Permaculture

Scott Horton

IF YOU TAKE AN ORBIT'S-DISTANCE SNAPSHOT of permaculture as a whole, it can certainly be argued—accurately for my money—that it is a design system that, after all is said and done, is profoundly about economics.

As Peter Bane points out in his essay in this issue, the word comes from the Greek roots *oikos* (home) and *nomos* (to manage). As ecology is the study of our home, so economy is the regulation of it and the interpretation should rightly embrace an expansive definition of home, from houses and apartments, to the land that supports and embraces them, to the Earth as a whole.

Economics, a term that came into popular usage in the 16th century during the meteoric rise of trade and the emergence of an affluent middle class, seems to have strayed from its linguistic and social roots. Today, many of us interpret the word and concept as diametrical to care of the earth, care of people, and fair share. Ecology is a manufactured term created in the 19th century as scientists began to try to wrap their brains around, among other things, the noticeably increasing effects of the very first century of accelerating industrial pollution on the environment. Both words emerged from the need to describe socio-environmental phenomena: one a result of burgeoning wealth largely gained by the increase of exploration and conquest, the other from Nature's signals that what humans do to the environment has consequences. With the invention of both words we were able to put a name to self-created doom, or at least to the change in destiny we engendered from self-serving practices.

Likewise, the word and concept of permaculture were born of a time of social, environmental, and—not the least—economic need. In its case, though, permaculture was coined not simply out of observation of the conditions of its time, but also as a visionary call for positive change.

Permaculture and economics are very compatible bedfellows. In fact, economics is embedded in every aspect of permaculture I can think of. In the practice of permaculture we strive for yields, manage the efficiency of inputs and outputs, attempt to achieve the biggest output for the least input, plan for disaster and for distribution of surplus, etc. Sounds like business and commerce to me. How our science, art, and practice differ from contemporary textbook economic applications may lie in the ethical roots that wed us to what some might call a higher purpose than simply the amassing of wealth.

From a personal point of view I find permaculture and economics a difficult subject to write about. About ten years ago I embarked on a personal journey that early on congealed into the plan to wean myself from my professional livelihood and reinvent my self-sufficiency with permaculture. For me it turned out to be a mistake that was not the responsibility or fault of permaculture, but about my own misconceptions about it, my needs, and abilities. I spent early years reading everything I could get my hands on, visiting permaculture sites, taking serial courses, beginning to design and implement, a little teaching, a little writing, and so on. I closed down a successful consulting partnership

and spent three years working on my home site, taking odd jobs, teaching, traveling, learning, and working, all with the goal of creating 100% livelihood “from permaculture.” I had very good luck, received much kindness and encouragement and, apart from a couple of poor choices early on, excellent teachers and mentors—many of whom I now count as friends. But in this decade of work I had profoundly missed something that I am almost embarrassed to admit: permaculture is not a goal, it is a tool and a process. By objectifying it I had missed this point almost entirely.

I choose now to stand in the place not of having failed, but of having learned important lessons and practices in a process I entered into with good intentions and hopes. At this end of the journey I have been able to put together a life that is profoundly and positively influenced by permaculture, my intended reinvention having become a happy redesign. I gave up the all-or-nothing permaculture dream a few years ago and have learned that for me, focusing on the practical basics is a meaningful way of integrating permaculture into my life and orbit. I shop locally, stack functions in all aspects of my life, am thoughtful about expenditures and their ramifications, maintain a modest apartment balcony garden, travel much less than I used to, work from home, etc. Having returned to the career I gave up in pursuit of permaculture, my financial livelihood now comes mostly from consulting with non-profit organizations that enhance communities and lives. I try to share my surplus by making contributions to non-profit organizations, doing work *pro bono*, editing this magazine, and helping others when I am able.

A few very hard-working and dedicated folks have been able to create livelihood from the practice of permaculture, and many others are striving to do so. I admire, respect, and applaud them and their amazing, inspiring work. To the thousands of others on the journey, there is joy, satisfaction and success in finding ways to use the lessons of the process of permaculture in lives not devoted entirely to it. △

Scott Horton is Editor of the Permaculture Activist and lives in the San Francisco Bay Area.

A Note from the Publisher—

As this issue went to press, The Permaculture Activist passed the 25th anniversary of its founding in July, 1985. Then we were the newsletter of the Permaculture Institute of North America (PINA). Editor Guy Baldwin assumed publishing duties on PINA's demise in 1989, passing the baton to me as editor and then publisher in 1990. With this issue (#77, and the 76th discrete publication) we also became the longest running permaculture journal in the world. The flagship *Permaculture International Journal* closed its Australian doors in 1999 after issue #75.

We extend a hearty appreciation to our readers and supporters, some of whom have been with us a quarter-century, and ask for your thoughts: “What is permanence?” and “What comes next?”

Design for a Sustainable Economics

Robert Gilman

ECONOMIC THINKING IS dangerously outmoded, but an emerging new framework could become the design guide for the 21st century.

There have always been critics of the conventional, marketplace approach to economics started by Adam Smith. Yet for more than 200 years, it seems to have worked—with some modifications and additions—remarkably well. From about 1970 onward, however, it has become less and less effective. Now we are at the point where economists speak of their profession being in profound crisis.

I see a parallel to this with the crisis in physics that occurred at the beginning of the 20th century. Physics was then completely dominated by the tradition started by Sir Isaac Newton—a tradition that had been brilliantly successful in explaining most of the recognized physical phenomena of the time. However, as physicists began to probe into atoms, Newtonian physics just didn't work for the new experimental results. Out of that crisis came the recognition that the Newtonian view of the world was too simple, and the scope of physics needed to expand to include non-Newtonian theories of quantum mechanics and relativity. Within this expanded worldview, the rules of Newtonian physics now are seen as special cases that apply only under certain limited conditions.

I think that economics is now, relative to its own crisis, where physics was in the first decade of the 20th century: The failure of the theory is growing more acute all the time, but the profession is still dominated by those who are steeped in the old approach. A new approach is gaining strength and supporters, but it is still a few years away from full recognition as the legitimate successor.

What is this new approach that may be on its way to becoming the “new economics”? I will call my interpretation of it here “sustainable economics,” although, as you might expect during a time of conceptual ferment, there are many variations on the new approach and many names used for them, such as green, holistic, ecological, and real-life economics.

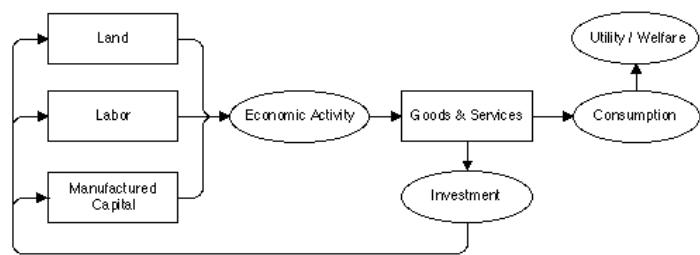
To understand what sustainable economics is, and why it would be superior to conventional economics, we need to start with a brief recap of the latter. I'll need to go through a number of definitions and distinctions, but this is far more than an academic exercise. The conventional economics concepts I'll be describing provide the basis on which those in power all over the world (which to some degree includes most of us in the rich, industrialized countries) justify the destruction of the Earth. It would be hard to find a more pervasive, pernicious, and powerful evil than the seemingly innocent concepts that currently rule our economic lives. Let me be more precise, for it is not so much the concepts on their own—they have served an historically useful role. The real evil is the continued dominant use of these concepts long after they have become seriously outdated and destructive. This is indeed the belly of the beast, and until we can replace these concepts with a more Earth-friendly approach, our prospects will remain grim.

The conventional picture

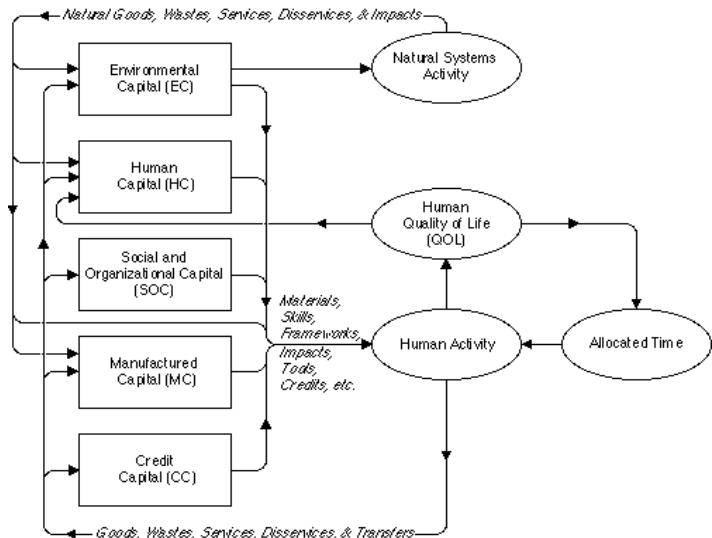
So let's plunge in, with the aid of the following diagram:

Two Views Of Economic Reality

Conventional ...



Sustainable ...



The top diagram gives the conventional picture (used across the board by capitalists, socialists, and communists alike) of the major factors involved in economic activity. It begins with the three “factors of production”: land, labor, and manufactured capital.

Land was initially included in recognition of the importance of agriculture, but as industrialization progressed it has been broadened to represent all raw materials, like minerals and timber.

Labor covers all direct human inputs into economic activity, although in practice it has been treated largely as a simple head-count—e.g., how big is the “labor-force” or how many are unemployed.

Manufactured Capital refers to buildings, tools, and equipment.

The oval labeled *Economic Activity* stands for the process

by which Labor, with the aid of Manufactured Capital, converts Land (as raw materials) into Goods and Services.

Some of these Goods and Services need to be invested back into the factors of production, either to maintain or improve them. Whatever is left over can then be consumed to produce Utility or Welfare for individuals and households.

At first glance, this picture seems fairly reasonable. After all, it would not have survived as the dominant view of economics if it was totally absurd. Yet it misses many important facets of real economic life, and distorts even those it does include. It will help, in understanding these deficiencies, to compare it to the lower diagram.

The five forms of wealth

This lower diagram is intended as a more realistic model of economic activity. It begins by expanding the three factors of production into five reservoirs of wealth. The concept of the first four I have taken from Ekins. (*See sidebar below.*) The fifth I've added for completeness in this diagram. In keeping with normal economic terminology, they are all called "capital" but that does not mean that they are thereby reduced to commodities to be bought and sold. But I'm getting ahead of my story; let's look more closely at each of these forms of capital:

Environmental Capital (EC) expands the idea of Land to include all natural systems, such as the atmosphere, biological systems, and even the sun. In recognition that these natural systems are more than just inert "resources," the diagram includes Natural Systems Activity, whose functioning depends on the quality of Environmental Capital and whose results impact, for good or ill, Environmental, Human, and Manufactured Capital, as well as directly on Human Activity. For example, sulfur dioxide released into the atmosphere becomes part of EC. The Natural System Activity of precipitation converts this sulfur dioxide into acid rain, acid rain then adversely impacts lakes and forests (EC),

Real-Life Economics

I've drawn considerable inspiration for this article from two books authored and edited by Paul Ekins: *Real-Life Economics: Understanding Wealth Creation* (coedited with Manfred Max-Neef; NY: Routledge, July 1992) and *The Gaia Atlas of Green Economics* (with Mayer Hillman and Robert Hutchison, NY: Anchor Doubleday, February 1992). Both books cover the same general territory, but *Real-Life Economics* is addressed to a professional and academic audience while *The Gaia Atlas of Green Economics* is more popular in its presentation.

Paul Ekins, a Research Fellow at the Department of Economics, Birbeck College, University of London, is a co-founder of The Other Economic Summit (TOES). He is also Research Director for the Right Livelihood Award, and the founder of the Living Economy Network.

His two books draw very effectively on this background to present the best overview of green economics that I have seen anywhere. I highly recommend them. △

respiratory health (HC), and buildings (MC), among other things. In a similar way, the natural activity of the sun produces both positive and negative impacts on EC, HC, and MC.

Another aspect of the dynamic character of natural systems is that EC can be self-maintaining and even self-building. It can regenerate itself. Powered by the sun, EC can be a long-term, continual source of enormous human benefit. EC is not locked into a zero-sum game.

The failure of the theory (of economics) is growing more acute all the time, but the profession is still dominated by those who are steeped in the old approach.

One of the gross simplifications of the conventional picture is the idea of free substitution between capitals, i.e., it really doesn't matter if one of the three factors of production is depleted as long as another, of equal or greater price, is built up in the process. The absurdity of this becomes clear when the notion of Land is expanded to Environmental Capital. Much of the real wealth in EC, such as the ozone layer or complex ecosystems like tropical rainforests, simply can't be replaced by other forms of capital. As we will see with the other four capitals as well, there is some room for tradeoffs between them, but each is sufficiently unique and vital that there are strong limits to substitution between them.

Human Capital (HC) expands Labor to include quality as well as quantity. According to Ekins "Human Capital has three components: health, knowledge and skills, and motivation." These three components behave differently than material forms of wealth. First, within an optimal range, all three of these are enhanced by use rather than worn down.

Second, they all obey an economy of multiplication rather than an economy of scarcity. That is, if I have a skill that I teach to you, I don't thereby lose that skill, indeed my skill probably improves in the process. Similarly, if I am healthy, that benefits, rather than taking away from, your health, and if I am motivated, that will likely enhance the motivation of those around me. The limiting factors for HC are not interpersonal competition over the scarce resources of health, knowledge, or motivation, but rather they are limits imposed by time and, in many parts of the world, competition over food, clean water, and other material supports for HC.

Social and Organizational Capital (SOC) recognizes a major form of wealth that is ignored in the conventional diagram. It includes all of the interpersonal "software" that enables societies and organizations to function: habits, norms, roles, traditions,

regulations, policies, etc.—in other words, the non-physical part of culture. SOC is different from HC in that HC is attached to a particular individual (you can walk out the door with it) while SOC is transpersonal, and can remain with an organization even though the individuals who comprise that organization keep coming and going. On a broader scale, it includes law, government, the feeling of community, the dynamics within families, as well as all art and knowledge that have become part of the culture.

Like the quality, or “software,” aspects of HC, SOC is generally enhanced by use and is not generally diminished by sharing. There are certain forms of knowledge whose commercial value is enhanced by keeping it scarce or difficult to come by, but that is different from the question of its overall value within the system. There are also many forms of SOC, like language, that increase in value for each individual as they are shared with more individuals.

Manufactured Capital (MC) includes, as in the conventional picture, buildings, tools, and equipment.

In this picture, however, the idea of MC is broadened in two ways. First, the conventional practice is usually to count as MC only equipment, etc., used by businesses. Thus a stove in a restaurant is a tax-deductible business asset, while a stove in a home is a “consumer durable,” not counted as capital. In the new approach, the assets of households are treated on the same footing as the assets of businesses or other organizations. Second, MC in the lower diagram includes anything physical that has been manufactured and has not been returned to the environment, so it includes all kinds of supplies and material as well.

MC is the classic form of capital, and so it is the source of many of the conventional ideas about capital. Some of these are that each object of MC can be used in only one place at one time (it obeys a zero-sum economy of scarcity), and MC always deteriorates, generally faster with use. As a system, however, even MC has some of the generative qualities of EC and HC. After all, it takes factories to make factories, so in practice MC tends to grow exponentially, just like human population, if not limited by other factors.

The major limitations on MC are EC, at both ends of life. That is, at the start of the life cycle of a manufactured object, EC can provide only a limited supply of non-renewable raw materials, such as copper or oil, and can sustainably supply only a limited flow of renewable materials, such as wood. At the other end of the life cycle, as the object returns to the environment as waste, natural systems are limited in their ability to assimilate this output from MC, both in terms of the quantity and the quality of the waste.

It is crucial, in understanding the role of MC, to notice that the ultimate value in MC lies in its use, not its production or disposal,

and yet frequently its use is the part of its lifecycle with the least adverse environmental impact. Thus everything that can be done to prolong the span of use between the initial extraction of raw materials from EC and the eventual disposal back to EC, such as long-life designs, easy repair, and good recycling, will enormously enhance the net value of MC within the context of all five forms of wealth.

Credit Capital (CC) is another reservoir of wealth not included on the conventional diagram, nor in Ekins’ work. It is defined here as a reservoir of credits and promises, so it includes money and debt, but not stocks or deeds, which are ownership rights tied to other forms of capital. Of course, conventional economics is well aware of CC, but CC was left off of the upper diagram because that diagram began its history describing only physical flows. Only later did “Goods” become “Goods & Services.” The lower diagram includes both physical (e.g., MC) and non-physical (e.g., SOC) quantities, so there is no reason to exclude CC—



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and it certainly is an important aspect of real economic life! CC could be considered as a special case of SOC (just as MC could be considered as a special case of EC), but it is so important for economic understanding that it has been broken out as a separate capital.

Like each of the other capitals, CC has its own unique characteristics. It makes a vital contribution to economic functioning for two reasons: First, the lifecycle of humans (and many businesses too) is such that we need to invest when we are young (in such things as education and housing), we can produce more than we need to consume when we are middle-aged, and we often need to consume more than we can produce when we are old. Thus we need a mechanism to allow us to spread the concentrated productive capability of our middle years to enable investment and consumption throughout life. Second, many goods and services can deliver more value than they cost, both for households and for businesses. Borrowing allows tapping that value to repay the loan and still have a net surplus of value left over.

Of course, that is not how borrowing always works. If the money is spent on items that do not return a net surplus, then the future is burdened with repaying the extravagance of the present. Another difficulty with CC is that it usually functions as a means to transfer wealth to the wealthiest members of society from everyone else (*see sidebar page 7*). Thus the real value of CC to the society as a whole depends on how it is used and whom it benefits, as well as how much there is.

The new approach recognizes that price is not the true measure of value in supporting quality of life.

Human activity

As in the upper diagram, these five capitals are blended together, in various proportions, in support of some Human Activity. A new addition, however, is the explicit recognition of Time as a limited resource that must be allocated among various alternative activities.

Another change is that the notion of “economic activity” has been broadened here to any human activity. Does this mean that everything is being reduced to economics? Hardly. Rather, it is the recognition that every human activity has impacts on quality of life, on how we allocate our time, and on the five capitals. Thus every human activity has an economic dimension, and we can not expect to get a realistic picture of economics if we begin by categorically excluding any aspect of life.

There are two flows that emerge out of Human Activity. One of these may seem superficially like the Goods and Services in the upper diagram, but the content of the flow and the structure of the diagrams are significantly different. First for content:

the notion of Goods and Services (i.e. only intended results) is broadened in the lower diagram to recognize that Wastes and Disservices are also a part of economic reality, whether we like it or not. In addition, Transfers are added to cover changes in CC and certain exchanges among the other capitals.

These Goods, Wastes, Services, Disservices, and Transfers all flow back to the five capitals. No longer is the stream broken into two parts labeled Investment and Consumption with only Investment flowing back. This is a major change in the structure of the diagram, and it is done for the following reasons.

...every human activity has impacts on quality of life, on how we allocate our time, and on the five capitals.

The notions of Investment and Consumption as used in the upper diagram are much too simplistic. For example, the upper diagram has no way of acknowledging that consumption (as in the use of energy and materials) goes on as part of the manufacture of goods.

The lower diagram replaces these notions with the more complex, and more realistic, notions of inputs and outputs from the various capitals. In this picture, Investment and Consumption are not distinct categories, but can be different aspects of the same activity. Consider eating. Let's assume that the food is classified as EC (although some foods are more accurately MC). The most obvious aspect of eating is the consumption of this food (output from EC) as an investment in health and motivation (input to HC). In addition, if the eating is done in a building, at a table, using dishes and silverware, these forms of MC will support the activity (output from MC) and may undergo some wear and tear (output from MC, input to EC). The peace and quiet (or lack thereof) surrounding the meal will be greatly influenced by various social norms (output from SOC), and the interaction during the meal may affect the interpersonal relationships of those present (input to SOC). Air quality (output from EC) will also affect the quality of the experience. On top of all this, there may be some transfers of money (CC) involved. Now tell me, was that meal an investment or was it consumption?

Notice that not all outputs result in consumption (e.g., using social norms doesn't “consume” them; on the contrary, using them usually strengthens them). Nor can all inputs be classed as investment (e.g. toxic wastes input to EC are at best a negative investment).

Quality of life

At the heart of the lower diagram is an oval labeled Human Quality of Life (QOL). There is a superficial correspondence between Utility/Welfare in the upper diagram and QOL in the

lower, but, as with Activity, the meaning of the concepts and the structure of the diagrams around these elements are significantly different.

In both diagrams, these elements serve as the “goals” for activity. That is, the assumption in the upper diagram is that people want to maximize their Welfare. The parallel assumption in the lower diagram is that people want to maximize their Quality of Life.

As usual, the conventional concept is simple—too simple. Welfare is assumed to be achieved by the indiscriminate satisfying of any and all human wants, expressed in terms of the price paid for the goods or services, which, according to the diagram, are the only contributors to welfare. Thus \$1 million spent on a private yacht is assumed to generate as much welfare as the same amount spent on pre-natal care for thousands of children.

The new approach recognizes that price is not the true measure of value in supporting QOL. There are many aspects of this distinction between price and value; let me describe two here. First, even if the marketplace functioned perfectly in conventional terms, “voting” in the marketplace (which sets prices) is on the basis of one-dollar, one-vote (biased toward the wealthy), whereas QOL, based on human experience, needs values allocated on a one-person, one-vote basis. Second, as the pre-natal care example illustrates, unborn children (as well as the natural environment) have no direct voice in setting today’s prices, even when they bear the brunt of today’s price-based decisions.

Developing a better measure of value requires a deeper understanding of what contributes to quality of life. One particularly illuminating approach has been developed by Manfred Max-Neef, based on his experience with community development in Latin America. He begins by creating a matrix of universal human needs and modes of experience, and then looks at the many culturally dependent ways in which we humans attempt to satisfy these needs. (Being refers to attributes, such as health, self-esteem, passion, etc., most of which would be aspects of HC; Having covers physical objects plus institutions, i.e., MC plus some SOC and EC; Doing refers to actions, i.e. Human Activity; and Interacting refers to locations and milieus, i.e., the context aspects of MC, SOC, and EC). His matrix (without the “satisfiers” filled in) looks like this:

	Modes of Experience			
Universal Needs	Being	Having	Doing	Interacting
Subsistence				
Protection				
Participation				
Affection				
Creation				
Freedom				
Recreation				
Understanding				
Identity				

The matrix can be used, for example by a community group, by filling it in with various ways that each need is being or could be met.

Of course, not all supposed satisfiers are equally effective or beneficial. Indeed, one of the great strengths of this tool is that

it allows those who use it to compare alternative satisfiers to see which ones 1) are most effective in what they intend, and 2) impact other needs, positively or negatively.

This matrix connects back to QOL in that each of these nine needs must be adequately met in order for a person to have an adequate quality of life. Another important aspect of many of these needs, like the needs for food and rest as part of Subsistence, is that, while they are ongoing, they are not infinite. Other, more unbounded needs, like Understanding or Creation, are limited ultimately by available time. In either case, they are not best satisfied by attempting to consume ever increasing qualities of goods and services.

Contrast this rich description of the factors contributing to QOL with the upper diagram where Utility/Welfare is contributed to only by Consumption. In other words, the only way this picture allows humans to increase their welfare is through destroying the subsequent usefulness of various goods and services (i.e. consuming them), and what’s more, the degree of welfare is in direct proportion to the rate of destruction. I know that sounds silly, but

Interest-Free Banking

Could a banking system work without charging interest to borrowers and paying interest to depositors? A non-profit association in Sweden, known as JAK, has been doing it successfully for more than 20 years. When I first found out about them, I was rather skeptical, expecting that they did it through some kind of hidden subsidy, but as I’ve studied their system I’ve been delighted to find that, rather than some trick, they do it through a genuine social invention.

The heart of their invention is this: Rather than operating as a bridge between two classes—borrowers and lenders—JAK expects the borrowers and lenders to be the same people, but at different times in their lives. Thus JAK requires every borrower to save, over and above repaying their loan, as much and for as long as their loan.

If I borrow \$10,000 for 10 years, JAK won’t charge me any interest (although they will charge me a modest fee), but, in addition to gradually repaying the \$10,000, I must gradually save enough so that I have a positive balance of \$10,000 at the end of the 10 years. I won’t get any interest on this savings, but I can withdraw it once I have fully paid off the loan.

My savings provides the funds which others can borrow, just as the interest-free savings of others permitted me to borrow. It is profitable for me to do this because the combined loan payments and required savings are still less than the normal loan payments plus interest of a regular bank, plus, I get all my savings back!

For more information, write to JAK, Ängsvägen 15, S-147 43 Tumba, SWEDEN.



believe it or not, this diagram—complete with its assumptions about consumption and welfare—forms the conceptual basis on which essentially all major economic and economically-related political decisions are made (or at least justified) all over the world. It is on this basis that politicians proclaim their conviction that “economic growth” (i.e. increases in the production of goods and services) is the key to increasing human welfare.

The structure of the lower diagram is very different, as are its implications. In this diagram, every human activity has an experience associated with it that the experiencers will assess as contributing to or detracting from their quality of life, whether that activity is primarily productive, consumptive, or neither. Even when the activity is in some sense consumptive (as with the case of eating), the positiveness of the experience is affected by many factors, not just quantity of consumption.

Furthermore, Utility/Welfare is a dangling dead end, while QOL is an integrated part of the system. The experienced level of QOL affects motivation (thus the link to HC) and it affects the amount of Allocated Time devoted to this activity.

The conventional economist may well object at this point that, “All this talk about QOL sounds nice, but unless there is an objective way to measure QOL, it is useless.” There are two

Mondragón Cooperative Group

I had the good fortune to spend a week in Mondragón, Spain, in March, 1992, studying what many people feel is the world's most successful group of employee-owned, democratically-controlled businesses. I had read, and written, about them for years, so I knew they were remarkably successful in conventional business terms: This group of over 160 co-ops, with a total of over 23,000 worker-members and over \$3 billion in sales in 1991, has been consistently more productive, more profitable, and faster growing than surrounding businesses since its start in 1956. During that time they have had essentially no layoffs (even when local unemployment was over 25%) and more than 95% of their business start-ups have succeeded.

What I hadn't fully appreciated before I went was that Mondragón is also a surprisingly pleasant place to live and work. In addition to their great business record, the co-ops have far better safety and environmental records than surrounding businesses. The community itself (of about 27,000) is designed so that everyone lives within easy walking distance of green fields and woods.

Mondragón is a model of what is possible when businesses and communities choose to take a whole-system approach that balances the roles of all five capitals in the interest of a sustainable quality of life.

There are some clouds on Mondragón's horizon, mostly due to the competition they feel from huge multinational corporations, but I expect they will weather these challenges as well as they have the many in their past.

responses to this. At a fundamental level, we need to see these alternative conceptual approaches in historical perspective. Conventional economics was developed at a time when the model for conceptual systems was Newtonian physics—simple, linear chains of cause and effect that could be modeled with numerical precision. Today, we understand that most of life—from biological systems, to climate, to social systems—doesn't fit the Newtonian model. The leading edge of theory now has to do with complex, highly interactive, highly non-linear systems for which numerical precision is not possible. Nevertheless, simply determining a good set of components connected by the appropriate feedback loops to represent these complex systems can lead to great insight and useful results. The old rule used to be, “If you can't measure it, don't include it.” Today's rule is, “Include elements on the basis of their likely significance, not their measurability.”

Having said that, the second response is that in fact there is a great deal that can be objectively measured as to how well Max-Neef's set of universal needs are being met, and thus the adequacy of QOL. Not necessarily with Newtonian precision, but with enough statistical accuracy to be useful.

Personal application

To ground these concepts, let's look at how they can be used at a personal level. Think of the major activities of your day. They could likely be put into categories such as self-care (sleeping, eating, bathing, etc.), paid work (including commuting and other associated activities), household activities, recreation, shopping, and so on. Each one of these activities 1) takes time, 2) draws on the five capitals, 3) has impacts back on the five capitals, and 4) affects your experienced QOL.

Let's assume that your goal is to maximize your on-going QOL, while also minimizing any adverse impacts on any of the five capitals. Achieving this goal (or even coming close!) requires a complicated balancing act.

The lower diagram can reflect this while the upper one can't. Consider, for example, the time you spend on paid work. According to the lower diagram, it would be “rational” for you to choose a job that

- provided direct job satisfaction (input to QOL)
- placed you in a healthy environment with clean air and water (output from EC, input to HC)
- didn't depend on non-renewable resources or the unsustainable use of renewables (draining output from EC)
- minimized pollution and other negative inputs to EC
- gave you opportunities to learn (input to HC)
- had a low level of stress and other hazards to your health (avoiding negative inputs to HC)
- had a sufficiently orderly social structure so that you could efficiently focus on your own task (output from SOC)
- enabled you to participate in shaping the organizational routines and culture (input to SOC)
- provided you with good tools in a pleasing and efficient building (output from MC)
- paid you enough to cover your expenses in the rest of your life (CC).

The lower diagram says that all these things (and more) need to be taken into consideration as you pursue your goal. The upper diagram takes a much simpler approach: the only purpose of having a job is to earn money so that you can consume goods and services when you are not on the job. From the conventional point of view it is not “rational” to consider anything other than the amount you are paid. From the new point of view it is not rational to consider only what you are paid.

From the new point of view it is not rational to consider only what you are paid.

tional to consider only what you are paid. Which approach seems more realistic to you? Which approach is reflected in the great bulk of our laws, institutions, and cultural assumptions?

We can take this comparison even further. In the model represented by the lower diagram, it would be perfectly rational for people to reduce their need for income by living as efficiently as possible within their household, and then to use this reduction to allow them to work under conditions that provided more direct QOL or required less time in paid work. Furthermore, it would be perfectly rational for a society as a whole to facilitate all of its members to do this, developing new social and economic institutions if necessary. The net result would be an increase in per capita QOL accompanied by a decrease in the production of goods and services (which is measured by the Gross National Product).

Such a decoupling of QOL and GNP is impossible in the conventional view. As you can see from the diagram, maximizing Utility/Welfare implies maximizing Consumption, which implies maximizing the production of Goods and Services—there is no other way.

The road ahead

This is just one example of the profoundly different conclusions that follow from these two views of economic reality. We need to do more, however, than just explore these concepts in principle. To put them into practice will require, as best as I can tell, more movement in three main areas:

Indicators—If we are to give full and equal importance to each of the five capitals, we need good measures, good indicators, for each. We need to be able to track the changes in both quantity and quality for each, and have ways to make comparisons between them.

Much work has been and is being done around the world on developing such indicators, and this work needs now to accelerate. These indicators will give us a better way to keep score.

Rights and Responsibilities—A second part of giving proper importance to each of the five capitals is clarifying our legal relationships to them. The world has begun this process relative to its environmental commons, but from the perspective of sustainable economics, the whole range of “ownership rights” needs to be reassessed for each of the five capitals. This reassessment will give us a new framework within which to play the economic game.

Institutions—Finally, to play the economic game in a sustainable way, we need to create institutions consistent with this framework. I’ve offered the Mondragón Cooperative Group and the JAK banking system (see sidebars) as examples of the kinds of institutions we need to establish on a much broader scale. Fortunately, there are many other such examples. We have decades of good work to build upon.

Let’s get on with it.

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This article first appeared in “Dancing Toward the Future,” In Context #32, pg. 52, (Summer, 1992). The material is copyright ©1992, 1996 by Context Institute, and used here with permission. Robert Gilman was an astrophysicist with the NASA Institute for Space Studies til 1975, and since 1979 has been the president of the Context Institute in Langley, Washington, where he also currently serves on the City Council. With his then wife Diane Gilman, he co-authored the principal study, commissioned by the Gaia Trust of Denmark, that launched the Global Ecovillage Network (GEN, www.gaia.org) in 1991. Robert is a member of the faculty of Antioch University. www.context.org/PEOPLE/RCGBio.htm.

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New Roots for Economics

Stephanie Mills

IN 1951, VINOBA BHAVE, GANDHI'S CHOSEN successor, confronted violent communist-organized disturbances in Hyderabad, India by asking a local landowner to share his property. The man donated 100 acres to the landless. Thus was born the *bhoodan*, or land-gift program, the beginnings of a consensual approach to land reform—without revolution.

In highly urbanized, industrialized North America, access to arable land is not understood as being fundamental to household and community subsistence and social order, as it is in peasant countries. This misconception may change, however, as economic decline and the end of cheap oil mandate the relocalization of food production and of much else besides. Whereupon the overdeveloped world may face its own land distribution crisis.

In his prophetic book *Jerusalem*, William Blake declared that “He who would do good to another, must do it in Minute Particulars... For Art and Science cannot exist but in minutely organized Particulars.” To institute a more just economics, Bob Swann, Ralph Borsodi, and other decentralists saw, required minute attention to structure and solid respect for the soil-spawned particulars that provide subsistence and the raw material of trade. Land is the alpha and the omega of our shared existence.

Access to land—the first civil right

When Bob Swann was in the southern US with civil rights activists in the 1960s, he saw landless black people whose labor in agriculture was also being eliminated, not least by federal subsidies that promoted agricultural industrialization. In early 1966, some of the thousands of black families evicted from plantations in the Delta occupied a vacant Air Force base near Greenville, Mississippi and drew attention to this refugee problem. They were forcibly evicted. Bob commented “This situation symbolizes...the morally bankrupt condition of a government which is willing to spend billions to hold back revolution in [Vietnam]...but cannot even let its own citizens use its military facilities.”

To confront this plight Bob was involved with the Delta Ministry to develop a self-help truck farm near Greenville. Four hundred acres had been purchased, but funds to build homes for the families to live and work there were hard to find. The Office of Economic Opportunity (OEO) wouldn’t help: the land wasn’t to be owned individually. To find investors, Bob and his colleagues started the Freedom Development Fund.

Rural development and world peace

Bob Swann worked on the ground in the deep South and in the realm of ideas through his writings. “[O]nly an economic programme can reach to the heart of the world peace problem,” wrote Bob in a 1967 paper “The Economics of Peace,” which appeared in both *The Catholic Worker* and *Peace News*. His was a grand vision for an international fund that would allow people to invest in “the small farmer, the rural cooperative, the village industry, the small businessman...who constitute the backbone of any successful ‘self-help’ programme to eliminate poverty

and injustice.” The program he proposed would provide carefully supervised credit at reasonable rates. It would globalize the *bhoodan* movement, helping to take land out of speculation, and offer alternative and “just” investment possibilities, to “prepare the ground for a significant boycott of the present financial structure.” It would launch a transformation towards a universal currency of stable commodity value because, Swann wrote, “At present, virtually all national currencies are in a continuous process of inflation caused by the internal necessities of a money system based on debt creation.”

Since the fund would operate within the worldwide commodity market, it could grow large enough to combat cartels as well as lowering the cost of credit in the developing world. Eventually it would revolutionize banking and help right “the balance between rural and urban development.... The present monopolistic land and money system acts as a magnet to attract resources into urban centers at the expense of rural areas,” leading to slums.

**“[O]nly an economic program
can reach to the heart of the
world peace problem...”**

With his interest in Gandhi and in the landlessness that was hobbling African-Americans, Bob was perforce interested in development. Swann, through the International Independence Institute (III), was working on Borsodi’s complex scheme to provide Indian villages with micro-financing for small-scale agriculture. The precept in that work, and in his “Economics of Peace,” was that monetary instruments of exchange and credit for productive purposes could happen without entrapping communities in debt.

Emergence of the community land trust

“The Economics of Peace” contains most of the economic elements—land reform, monetary reform, small-scale productive credit, socially responsible investing, and banking reform—that Bob would work on for the rest of his life. Like his new mentor Borsodi, Bob would work on projects that brought the grand vision—or some aspect of it—down to the minute particulars.

This was the case with the community land trust mechanism, which began to evolve in Bob’s mind during this period. Building the family home at Voluntown, Connecticut was a particular that focused his attention. The land there was held by a simple non-profit trust. But who should possess the equity in those improvements on the land, like houses, that were created by individuals?

A test case in the South

Meanwhile, the group endeavor to realize what became

the New Communities project included Slater King of Albany, Georgia, Faye Bennett, executive secretary of the National Sharecroppers Fund, and Charles Sherrod, director of the Southwest Georgia Project. They, Andrew Young, and several other black civil rights activists, all of whom saw the problem of access to land as primary, traveled to Israel to study the Jewish National Fund's land acquisition and settlement mechanisms firsthand.

The saga of the genesis of New Communities is recounted in the III's book, *The Community Land Trust*, published in 1972. A predominantly black group was putting together a big (4,800 acre, \$1,080,000) real estate deal in a hostile environment while organizing the governance of the land trust to provide both individual and cooperative farm plots and to secure commitments of labor. Meanwhile the leaders, Bob among them, were hustling all over the country to put together financing to acquire the land.

The business plan was extensive and complex—it had to delineate the means of livelihood for hundreds of black farm families whom the founders of New Communities envisioned settling on the land. Low-cost housing cooperatives, schools and training facilities, individual shops, an industrial park, and a cultural center were included. Nineteen sixty-nine, when most of the work on New Communities was accomplished, found Bob and the project's leaders meeting frequently for long and contentious discussions of the leasehold principle underlying the whole endeavor. The authors of *The Community Land Trust* wrote:

"Although history has shown that the leasehold principle is needed to keep people from losing their land; to prevent land speculation, absentee ownership, and exploitation; and to assure land utilization for maximum usage, people would need time to learn to accept this form of land tenure."

Bringing land and community together

In devising his alternative to the individual possession of land which allows the right of sale of improvements and heritability of lease, Bob's great contribution was to figure out ways to structure community responsibility and participation into the leasehold. He created a system of checks and balances. The CLT board would include representatives of the land's occupants, but one third of its membership would come from the community at large, and another third would be individuals with relevant expertise in accounting, law, real estate, or planning.

Community land trusts (CLTs) do not require their occupants to be saints, forgoing tenure or improvements. They do require active participation in the trust's land use plan and continuing engagement at periodic meetings. They represent a kind of contemporary re-creation of the village council.

Microcredit for economic development

In the early 1970s Borsodi's International Foundation for Independence (of which the III was technically the educational arm) advanced credit to a program in Mexico. The program launched a successful agricultural microlending project that provided small groups of farmers with credit for fertilizer and livestock purchases. The focus was resolutely local and agrarian, experimenting, as Bob would put it, "with the application of such potent concepts as decentralized, small-scale credit and technology.... act[ing] as catalysts."

A push for new money

In addition to their concern with land reform and rural development Swann and Borsodi both believed that a stable system of non-national currencies would be crucial for the future.

Monetary theory is a large and elusive subject. For our purposes it helps to understand that in the US, our everyday money is fiat currency, essentially lent into existence, at interest, by commercial banks at the pleasure of the quasi-public Federal Reserve system. Its value is, in a sense, a matter of opinion, for its issue isn't constrained by any requirement that it be redeemable in something tangible like precious metal as U.S. currency was at one time. Governments can finance their mischief—like war making—by increasing the money supply through the sale of

In addition to their concern with land reform and rural development Swann and Borsodi both believed that a stable system of non-national currencies would be crucial for the future.

treasury bonds rather than resorting to the unpopular measure of taxation. The tendency of these unmoored national currencies is inflation—a loss in purchasing power and in the value of savings.

There's far more economic activity in the world than can be transacted in gold or silver-backed money, however. One of the money-backing ideas that Swann and Borsodi espoused was the use of a basket of commodities commonly traded worldwide. The idea was that, on average, the overall value of two dozen or so basic commodities would be stable. Borsodi's innovation, which circumvented the problem of warehousing, was to arbitrage contracts for those commodities. This would not only tether the value of the currency (provisionally called the Constant) to real production but could, if the system grew enough, exert a tempering effect on the trade in commodities.

Borsodi was preparing to issue Constants experimentally in Exeter, New Hampshire where he lived. But Bob imagined and wrote about the possibility of a new, Third World world bank that would issue a commodity-indexed currency. Swann's zeal was patent. He declared

"To take the power of creating money away from the nation-state might be the most effective way of stopping its power to wage war—hot or cold.... [But] since politicians are not going to give up their most potent source of power...doing it indirectly [is advisable]...by first creating a world or non-national currency, which because of its stability...would push national currencies out of the way."

Bob went on to propose a world bank using raw materials as the basis for a stable world currency.

"...since each country could use its commodity reserves as the basis for new money creation at the world bank, it would be able to expand credit many times—without inflation."

Land reform gains a foothold

By this time Swann was involved in a myriad of initiatives to change the nature of economics, aspect by aspect. With the publication in 1972 of *The Community Land Trust: A Guide to a New Model for Land Tenure in America* co-authored by Swann, Shimon Gottschalk, Erick Hansch and Edward Webster, a nascent movement was given its handbook.

In a paper delivered at the National Conference on Land Reform in San Francisco in 1973, Swann distilled the basic features of the community land trust. He described the CLT as "a quasi-public body, chartered to hold land in stewardship for all mankind present and future while protecting the legitimate use-rights of its residents. The word 'trust' is used more to connote the idea of trusteeship...than to define the legal form. Most often the land trust will be a non-profit corporation rather than a legal trust."

Four features differentiate the community land trust from real estate or conservation trusts, Bob explained: the trust holds land only, not improvements; the land user is protected by a 99-year, renewable lease; the trust's charter protects the land itself, and the trustees ensure that the land trust's charter and provisions of the lease contracts are fulfilled.

Enough groups around the country were able to acquire land and do the organizational work that by 1975, Paul Salstrom, by then the editor of the magazine *Green Revolution*, reported that "the III files show over 50 community land trusts formed, and the actual number is estimated as at least twice as many."

Structures for social investment

In late 1975, Bob and his colleagues conjured a different organization, the Institute for Community Economics, which evolved out of the III. In addition to providing technical assistance on the formation of CLTs, the ICE confronted the need for money to make land purchases and other community investments. The group brainstormed social screens—positive criteria for channeling funds from socially conscious investors into pro-active endeavors. This germ of an idea would blossom some years later into the Calvert Social Investment Fund, making Bob, in Terry Mollner's words, "one of the fathers of socially responsible investing."

Later, the ICE would back urban community land trusts as a strategy for keeping housing affordable and thus addressing poverty. Over the years since it began, the ICE's revolving loan fund has placed more than 370 loans totaling more than \$35 million. These days, community land trusts are proving resilient for their residents and are, thanks to the CLT structure, far less vulnerable to foreclosure than conventional mortgage holders.

Philosophy meets practice: Swann and Schumacher

Swann was not alone in engaging the challenges of economic reform as creatively as he did, but he, more than many, translated his ideas into grassroots action. With the appearance in 1973

of E.F. Schumacher's book *Small Is Beautiful*, a new mode of economic discourse arrived with a moral philosophy to frame the kind of work Bob Swann had been doing.

What gave the book its value and influence was Schumacher's light, sure touch in calling conventional economic thinking to account in ethical terms. Schumacher grasped both the physical and moral implications of ecology. This was one of the main reasons that *Small Is Beautiful* was so valuable at its moment and looks so prescient in ours.

If *Small Is Beautiful*, with its wisdom and charm, did much to establish a good and sensible climate of opinion, Bob Swann's as-yet uncollected writings on economics, by contrast, are a sort of... Popular Economics.

A hard-working visionary

Like Schumacher and Borsodi, Bob Swann had the gift of an ability to illuminate economics, which, as he once dryly remarked, "is not necessarily an easy subject." His extant and as-yet-uncollected writings from the latter half of the 1970s delved into monetary issue ("Energy, PetroCurrency and the World's Future," "A World Currency Based on Community Land Trust Resources," and "Proposal for a Village Monetary System Based on trusteeship,") land reform ("Community Land Trust: A New Ownership Approach?" "Land Trusts as a Part of a Threefold Strategy for Regional Integration" and "Appropriate Technology and New Approaches to Ownership"), and microfinance ("Rural Credit as a Key to Development: A Report on a Mexican Experiment"). In addition to their visionary import, these heresies provided readers, and those who heard them at various conferences, a functional education in banking, credit, currency issue, and land tenure. If *Small Is Beautiful*, with its wisdom and charm, did much to establish a good and sensible climate of opinion, Bob Swann's as-yet uncollected writings on economics, by contrast, are a sort of *Popular Mechanics*—or Popular Economics. Many of these papers have been published online by the E. F. Schumacher Society. (www.smallisbeautiful.org)

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Home Economics

Making Sense of a Collapsing World

Peter Bane

YESTERDAY I KILLED A BEE. I was pulling a frame from the brood box of my beehive and my tongs caught the abdomen of a worker bee on the top of the frame. I never like to hurt any of the bees—they are working for me after all. But I'm a novice beekeeper and not very skilled yet. Despite my bumbling and my ignorance, the bees have been very kind to me. Perhaps it is because I always treat them with respect, even when I sometimes squish one inadvertently. I try to go slowly and work deliberately, so as not to burden them too much. At all times, I try to keep a peaceful heart, even when I am nervous—which still happens often. I also accept their feedback. I leave them alone when the weather threatens; I feed them when they need it; and I follow their rhythms as much as I can. They were kind to me yesterday, too—they didn't sting me or my young helper. They did, however, register their displeasure at the slaughter of one of their sisters. As soon as my tool hit the victim, about three dozen bees took to the air and began circling us and buzzing angrily. The hive got noticeably louder, despite the smoke with which I was deliberately confusing and subduing them. After examining the frame briefly, I carefully replaced it and closed up the hive. The bees knew: I had done all I needed to do and I had seen that they were working well and things were in good shape. We retreated gracefully and left them to get on about their business.

Bees are a small but significant part of our economy: they tell a larger story . . .

Bees are a small but significant part of our economy: they tell a larger story about our home system than you might think. For the bees operate in the love economy. Indeed, they're the epicenter of it. Everything they do, they do for love. So far, the bees haven't made us any money, but they are making honey—and that can be sold for cash eventually. We have invested several hundred dollars in acquiring equipment and education and bees. Food for our "livestock" also costs a little. When a colony is young and has relatively few workers to forage, or at times when there is a dearth of nectar in the wild, it needs extra energy, and I supply that by making sugar syrup; it's cheap but still costs a few dozen dollars a year and a little gas to heat on the stove.

If things go well, we will probably get another hive next year. Perhaps our present colony will swarm, or if it is energetic and prosperous, we may be able to divide it next spring. Keeping two



The beehive and the bees themselves near this incredibly rich and productive pond system provide a biological model that human home economies might strive to emulate.

hives is little more work than keeping one and the hive stand I have already set up has room for a second colony. But two bee hives does not amount to much of a business. If the hives do well, they might produce from 50-80 lbs. of honey apiece each year. At eight dollars a pound—perhaps a little more in small quantities at retail—the gross might amount to \$500-600; not enough to pay our taxes. More is certainly possible, and we could probably expand to manage a few more hives. But losses are also common. Colonies freeze out in the winter. There are mites, and odd things happen to throw off your plans.

The business of bees

It is strange (though completely reasonable) to evaluate beekeeping by the model of business. Many thousands of people make their living from keeping bees. The bees, however, have their own business, and are meticulous about it because their lives are on the line. They keep no records, though they are very orderly. They save assiduously, but they also give away their wealth generously—when a colony gets crowded, it raises a new queen, and once she hatches and begins to function, the old queen

departs, taking about half the workers with her and leaving behind all the honey stores for the old colony to continue. With no certainties, the swarm sets out to find a new home and begin the work of gathering nectar and pollen all over.

Bees are not only hard workers, they're also good citizens. They exchange fairly with millions of flowers, pollinating plants as they gather their food, and they tolerate moderate taxation by the beekeeper, who, if he or she is lucky, gets to steal some of the honey at the end of the season. The bees cooperate almost fanatically with each other—making the famous Japanese corporate model looking completely Hobbesian by comparison—because the little insects are more than family, the colony is almost a single organism: certainly it has a profound group intelligence. And though each worker bee carries a sac of venom with which to defend the hive or repel an aggressor, no bee ever wants to sting because to do so is to end its own life. Bees know their limits.

Bees gather from far and wide, which is a great advantage to the beekeeper, who needn't own property or even rent it. Many sharecrop some honey for a bit of yard space. But despite flying many miles in search of nectar, bees never go far from the hive; they stay within a few miles of home. Theirs is a completely local economy.

It is hard not to be in awe of these tiny creatures who make so many remarkably useful and even magical materials from their hard work and their own extraordinary chemistry. We all know honey, a sweet elixir with a wide range of often delightful aromas. There's also wax that when burned gives a clear light without smoke. There's propolis, a resinous glue that the bees collect and use for housekeeping, which will preserve things without decay, sealing them against microbes and protecting them against wetting, but allowing moisture to escape. And then there are pollen, which the bees collect and eat for strength, and royal jelly, by which they mature their young and make new queens.



The author storing energy in the form of firewood for the winter. This form of natural wealth, though its end product is temporary in the form of heat for the house, is an economic benefit tied to a ethical decision--true to permaculture. photo by Keith Johnson.

Both are prized for their health-giving properties.

But since we have already compared honey to money, perhaps we should look a little deeper into this rhyming conundrum. Unlike most other substances of biological origin, honey doesn't deteriorate, but can last indefinitely. It resists invasion by microbes, and indeed, makes a fine topical medicine for that reason. It's now being used successfully as a treatment for MRSA infections against which almost all antibiotics have failed. Money, by contrast, typically loses value over time, and has no intrinsic

[Honey] is a real substance with intrinsic value that's almost pure food energy, as nearly universal a currency as nature produces.

uses. Honey is a near perfect food for almost any animal, though most cannot live by honey alone. Unlike money, especially our fiat money such as Federal Reserve Notes, Bank of Canada notes, Euro notes, and similar, which are created by bankers out of nothing (well...out of paper, ink, and voodoo, or debt) honey is made by the bees from nectar and enzymes. It's aged, like wine, though nowhere near so long. And it's a real substance with intrinsic value that's almost pure food energy, as nearly universal a currency as nature produces.

The spiritual contrast between honey and money is also striking. Both are symbolic, but only one is real. The one arises from cooperation in a well-organized society that knows and recognizes its limits. The other comes into existence with debt, grows not by solar energy but by the usurious black magic of compound interest, and flows where greed directs it. Honey comes from the honest exchange of services (pollination) through an almost entirely regenerative process: bees regenerate their colonies, pollinated flowers set seed and reproduce more flowers with more nectar and pollen, and so the cycle continues, fueled by the sun for free, and punctuated by periodic surpluses which are widely distributed for the benefit of many organisms. Honey brings sustenance, healing, sweet pleasures, and embodies the radiant light of the sun. Money, as we know it, is largely symbolic of depleting petroleum energy, shifting political alliances, centralized power, secret authority, and all that comes with it: war, poison, poverty, corruption, and mounting catastrophe.

Which leads me to ask: On what should we base our economy?

What is an economy for?

I've titled this report knowing that it places me in the long shadow of our greatest living exponent of the agrarian way of life, Wendell Berry, who gave us a fine collection of essays on this subject more than two decades ago. I can add little to the clarity that our Kentucky farmer and poet brings to the subject of the family farm, the fallacies of agriculture, and such ballyhooed but little understood concepts as patriotism, property, and national defense. But I can sincerely wish that every reader holding this magazine would turn to these seminal essays for a renewal of the real debate over public and private life that continues to rage in this country.

I wish to report on our home economy so that others might see some path or gain inspiration for themselves in the struggle to preserve the life of the world. And I have to begin with the title, *Home Economics*, shared with brother Berry, which in the manner of ‘yes, yes,’ is emphatic, not merely redundant. The root ‘eco-’, of course, derives from the Greek *oikos*, or household, while *-nomos* means ‘regulation.’

Regulating the household, for the purpose of self-provision, self-reliance, or the meeting of real human needs...is the essence of the economy.

Regulating the household, for the purpose of self-provision, self-reliance, or the meeting of real human needs, as it is variously described, is the essence of the economy. Everything else is, or ought to be supportive of that aim. The formal economy of Wall Street and *Business Week*, the Federal Reserve and the Department of Commerce, J.C. Penney and Cincinnati Bell rests, as Hazel Henderson and others have long pointed out, on the land, the gifts of nature, and the love economy by which we care for ourselves and those around us. (1) In Gilman's terminology, we need Ecological Capital, Human Capital, and Social Capital in order to make Manufactured Capital. All these must be in place and



A drab and run-down rental property on the edge of a university town—the consequence of land reduced to money only. Simple beginnings for a permaculture system.

healthy long before a greenback dollar (Credit Capital) changes hands. And all of these (land - EC, family - HC, and culture - SOC) have historically been central to the home economy. Even much MC used to be created at home—we used to call it “cottage industry.”

Home economics brings into close focus the central concept of Robert Gilman's essay: Quality of Life. Why, after all, do we do what we do?

What is an economy for? And how do we make choices between different actions, all of which have economic consequences?

Navigating the transition

Like most Americans, I live in a perilous state between the world of the global economy and the orbit of my household. But I am clear about which of these is the more important, which has the better chance of enduring, and where my loyalty lies. Our household is tied to the global economy by numerous threads—electric, gas, and

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water lines, data links, mail, and roadways, but it is anchored in a community and in relations with the land. Our economic design is based on loosening dependence on the former and strengthening the latter. This is neither an easy nor a quick process, but I think it is necessary. Shifting the basis of our economy away from Walmart and toward the permaculture household, however, requires that we leave our dogmas at the door. Transitions are always messy. You cannot discern the virtuous from the damned by the color of their clothes—you have to look deeper.

A new home economics

Most of our focus during the past four years since moving to Indiana from North Carolina, has gone onto building capacity in our household. This has meant repairing and renovating two houses and constructing two woodsheds and a large ferrocement cistern. We have also put up a large kit, plastic-film-and-steel-frame greenhouse, and planted an edible landscape. We have used our work and our resources to reduce our cost of living, increase our quality of life, and build resilience into our household economy. We have also tried to create paying work for ourselves at home or in the local region, work that builds community capacity, that is satisfying, and leaves us with a flexible schedule.

Our financial strategy has been to invest almost all of our surplus into conservative, generative, and regenerative assets. What do I mean by these terms? Conservative assets are those things which hold value over time and which enable us to conserve other values. Our home is the chief among those, even though the buildings and infrastructure are subject to entropy, needing main-

Shifting the basis of our economy away from Walmart and toward the permaculture household, however, requires that we leave our dogmas at the door.

tenance and repair. The land and buildings enable us to conserve other assets and capture other resources (sunlight, biomass, visitors, salvage). Generative assets are things like tools, facilities, energy systems, and reference books that will degrade slowly



The problem is the solution. Asphalt shingles, replaced during the recent roofing project, and tubing for a radiant-floor heating system are in place awaiting a concrete pour to improve energy efficiency and raise the floor in a south-facing, attached garage-turned-living room. photo by Keith Johnson.

under use, but which help us to create other forms of wealth in excess of their cost. Machines such as lathes, drills, band saws, etc. may fall into this category, but most machines are degenerative, costing more than they return in value. Regenerative assets are living systems, based on plants, animals, and microbes, as well as relationships with other people. Investments in our health, education, and motivation can also be regenerative.

This strategy reflects permaculture's ethics and its analysis of real wealth. Our choices also stem from concern that money—specifically dollars, but all forms of fiat money—which is based on oil extraction, must lose value over the coming years and decades. Storing up wealth in conventional financial instruments, which we would otherwise be inclined to do because of our age, seems unwise. Permanent economic contraction has set in, the growth economy is ever more of a phantom, and debts generated during the boom years of the 90s and 00s are likely to become unpayable. With few exceptions, stocks, bonds, annuities, and other investments in the conventional economy are unlikely to make long-term gains from here on. We are also loathe to delegate investment decisions to the criminal class presently running the world's economy.

While we lived off-grid and in very modest hand-built structures (about 1,200 sf of indoor space) for six years, sharing toilets, bathing facilities, and power systems, the limitations of remote ecovillage living became apparent over time. We moved toward the mainstream for a variety of reasons: family needs, improved economic security, greater opportunity for our work to expand and to influence others. We sought land in or near a small but convivial city, with adequate rainfall, local farms and forests, and housing stock that was older but repairable and mostly in

working order.

Starting over

Our present suburban property was quite conventional when we found it. It was in poor though serviceable condition and just matched our very limited means. Buying a home after living a decade in intentional community and living lives of semi-voluntary poverty for 30 years, my partner and I had scant savings; we had to take on substantial debt to finance our home. This amounted to about 2.5 years of income, generally considered a prudent level for home finance, but more than either of us had ever contemplated. Because of the unconventional nature of our self-employment, as permaculture teachers, publishers, and designers, we found the options for conventional mortgage finance unattractive.

We resolved to get out of debt within three years because of our expectation that the global economy was headed for collapse.

A combination of family loans (35%), equity in our small NC cottage (20%), and low-interest promotional credit card advances of short duration (45%) enabled us to leverage about \$10,000 of personal savings into a cash home purchase. We resolved to get out of debt within three years because of our expectation that the global economy was headed for collapse. We made the final loan payment in September 2008 while following the dramas of Wall Street's implosion.

Simply financing a home purchase, as audacious as it seemed to us four years ago, was not enough. We also had to renovate two small houses built in the 50s and 60s, eras of little concern for energy efficiency. The fundamentals of the land and building placement were sound: good air and light, good drainage, good microclimate, compact lot shape, positive outdoor space around and between the buildings, good access to town services and country resources. But almost everything about the structures was worn out, badly designed, cheap, shabby, ugly, or incompetent. As we peeled back the layers, we frequently found evidence of decisions that won the prize in several of these categories. In a classic case of "the problem is the solution," we understood that not buying other people's poor choices in renovation and renewal would enable us to make shrewder investments and better designed systems.

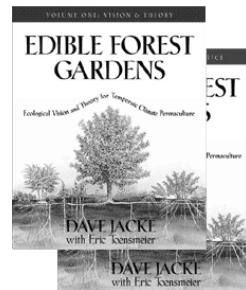
The sidebar on Energy Systems gives a synopsis of our investments toward reducing fossil fuel use and energy expenses. You will notice that almost all of the things we have spent money

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Energy Systems at Renaissance Farm

1. Space Heating—Two small, efficient wood stoves, one in each house, the larger one equipped with a heat exchanger connected by water pipe into an insulated slab, provide 100% of winter heat. Back-up is by a 92% efficient natural gas furnace in one building, and an air-to-air heat pump and electric resistance furnace in the smaller building. Newly installed south glazing, together with eaves and awnings bring in solar energy which is stored passively in a tiled slab. Ceiling, floor, wall, and foundation insulation has all been upgraded significantly, and doors and windows have been repaired, replaced, and tightened against drafts. Insulating blinds or curtains on almost all windows improve thermal performance dramatically. We continue to refine our insulation and draft-proofing.

Solar glazing & awnings	\$3,000
Tree trimming	\$ 700
Insulating blinds	\$1,100
Foundation insulation	\$ 900
Storm doors & draftproofing	\$ 800
Wood Stoves & chimneys	\$3,500
Slab and heat exchanger	\$1,600
19 Windows & installation	\$6,100
Replace gas furnace	\$2,300
Total	\$20,000

Estimated cost savings over no improvements: \$1,300/year net in avoided gas and electric fuel costs. Four cords of wood worth \$520 captured from the tree trimming.

2. Fuel—Wood fuel for the stoves is harvested from older trees on our lot that we are pruning or removing for strategic reasons (40%). We also scavenge fallen limbs and dead trees from our neighborhood (30%), we purchase about one cord of hardwood per year (\$130) from a local woodcutter harvesting his own forest (30%). New tree and shrub plantings promise to supply about 10% of our need by sustained yield over the long term. Two thousand square feet of buildings require about 2.4 cords of dry firewood of mixed quality per year. We have more than two years' wood in covered storage, and room for twice that.

Two chainsaws	\$ 600
Two woodsheds	\$1,800
Total	\$2,400

Fuel storage has contributed to saving about half a cord of wood per year due to greater heat recovery from dry fuel. Also storage allows us to capture windfalls that reduce purchased fuel costs by as much as one cord/year. Est'd annl. svgs.—\$200.

3. Space Cooling—Both buildings are centrally air-conditioned. Electric use for this purpose is about 35-40% of our annual electric demand (=1000-1200 kWh). Good insulation and window fans enable us often to pull cool air into the buildings on summer nights, close up during the day, and avoid the use of much mechanical a/c. We can easily hold a 10°F difference between indoors and out with almost no electric power use. Window awnings and insulating blinds exclude unwelcome summer heat and hold in winter warmth. Ceiling fans help distribute air. Vines on trellis, shrub plantings around the buildings, a covered porch to the east, large deciduous trees to the south, and an evergreen hedge to the west all help exclude summer heat.

Ceiling & Window Fans	\$ 250
Trellis	\$ 200
Covered Porch	\$1,850
Total	\$2,300

Continued on page 20

on appear to be returning 6-7% in cash savings or actual income, even though the list includes some unconventional choices. This figure would be somewhat less if we added in the value of our own labor, but since we are not fully employed in paying work, directing some of our time into saving cash has seemed prudent. It has also enabled us to achieve a generally higher standard of quality for less money, and in some cases allowed us to accomplish things that we could not have hired done.

In contrast to the off-grid, remote, and independent D-I-Y strategy that characterized our ecovillage experience, we have chosen since to make use of the embedded energy in our society's investments, as bad as many of them have been. The community where we live today has high levels of SOC and HC and a relatively high level of EC. These contribute to our quality of life and even to our financial well-being. The university here offers cultural and educational opportunities and a large body of mostly young and many cosmopolitan students and faculty provide a large potential audience for our services as teachers and designers. Extensive forest and farm lands in the region along with

Much of what disturbs people today is the felt lack of support: community has eroded, resources are distant, but the answer is not in running faster to pursue money.

generally adequate to abundant water resources mean that local self-reliance is possible over the long-term. Air pollution from coal power plants and industry is higher than in some parts of the country, and the industrial agriculture of the Corn Belt is problematic due to GMOs and herbicides, but we are in a part of the territory more wooded than farmed, so slightly buffered from the worst effects of these toxins.

Outreach, outside

The edible landscape we are planting and designing already makes a significant contribution to our diet and health; it also enriches our lives spiritually—it's fun, beautiful, and draws praise and enthusiasm from friends and visitors. We eat berries until our tongues are blue and can practically roll around in fresh vegetables. The garden's a source of information, which is potentially and actually worth money. Products include seed, fruits and

vegetables, nursery stock, and perhaps soon honey. The likeliest path for us to add value to the primary produce of our landscape is through education and training in permaculture and garden farming. We have been attempting to expand our household (we have extra housing) as the cheapest means to increase our labor supply and lower our per capita carbon footprint. Thus far, this has involved interns and students, and may continue to do so for the foreseeable future.

We have a plan to add a barn with living quarters above it in the next two years. In addition to meeting our need for a workshop, animal housing, and adding some elements to the system—such as a compost toilet, that we presently lack, this project would create more autonomous quarters for a second family, or alternately more lodging for transient help (e.g. WWOOFers) or visitors (B&B).

From money to honey: ten tips

There is no one formula for economic transition, but we are all undergoing it and must figure out how to use existing resources, embedded energy, and diminishing income flows to arrive in a stable, supportive situation. Fossil fuel use must decline because the supply is dwindling, global demand and costs are increasing, and climate cannot bear continue carbon emissions at the present rate without destroying civilization. Since we have to reel in our far-flung economic relations, we can foresee a relocalization of life. How to make that satisfying is the only question worth asking. Our path has been informed by our understanding of real-life economics. I would summarize our approach as this:



Four years later, the author's old house, seen in early spring with a new porch and solar panels, stands flanked by four-season gardens and fruiting perennials.

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1. Optimize access to resources and limit liabilities by location.
2. Secure home with enough land for significant food and

Continued from page 18.

Cost savings are hard to calculate because the baseline has changed over four years and so many multifunctions are at work. We may have reduced cooling power demand by 1/3, or 400 kWh—only \$50 at present electric rates, but 600 lbs of CO₂ avoided—what is the value of climate disaster forestalled?

4. Refrigeration and Food Storage—A relatively efficient electric refrigerator was new four years ago. We've added an above-ground root cellar and a considerable food storage space in a pantry off the kitchen.

Refrigerator	\$750
Pantry Renovation	\$1,200
Root Cellar	\$2,800
Total	\$4,750

5. Water Heating, Cooking, and Clothes Drying—Natural gas appliances for these purposes consume about 100 therms of fuel a year, costing \$60 plus \$160 of base connection charges for the gas company. Gas prices have been higher and are likely to double or triple within five years. Virtually all clothes drying is done on outdoor lines. We avoid most indoor cooking during hot weather and are creating summer kitchen options such as barbecue grill, wood rocket stoves, and outdoor propane range. A solar water heater would be feasible but is a low priority for now.

New gas range	\$450
Wood & charcoal stoves	\$150
Repair & relocate clotheslines & laundry access	\$100
Total	\$700

Estimated annual cost savings from switching electric range to gas cooking and using solar energy for clothes drying - \$50. Avoided cooling cost savings not included.

6. Electricity—We use about 3,000 kWh annually. Indiana's supply is 94% from coal, and our use equals about 750 lbs. of coal burnt per year = 4500 lbs. CO₂. Our 2.4 kW photovoltaic array feeds about 3,000 kWh into the grid per year (projected). We pay an average of \$30 per month for connection charges and some power not metered through the grid intertie. Renewable Energy Credits return about \$600 per year.

PV array, inverter, and wiring changes	\$15,000
Present-value annual cost savings plus earnings	-\$900

7. Water System—About 2,500 square feet of enameled metal roof feeds a 10,000 gallon above-ground cistern by gravity. Water flows to five outdoor hydrants, the greenhouse, and into the main house for toilet and laundry use. Piped, pressurized mains water use is about 600 gallons/month. All irrigation and most laundry use is from tank water.

Tank construction	\$3,500
Plumbing and hydrants	\$3,000
Total	\$6,500
Annual water cost savings	- \$50.

Peace of mind—priceless.

Costs do not include household labor.



The system is emerging, with new investments of labor and resources, as a place of intrinsic value and beauty.

energy production.

3. Get out of debt.
4. Apply surplus and savings beyond basic liquidity to lower costs and improve capacity.
5. Focus on buildings and infrastructure to conserve energy, reduce maintenance, and create redundancy in essential systems (water, heat, food).
6. Build up natural capital in the form of soil, water, biomass, and diversity.
7. Invest in relationships and other forms of social, organizational, and human capital.
8. Acquire and maintain adequate tools, inventory, and skills for earthcare, construction, and repair.
9. Diversify income streams, crops, and opportunities.
10. Use existing systems as a springboard to creating regenerative ones, not as a basis for continued dependency.

We have no crystal ball. Like most people, our fates are bound up with the society around us. We can't escape it, but we try to pull with our small weight in the direction we think it should move. If more of us would get clear about that direction and lean into it, good change would come faster. Much of what disturbs people today is the felt lack of support: community has eroded, resources are distant, but the answer is not in running faster to pursue money. This is bound to fail for most people soon and for everyone eventually—even the rich. There can only be “stability” amidst this millennial upheaval by reconnecting with the sources of real wealth—the natural world, caring and capable family, friends, and neighbors, one's own integrity and practice, and a real basis for understanding the world. Permaculture offers all of these, but no free lunch, no get-rich-quick, and no guarantees.

I'm in.

Δ

Peter Bane holds the Diploma of Permaculture Design and has published this magazine for 20 of its 25 years. He would like to help others achieve competence in the skills for creating regenerative systems and have a good time doing so. www.permaculture-reactivist.net.

Real Wealth, Real Life

Eco-nomics of Small-Scale Forestry

Ish Shalom

OUR JOURNEY TOWARDS self-reliance started with a raw piece of mountain land in southern Oregon a decade ago. The land we bought had no road access, no grid power, no buildings, and seemingly nothing but brush. Beyond the land purchase itself, plus ten years of intensive labor, we have invested a steady capital stream adding up to a serious six-digit figure to construct enough physical infrastructure to generate land-based income. We have established much of the system that can sustain us, but as we work to meet our needs directly from the land within a model of permaculture homesteading, financial sustainability remains our final frontier.

In textbook permaculture fashion, we started by investing in broadscale infrastructure. We needed everything: access, shelter, drainage, gravity flow water supply, water storage, an off-grid power system, fencing, vegetable gardens and food forests, and finally, land-based income (as even all these other parts of the system combined won't pay property taxes or car insurance). Of course we began with access: There was no way in! We built a wooden vehicle bridge and a half mile of rocked road. After this came the first buildings and then terraces to store and



Logs xon the trailer headed for sale. Restoration forestry is part of the overall plan for meeting site repair needs and an income for those living here.

If we are successful in designing closed-loop systems...then our products should end up costing less to consumers than comparable industrial products, right?

manage water in the landscape. We dug a small pond for domestic water use and minimal irrigation, and piped and plumbed springs into a tank for drinking water. Next came a photovoltaic power system. Then we bought a tractor. We expanded the old quarter-acre, temporarily fenced garden by building a permanent deer fence enclosing 3.5 acres. This was all during the first five years.

Between 2005 and the present, we've built three more large ponds for water supply and storage, added a hydroelectric turbine to our power system, planted three acres of food forest, and built a bath house, a greenhouse, an outdoor classroom, and housing for ten more people. During this time, we put together an ecoforestry plan for 50 acres and implemented about half of it, thinning, pruning, and planting trees. In 2005 we started harvesting and selling logs to a local mill, yielding about \$75 per person-day of work. The challenge is, with work equating to minimum wage, how can we afford to establish all these systems which, besides being costly, take huge amounts of labor?

A model for living on resource lands

Wanting to demonstrate a model of stewardship while living in the forest, we work to restore forest health while selectively harvesting wood products for export, capturing and directing energy flows and by-products to meet our home needs from the land. Our broadest goal is to exemplify the intensive, rather than extensive management of resource lands. We aim to provide a sustainable supply of many forest products to the community without compromising land health. This same model could be adapted for any resource lands: agricultural, coastal, etc. The most straightforward criteria for the success of this model are to offer equal or greater product value for the same or lower cost as conventional equivalents. In my eyes, selling FSC-certified wood for considerably higher prices than clearcut wood undermines the purpose of demonstrating an ecological alternative.

I believe that a well-designed permaculture system of commercial ecoforestry should be able to compete with the con-

ventional forestry business. If we are successful in designing closed-loop systems, if we make no waste, if each action and each resource serves multiple functions, and our work enhances rather than detracts from the land, then our products should end up costing less to consumers than comparable industrial products, right? In practice, it costs us more to provide forest products because our systems require more labor. Presumably, the subsidies to fossil fuel account for the discrepancy in price; sometime soon this will change. How then do we meet our financial needs until the markets reflect honest value?

Meeting present financial needs

I think it fair to say that taking environmental concerns into our business model requires more labor and more time. To follow nature's logic and respect nature's pace is, in the present market, more costly in dollars. An example is selective harvesting: It is a far more sensible long-term approach to forest management than clear cutting, creating greater value in the timber and in the forest, but it takes more work per board foot of harvested wood. This extra work, at least in the early decades, is not compensated by more valuable wood, though it may be in the long run. Conventional forestry has extracted—

So how should we account for this? We offset our labor costs by stacking more functions into our operation. We have to sell the educational value of the experience of ecoforestry as well as the wood. Apprenticeships and work-trade programs appear to



The system in progress. Expansion is based upon the yields of natural and social capital in the form of forestry projects, educational courses, and apprenticeships.

Wouldn't it be nice if every case of permaculture system establishment provided a yield of equal or greater value than its cost? We'd always be rewarded for doing the right thing!

and continues to extract—the slowly accumulating natural capital of centuries of forest growth in a few short years. This gives it a market edge so long as we do not properly account for the loss of natural wealth (EC) that goes with it. Also, with selective harvesting some economies of scale made possible by oil-powered machines are lost. These may be false economies, since to create them, irreplaceable oil of immense unrealized value is being used up at a price subsidized by war and pollution, but those are the "truths" of market economics. This same dynamic is evident within organic farming and natural building.

be pretty common in these situations. The value of providing an educational experience subsidizes the labor, thus thousands of middle- and upper-class Americans willingly work as farmhands all over the country for less than minimum wage. When I was one of them for a while, I felt I was coming out ahead considering the much more expensive course of education that would have been my alternative.

Establishing systems, adding value

Although most of our homestead was built by the hands of apprentices, in 2009 we took this hands-on education one step further when we created our Zone 4 nut forest and woodlot. (*Ed.: Permaculture zones 0-5 are physical and reflect distance from the activity center and a gradient of intensity of use and cultivation.*) This is similar in concept to a planted woodlot, except that we were starting out with a brushy forest. Following standard ecoforestry principles, we thinned and pruned this two-acre patch of young, third-growth forest, but instead of then planting local conifer species, we planted 60 different valuable, multi-use species for food, fuel, and fiber in order to speed up the natural succession of our forest. Beyond our future yields, we wanted to maximize the benefit of the establishment process itself, so we offered a Zone-4 ecoforestry course. Opening up the implementation process to paying participants provided all the funding we needed to establish the woodlot. Six participants paying \$550 each covered all expenses during the workshop. This included all the purchased food, guest speakers and instructors, tools that we had to replace, \$1,200 for plants, and even left a little money to

spare. In contrast to our previous projects, which ended up costing more than anticipated, this project completely paid for itself.

We started work on this two-acre patch in 2007, when we cut eight selected red alders to sell as sawlogs, earning us close to \$1,000. That project paid most of our property tax that year. In 2009, we unexpectedly found a few more mill-worthy alders within the patch when we started thinning. Although not quite large enough to be sold as sawlogs, these alders, along with a single maple tree, were milled on site with a super-portable Lucas Mill. Since it was February and we only use our seasonal roads during the summer, we carried the small mill to the logs rather than the other way around, as we had always done before. The lumber we milled was later sold to a local farm for \$2,000 as alder flooring and furniture material. The experience of milling was a bonus to our hands-on curriculum. While we were at it, we even took down some large Douglas firs and milled them up for a planned building project.

The establishment of the nut forest took seven weeks. We spent two weeks thinning and pruning prior to the 11-day course, then during the course we completed the site prep, including more thinning and pruning, plus harvesting, milling, firewood processing, pathway layout, and landscaping. We also developed a planting design, and we even got to start planting during those 11 days. The rest of the work, which included planting 189 trees, was finished in the next three weeks. I always wonder whether the extra time it takes to train course participants during a hands-on course is compensated by the extra labor, or whether focused skilled labor gets the job done more effectively. However, if

Through our work-trade program, I meet a lot of disappointed students who have not had any real first-hand practice in their field of study, permaculture course graduates included.

one considers the added yield of education, the course approach certainly returns more value. The permaculture ethic of Care for People is a good reminder of how to act appropriately: education must always be built in to our work. Overall, I have found this model of combining education with commercial ecoforestry practice and homestead permaculture design implementation to be highly successful.

Although in the above case we wedded the nut forest establishment to the production of lumber for sale, this is most often not the case. Wouldn't it be nice if every case of permaculture system establishment provided a yield of equal or greater value

than its cost? We'd always be rewarded for doing the right thing! Most of the time business is business and we establish our permaculture systems on weekends.



A cob workshop builds needed infrastructure on the site. More educational opportunities are needed for a re-skilling.

Education as a by-product

Design implementation, as in the case of our nut forest, can provide amazing learning opportunities for inexperienced individuals. Through our work-trade program, I meet a lot of disappointed students who have not had any real first-hand practice in their field of study, permaculture course graduates included. Personally, I find that hands-on learning is the only form of education I really benefit from. Hands-on learning used to be the only way people learned how to do things, before the concept of schools was ever invented. What if instead of investing so much money in schools, all those resources went into establishing functional systems that could then be productive in themselves? If the curriculum included building the school, planting and tending the gardens and the food forest that would provide the student meals, and regenerating the building materials through ecoforestry, education could be largely self-supporting.

This is what we are working towards. Once we fully implement our design, most of our needs will be met from the land itself, with no money outlays. We should then be prepared to offer educational opportunities at little or no cost. We are looking at a couple more years of establishing ecoforestry infrastructure: clearing more forest roads, constructing a wood processing barn complete with a renewably powered mill, and purchasing more equipment for more effective rigging. In those few years our perennial plantings should begin yielding heavily, thus reducing our living costs. At that point, even if we only got \$75 per person-day, we would be pretty well off considering we'll hardly have any living expenses. However, by selling value-added wood products, milled on-site, we may do a lot better than \$75 per person-day. The future will tell. △

Ish Shalom works for Walker Creek Ecoforestry, based out of Mountain Homestead intentional community in Coquille, Oregon (www.mountainhomestead.org). He is a food forester, permaculture consultant and educator, and runs Perennial Foods Nursery. He can be reached at ish.shalom@gmail.com

A Permaculture Farm Indoors

The Bioshelter Market Garden

Darrell Frey

BIOSHELTER MANAGEMENT has much in common with standard greenhouse management. Both strive to provide a proper environment for plant productivity. A bioshelter is a departure from a standard greenhouse because it attempts to create and sustain a diverse organic system of plants, poultry, renewable energy, insects, gardeners, and the building. Such a system is complex, and it evolves as new species and varieties are added, seasons change and managers learn. After two decades of managing our bioshelter, we are still enthralled by the prospect of spending a day in a hot, sunny garden surrounded by snow and ice. (However, the need to feed the fire on long, cold winter evenings and feed the chickens each morning is a bit less entralling. It's important to have a backup team to allow days off and travel.)

We see bioshelters as a vital feature for any sustainable community in a temperate climate. Much of the value of a bioshelter is the use of the space for social and educational activities. At Three Sisters, weddings and other events have been held between the compost chambers and the planters, among the vines, and beside the fireplace.

Much of the value of a bioshelter is the use of the space for social and educational activities.

Sunlit interior gathering spaces integrated with crop production—edible conservatories, so to speak—will be commonplace when local food systems are fully developed. Our bioshelter is an aesthetic environment as well as a production facility, so we try to keep the space neat and orderly as well as productive.

This [article] details the management of the bioshelter as the heart of the permaculture farm.

Managing the indoor ecosystem

The primary objective in managing a bioshelter is crop production. Three Sisters Farm is a commercial enterprise. At the same time, we have always had a goal of furthering bioshelter research. Ecological management of an indoor polyculture system is a fascinating study. Our bioshelter has been developing as an indoor ecosystem since 1989. Over the years, our seasonal



Lettuces and greens interplanted with herbs make a much more productive and healthy system in the bioshelter.

crop mixes have varied, and perennial plants have been rearranged many times. We have not always managed the building simply for profit. At times we have just experimented with crops or taken a break from intensive management to pursue other activities (such as writing this book). We have given space over to collections of unusual ornamental plants. Linda loves working in the sunny bioshelter—getting her hands in the soil and growing healthy plants. My own fascination with the natural world and garden ecology has been engaged by the various components involved in the site's development. Our mutual belief in creating new possibilities for abundant and ecological landscapes has kept us interested all these years.

Many aspects of the bioshelter's management have been consistent through the years. Seasonal planting schedules, soil management, harvest schedules, and daily maintenance are well-established patterns. The production of salad greens, herbs, herbal bouquets and edible flowers has been ongoing. Every day since 1989, someone has tended the chickens, watered the plants and managed the heating or ventilation.

Daily management

Daily care of the bioshelter begins with the chickens. Fresh hay or straw is strewn over the morning's chicken droppings. This makes a cleaner space for the birds and reduces ammonia evaporation, conserving nitrogen and keeping down the odor. It is surprising how well this works. A well-tended chicken coop smells like fresh straw instead of ammonia. In winter months, when the animals have less access to the outside, extra straw is added, and rock phosphate or crushed limestone is occasionally added to absorb nitrogen.

Bedding is removed and composted several times in the summer and in late winter. After the old bedding is removed, a base of sawdust is sprinkled with rock lime and then covered with straw to begin the process again.

The chickens' water is refreshed and feed troughs are filled with a daily ration. In all but the coldest weather, chickens are allowed access to an outdoor yard and forage areas. Eggs are collected two or three times daily. Additional feed may be given to the chickens at midday. As we work in the gardens and bioshelter, wheelbarrow loads of weeds and plant trimming are given to the chickens.

Besides regular building maintenance, such as painting and window washing, the bioshelter has some unique needs.

Heating and cooling

Fire is maintained in the woodstove during the winter months on cloudy days when the temperature is below 30°. When the outside temperature falls below 20°, we also heat the 600-gallon water tank to act as a radiator. A submerged aluminum "Snorkel Stove" provides highly efficient water heating. The warmed water is used to irrigate garden beds as needed. Two fans near the wood stove and water tank blow air from the center of the building toward the east and west ends on cold nights.



Jujube, or Chinese dates, are a pleasant treat from the bioshelter.

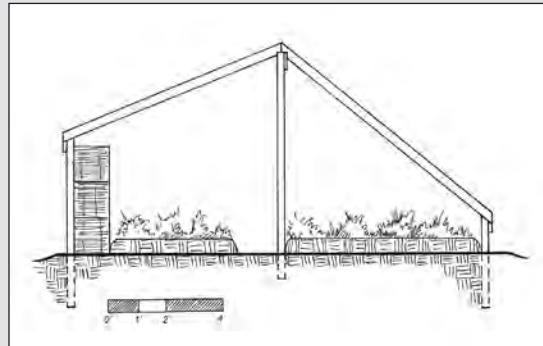
During spring, summer, and fall months, roof vents are opened to allow passive cooling. We have multiple options for ventilation, depending on the season and the weather. An electric exhaust fan is used as needed on summer afternoons to keep building temperatures below 100° on the second floor.

Plants require daily monitoring for water needs, health, and insect infestations. Most plants are watered daily and fertilized with liquid seaweed; they get fish emulsion weekly during the spring-through-fall growing season. Less fertilizer is applied in the cold and darker winter season.

A Bioshelter Economy

"It is much easier to estimate the profits from the products of the soil, be they fruits or vegetables, than to define by any certain rule what the profits of our greenhouse floriculture are. In fact, we can only approximate to it, because the conditions in which the operations are carried on in different places, or the different articles grown, make anything like a general average for the whole country impossible."

—Peter Henderson, *Practical Floriculture*,
Orange Judd Company, 1906.



The problem of measurement

Peter Henderson's observations of a century ago hold true today in regard to bioshelter economics. The wide range of potential products of a bioshelter makes generalization difficult. For example, when growing plants for sale, the value of a two-square-foot flat of seedlings can range from \$15 for vegetable seedlings in plastic inserts to \$72 or more for herbs and wild flowers in 4-inch pots. Small scale growers plant and sell a wide mix of items across the price range.

Similarly, one can estimate the yield per square foot of a bed of head lettuce (one full-size head per square foot, two or more "baby lettuce" heads per square foot), but to quantify the sustained yields of diverse and intensively managed polyculture cropping in a bioshelter is not straightforward. Perennial herbs that serve as beneficial insect habitat, such as alyssum, are interplanted with continuous rotations of salad greens, cooking greens, edible flowers, and bouquet flowers. What is the crop?

A better measure of the economic success of a market garden is the annual balance sheet. After all the bills are paid, is there a profit? Do you have enough left at the end of the year to pay bills until the next season's revenue begins to flow? Is there a buffer for potential crop losses and a budget for equipment repairs and purchases? Many factors can influence the seasonal and annual profits, including a variable workforce, weather, and markets. A good business manager will minimize debt, retain good workers, and plan for unexpected challenges.

Because of the seasonal nature of agriculture many farmers find it necessary to garner off-season income.

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Ongoing building maintenance

Besides regular building maintenance, such as painting and window washing, the bioshelter has some unique needs. Most of the wood-paneled walls, floor joists, trusses, and wood framing for planters are painted every few years with a mix of beeswax dissolved in turpentine. This soaks into the wood and provides a waterproof finish. Floors and decks inside are painted as needed with linseed oil stain. Extra care is taken to keep windows and doors in good repair to keep out drafts.

The building exhaust fan, the active heat recovery blowers, and several air circulation fans are kept clean and in good repair. The faucets and plumbing in the bioshelter and associated hoses, watering wands and nozzles are also kept in good repair to prevent leaks.

Wood stoves and chimney pipes require proper care for fire safety. The dampers and doors of our wood stove are maintained to keep an airtight seal. Chimneys are kept clean by proper fire management and timely sweeping.

We have found wooden planters are not cost effective because they rot too quickly. Most of our planters are heavy, recycled plastic barrels. Still, we have found it necessary to have some wood in contact with soil at the ends of the planter beds to allow them to be emptied if we want to change soil or access air ducts under the beds. These wax-coated hardwood boards are occasionally replaced, maybe every eight or nine years.

The first floor of the bioshelter is covered with crushed gravel over packed subsoil. The gravel is raked as needed to keep it clean of plant residue. Every four or five years, the gravel is removed and used to fill potholes in the driveway. Fresh gravel is brought in to cover the floor.

Plant growth factors

Factors affecting plant growth include fertility, temperature, light, moisture, air circulation, CO₂ levels, insect pests, and disease. All these factors interrelate. A few examples: in a cold or dry soil, nutrients may not be available; in low light, plants cannot metabolize nutrients; insects and diseases attack weakened plants. The goal of managing a bioshelter is to maintain a balance of growth factors to encourage productive and healthy plants.

The main factor we cannot control in our bioshelter is the light level. We decided we wanted to use the absolute minimum of energy-intensive, artificial light. The only exception is the fluorescent grow lights we use to get seedlings off to a good start. Therefore, during the short, cloudy days between early December and mid-January, we keep the building cool and take a break from the busy schedule of the rest of the year. If the sun happens to shine more than usual, we appreciate the extra harvest income.

During the summer, many of the planters and beds in the bioshelter are allowed to lay fallow, or we do succession plantings of buckwheat as green manure. Perennial plants (ornamentals, herbs, flowers, and tomatoes) are maintained year round in the bioshelter. In the summer, the annual crops most susceptible to flea beetle damage—brassicas, eggplants, and salad mix cutting trays—are grown inside. Flea beetles rarely enter the bioshelter, but they render these crops unmarketable in our outdoor beds.

Microclimates within microclimates

The bioshelter's plantings are arranged to take advantage of the building's various microclimates. Heat-loving figs, tomatoes, and nasturtiums are grown in planters and beds on the warmer second floor. Taller shrubs and vines are located on the north end of the beds to mimic a forest edge and prevent them from shading other crops. Shorter perennial herbs are planted in the narrow divide between the deep beds. This is done to divide annual planting beds and slow down the migration of any pests that might try to take up residence.

Salad crops are grown in the cooler beds on the first floor all year and in the second floor planters all winter. Houseplants and ornamentals are located throughout the building but are concentrated at the ends of the building, which are shaded in the morning or evening.

In August and early September, we begin preparing and planting for fall and winter production in the bioshelter. Around this time, soil tests are done to check for nutrient levels and pH. Mineral levels are high after years of organic management, so we usually do not need to add much more than a few inches of compost each fall.



Snapdragons and other flowers throughout the bioshelter help foster an excellent habitat for pest predators, and they brighten up the shelter even on drab winter days.

Pests

At the beginning of the fall season, we monitor the bioshelter for pests. Aphids, thrips, whitefly, and spider mites are likely lurking among the perennials and self-seeded crops in the beds. Sow bugs (also known as pill bugs) are ever present. While usually a valued part of the decomposition process, sow bugs can be a major consumer of crops when populations get out of control. To get the season off to a good start, we try to get the insects in

Mineral levels are high after years of organic management, so we usually do not need to add much more than a few inches of compost each fall.

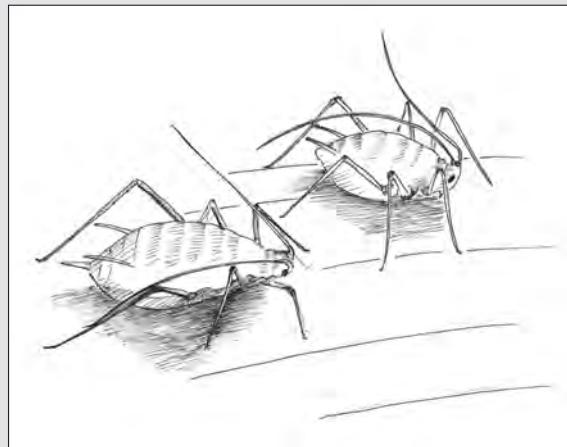
balance early. Bowls of beer are set around the beds to trap sow bugs by the hundreds as well as any slugs that may have come in with plants or flats from the outside. (Sows bug and slugs are a big treat for the chickens!)

However, one must be careful when trying to control pests. Colonies of aphids and whiteflies usually support beneficial predators as well. Before we spray insecticidal soap, we look for these predators, collect and relocate them. Aphid predators include the bright red gall midge larvae, syrphid fly larvae, tiny parasitic wasps and ladybugs. These all come into the building from the surrounding gardens. We encourage them by planting insectary plants, such as tansy and fennel, just outside the building.

The parasitic wasp, *Encarsia formosa*, consumes whitefly. If their numbers are low, we purchase a few thousand larvae. But they are usually present in sufficient numbers to keep the whitefly in check. Occasionally, a summer crop of tomatoes or other host plant will become host to vast numbers of whiteflies. When that happens, we resort to vacuuming and then spraying soap before releasing more *Encarsia*.

Ladybugs and their larvae are major predators of aphids. Unfortunately, they only reproduce one generation in the greenhouse. For about eight years, we bought ladybug larvae by the thousands from California. But we didn't feel right about it. Besides the unknown effect on California ecosystems, we thought we might be introducing new ladybug diseases or parasites into our gardens. Then, in the mid 1990s, an Asian ladybug introduced by the USDA began to appear in our area. We do not know how they are affecting the local native ladybugs, but the Asian ladybugs are now here in abundance. On warm Indian summer days (a warm period after the first killing frost), we leave the doors and windows open, and they come into our bioshelter by the hundreds seeking a sheltered place to hibernate. We no longer have to pur-

A bioshelter enables the farm to extend the production season and to generate multiple income streams. If the design provides space for plant propagation and anticipates winter harvest, the market garden can become a year-round enterprise. We grow a succession of seedlings, propagate herbs for sale from cuttings, and get an early start on our spring and summer crops.

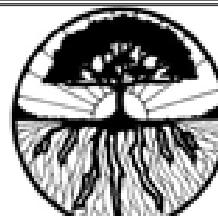


Return on investment

The high cost of building a bioshelter requires a long payback time, but if it is designed and managed well the investment will be rewarded. Bioshelters allow the grower to integrate a number of diverse enterprises under the roof. These can include aquaculture, egg production, salad, herb, flower and vegetable crops, educational programs, community events, and value-added processing. Mixed use of the facilities and a seasonal succession of activities is the key to steady cash income.

Creative thinking, innovation, and careful planning are important to any business development. When the students at Hershey Montessori Farm School, near Huntsburg, Ohio, were planning a bioshelter, their studies revealed that the proposed building's cost would be far less than that for a standard class room space. The lower cost per square foot of the bioshelter was appealing and easily afforded, especially as the expanded facilities supported an increased enrollment at the school. The

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bioshelter design to create a science laboratory for students, while providing greens for school lunches and seedlings for the farm gardens. Economy and extra value added up to a winning business plan.

Non-money values

The motivations that lead people to begin a small business go far beyond simple profit motives. Entrepreneurial individuals are willing to invest hard-earned cash and, sometimes, years of long hours building a business for the personal satisfaction of following their chosen path and bringing a dream to fruition. Personally, when thinking of the economics of bioshelter management my mind strays to the less tangible rewards. I watch my adult daughter Terra water the planting beds while my 11 month old granddaughter Deja, snug in her front pack, holds a pink and purple mallow flower and laughs with delight at the water spray. The experience is deeply rewarding. So is the positive feed back given by the volunteers from Brooklyn, NY who stopped to visit on the way home from the 2010 US Social Forum 2010 in Detroit.



Yet the search for a sustainable future still demands the economic survival of the enterprise. After 21 seasons we are still in business. Bills are up to date and the farm still thrives. My daughter and her partner Cody take on more of the day-to-day farm management while I teach and work off-farm several days each week. We maintain our sales to restaurants, grocers, and produce subscribers ten months of the year.

When we began to develop our five acres into a permaculture farm, we were motivated more by the desire to experiment with permaculture than to make a profit. But we quickly realized we needed to balance the books and earn a modest income. The economic potential of a well designed bioshelter is limited mostly by the energy and labor available. We have not wanted to manage a large workforce, and so have not realized our full potential. A family-run farm better suited our goals.

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chase ladybugs. We do order predators for thrips and spider mites each fall and again in late winter. These pests are difficult to see until after damage has been done (the presence of spider mites is only obvious once an infestation strips leaves of their outer surface), so if we see signs of them, we add predators.

Even before the advent of the Asian ladybug, our use of imported predators was greatly reduced by the appearance of the insect-consuming fungus *Beauveria bassiana* in the bioshelter and surrounding gardens. This fungus spends the warm months in the soil. When the air cools in the fall, we find the fungus infecting aphid colonies in the gardens. We collect a dozen or so “fuzzy” aphids (already infected with the fungus) in a deli tray and allow them to spore. Spores are mixed with distilled water and sprayed throughout the bioshelter. New seedlings are given an application of the spores all winter and spring. The fungus becomes active in the bioshelter in November, just as predators go into dormancy. Some years, when temperatures are cool and humidity is high, the *Beauveria* fungus virtually eliminates aphids, whiteflies and thrips until March—when it gets too warm for the fungus. But by then, the predators are active again.

But every year is different. The winter of 2006–2007 lasted so long that the *Beauveria* fungus remained active into May. Other winters have been too sunny and warm for the fungus to be completely effective. When that happens, we spray more with insecticidal soap and rinse plants more often. On the brighter side, though, predatory insects are active earlier in those sunny winters.

In the fall of 2002 we had no Indian summer—and the ladybugs did not invade the bioshelter. The early onset of winter that year greatly reduced the population of Asian ladybugs in our region in 2003. In the fall of 2004, they came back in smaller numbers. Since then, their numbers have stayed level; they seem to have reached a more balanced relationship with the local environment.

Habitat

A profusion of flowers are planted throughout the building to provide nectar and pollen for the adult parasitic wasps, syrphid flies and ladybugs. The New Alchemy Institute’s publications discussed establishing such “biological islands” of habitat in a greenhouse. So we have included plantings of pansy, alyssum, scented geraniums, calendula, nasturtium, nicotiana, and snapdragons—all of which are good habitat in the winter greenhouse. Plants that tend to be pest free, such as rosemary, thyme, or sage, are placed at key spots to minimize pest migration through the continuous deep beds.

A large two-story bioshelter like ours contains many zones, each with a different combination of average daily light, temperature ranges, and humidity. Plants are located in the appropriate zone to maximize health and productivity. The second floor tends to be hotter, so tomatoes go in the planters on the second floor and hang down to be harvested from the first floor.

Pollinators and other fauna

Each February, carpenter bees (a wood-boring bumblebee look-alike) emerge from hibernation in the bioshelter ceiling and pollinate our tomatoes. A few weeks later, adult syrphid flies ap-

pear and pollinate as well. By mid-March, syrphid fly larvae are busy consuming insect pests. Syrphid flies are active pollinators and their larvae are active predators until late fall. Ground beetles (Carabidae family) are plentiful in the bioshelter beds and planters. These predators must be eating something, but we are not sure what. They probably consume various soil fauna (hopefully, pill bugs). They are active from March through October.

Toads often find their way into the bioshelter, patrolling the floor under planters and among the plants in the deep beds. Usually we put them outside where they are safe from the high traffic in the building. Nevertheless, every winter we find one or two toads nestled in the soil of the bioshelter beds, or in the gravel floors. Their spring song, a lovely, soft trilling, is a unique entertainment in March.

Spiders are common in the bioshelter. Although their contribution to pest control is hard to quantify, spiders occupy many niches in the building. Black jumping spiders usually become active in February and can be seen patrolling for insect prey throughout the building. Several other spiders weave their webs along window frames and in odd corners of the building, catching flies, aphids, whitefly and cabbageworm butterflies. One interesting, long-legged spider we have yet to identify survives by eating other spiders.

In the spring and summer, hummingbirds come and go through open doors as they please to drink from the nasturtiums. Swallows also visit the bioshelter at their leisure. Most other birds need help finding their way out. △

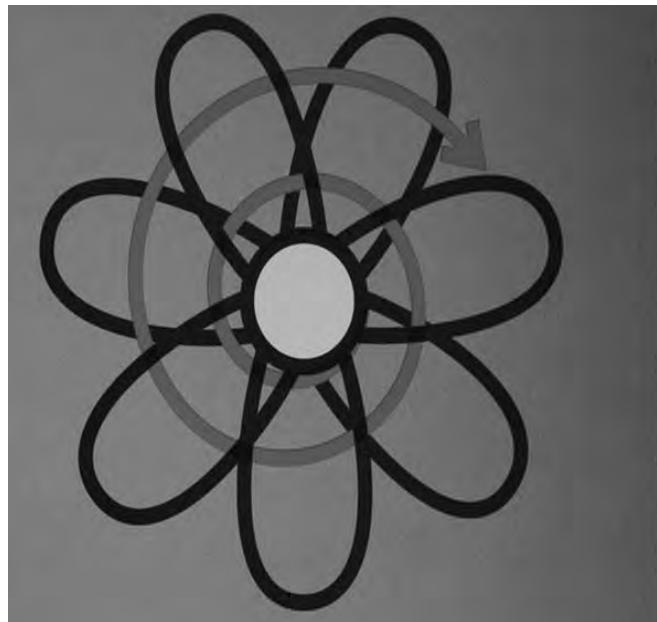
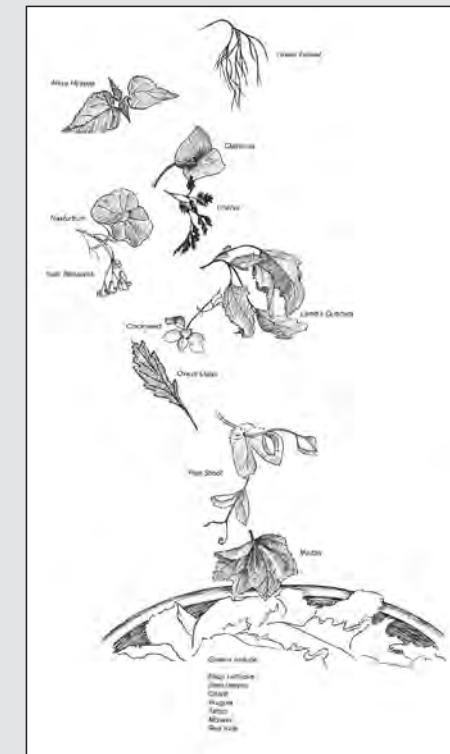
Darrell Frey operates Three Sisters Farm at Sandy Lake, Pennsylvania with the help of his wife Linda and his family. He will lead a team of permaculture teachers in offering the Permaculture Design Course from August 6-15 at Schellsburg, PA (www.wildmeadowfarm.org). The body of this article (though not the sidebar) is an excerpt from his book, Bioshelter Market Garden, forthcoming from New Society Publishers (www.newsociety.org), and used here with permission. Learn more about Three Sisters and the Bioshelter at www.bioshelter.com.

Insurmountable opportunities

Still, it is easy to see that a more motivated individual or team could manage a number of value-added enterprises on a bioshelter market garden farm. These might include making medicinal teas and tinctures, herbal soaps and body oils, pesto, herbal vinegars and cooking oils, canned sauces and salsa, jams and jellies, herbal wreaths, or arrangements of dried and pressed flowers. Other potential enterprises include fish production, raising chickens for meat, dairy goats, vermicomposting, manure-based compost for sale; and more educational programs.

All these enterprises and more could be integrated into a five-acre farm with a bioshelter of 3,000 square feet.

Each would feed nutrients and materials to the others in a seasonal cycle of work and celebration. In turn, the permaculture farm feeds these products to the local community and more feed back loops co-evolve. The new green economy starts in the garden. △



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Economists Measure Ecological Capital Commercial Logging on Public Forests: A Losing Proposition?

Christine Glaser

THE SHARE OF STATE AND NATIONAL forest land in Ohio, Indiana, and Kentucky is small, but how this small share should be managed has been a matter of intense controversy, which revolves mainly around the question of whether or not commercial logging should continue on public lands. Economic arguments have been an important part of the discussion, and this article will look at a particular example, the Wayne National Forest in Ohio, to show how economics has been used as a tool to analyze commercial timber sales on public forests. But before we get started on that, here is a little bit of background about the history of forests in the eastern United States, and the role that state and federal governments have played in it.

Between the late 1700s and the early 20th century, almost all of the forests that once covered the eastern United States were taken out. They were cut for fuel, to build houses, barns, and factories, and to make room for human settlements, farms, industry, and mining. At the beginning of the 20th century,

Environmental problems resulted from this massive conversion of land, especially soil erosion and flooding. At the begin-



The Wayne National Forest, one of our many public forests is managed with commercial logging as the primary forestry objective. Can new economic analyses help make the case for protecting these forest ecosystems?

With very few exceptions, public forest lands in the East have been managed for timber since the beginning of the state and national forest system about one hundred years ago.

Ohio's forests had been decimated to 10% of the state area, down from 95% about a century earlier.

ning of the 20th century, state and national forests were created in an effort to protect watersheds and to promote a practice of forestry that could provide a continuous supply of industrial timber. In the eastern US, state and federal governments started buying up private lands with the purpose of reforesting them, and over time forest cover started to increase. In Ohio, 31% percent of the state is now covered with second-growth forests.

With very few exceptions, public forest lands in the East have been managed for timber production since the beginning of the state and national forest system about one hundred years ago. In response to increasing citizen concerns over diminishing species diversity, starting in the 1970s, small portions of some public forests were set aside as wilderness areas or as nature preserves, and logging ceased in those areas. Yet, on the majority of public forest lands, logging sales to private logging companies continued.

The myth of economic benefits

In justifying the practice of silviculture and timber sales, for-

est managers often stress economic benefits that can be derived from logging on public lands: Logging-related jobs and income in poor rural counties, logging revenues for local, state, and federal governments, including for local school districts, and jobs and income in industries that use timber as an input.

On the other hand, citizens demanding an end to commercial logging on public lands point to conflicts between logging and other uses of the forest, especially recreation, the protection of watersheds, and the protection of native biodiversity. Lately, there has been much emphasis also on ecosystem services provided by forests and how logging affects them. In putting forward their case against logging on public forests, citizens have used economic arguments as well.

One example is the attempt to put an end to logging on national forests based on the argument that logging revenues do not cover the costs of logging. In the past, the Forest Service, an agency of the U.S. Department of Agriculture (USDA) that manages national forests, denied that the timber sale program was a money loser. This led to intense lobbying efforts by citizens resulting in Congress ordering the Forest Service to publicize the Timber Sale Program Information Reporting System (TSPIRS). Between the late 1980s and the late 1990s, TSPIRS provided the information that made it possible for citizens to verify that in most years, nearly every one of the 122 national forests lost money on timber programs. The Wayne National Forest in Ohio was one of them. Finally, in the mid 1990s, the Forest Service began to admit publicly that the timber program lost money.

Agencies cook the books

But this did not lead to the end of logging on national forests. Rather, since 1997 the Forest Service has managed to get out of having to issue TSPIRS reports. The new financial information system has eliminated any meaningful timber sale program reporting. Today, entire program budgets are condensed into one line item, making it impossible to see where the money within the logging program has been spent (for example, on roads, timber sale planning, timber sale improvement, reforestation, etc.).

Similarly, state forest agencies usually do not maintain finan-

cial records in a way that would allow a systematic analysis of revenues and costs of state logging operations.

Forest ecosystem services provide public benefits that reach far beyond the forested area. But they are usually not valued in the marketplace, as are ecosystem goods like timber.

Planning for public benefit not profits

In 2008, Heartwood, a forest protection network with affiliate groups throughout the hardwood region, hired my company, GreenFire Consulting Group LLC, to conduct a thorough economic analysis of the 2006 Wayne National Forest Plan. The Forest Service is required to conduct forest planning periodically for each national forest, and to submit planning drafts for public scrutiny. These drafts usually discuss several different action alternatives, and analyze the environmental effects that would result from implementing each. After analyzing public comments, the agency puts out the final version of the plan, and justifies its choice of the preferred alternative in a so-called Record of

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Decision. In 2006, the Forest Service had issued such a Record of Decision for the Wayne National Forest Plan.

When GreenFire started working, the Wayne National Forest Plan had already been finalized. The ten-year plan called for an increase in logging over previous years on the Wayne National Forest. Even though the planning process was completed, our clients thought it was important that an economic analysis of the plan be conducted, as a way to inform the public discourse on this matter. Our clients wanted us to focus our analysis around a statement issued by the Forest Supervisor in his Record of Decision (ROD), claiming that the “2006 Forest Plan maximizes net public benefit.”

Net public benefit is an economic concept, and is defined in the 1982 National Forest Management Act (NFMA) regulations as: “An expression used to signify the overall long-term value to the nation of all outputs and positive effects (benefits) less all associated inputs and negative effects (costs) whether they can be quantitatively valued or not. Net public benefits are measured by both quantitative and qualitative criteria rather than a single measure or index...”(Sec. 219.3)

Simply put, within the constraints of its budget, the Forest Service would maximize net public benefit by preferring goals and activities that generate high net public benefit (= benefits minus costs) over those that create a lower net benefit or a net loss. Those benefits and costs could be monetary or not. When

is net public benefit not maximized? When a different use of funds, or pursuit of different activities, goals, and priorities could provide society with a higher net public benefit than the course of action that is proposed. So then, how can we compare the values and benefits from logging to the values generated by allowing the forest to develop naturally?

Instead of continuing the logging and providing more opportunities for non-native species to establish themselves and to spread, the Wayne National Forest could be managed to provide a rare sanctuary for native species, something unlikely to be found on private forest lands.



Eastern hardwood forests, such as this state wilderness area in Indiana, are facing the same management mentality and threats as the Wayne National Forest. photo by Rhonda Baird.

One basic question that economists raise is about the role of government in providing goods and services versus provision by private entities. Generally, the proper role of local, state, and federal governments has been to step in where private initiative and entrepreneurship alone cannot be relied on to meet important needs of society. Based on that line of thinking, public forest management should focus on the achievement of goals and benefits that cannot be expected to be delivered by forests in private ownership. How does that help us in analyzing the controversy around logging on public forests?

With an area that is about 3.3% of the total forested area in Ohio, the Wayne National Forest provides a very small percentage of all timber harvested in the state. Today, the harvests from this forest, along with the associated income and employment, could very easily be replaced with harvests from private lands.

On the other hand, looking at the sizes of public and private forests in Ohio, we found that private forests are generally small, with little continuity in management between parcels. Public forests are generally larger. For some species of mammals and birds, the size of their habitat matters for whether they survive as a species. Fragmentation of habitat is considered to be one of four major threats to our forests and rangelands that impair ecosystem functions and biodiversity. This assessment comes from the Forest Service itself as found in the USDA Forest Service Strategic Plan for FY 2007–2012. National forests, because of their size,

have a unique opportunity to provide large tracts of undisturbed, unfragmented forestland for species that do not have other places to go. Timber management contributes to fragmentation of habitat. But timber management can happen in many other places.

Exotic species

The USDA Forest Service Strategic Plan also includes the introduction and spread of exotic species as one of the four major threats that impair forest ecosystems and native biodiversity. Timber management and harvesting help spread opportunistic non-native plants because of canopy removal and earth disturbance, particularly through the use of heavy machinery during logging operations, through movement of forest products on skid trails, the building of logging roads, and because of herbicide use and timber stand improvement activities. Altogether, the Final Environmental Impact Statement for the Wayne National Forest estimates that about 82,000 acres (about 1/3 of the Wayne National Forest area) will be affected by such logging-related activities over the planning horizon of ten years.

Instead of continuing the logging and providing more opportunities for non-native species to establish themselves and to spread, the Wayne National Forest could be managed to provide a rare sanctuary for native species, something unlikely to be found on private forest lands.

The above arguments are centered around the protection of biodiversity, and the unique opportunities for public forests to provide these benefits. When you read the 2006 Wayne National Forest Plan and the associated Environmental Impact Statement, you might be surprised to find that the Forest Service actually

presents itself as a promoter of biodiversity. There is much talk about how the plan promotes species diversity especially by providing early successional habitat—through logging.

Naturally developing forests, undisturbed by human logging, mining, and other activities, and their associated biodiversity, are almost nonexistent.

In addressing this issue we need to go back to TSPIRS for a moment. If you recall, in the 1990s, citizens had been successful in disclosing that almost all national forests were losing money on timber sales. The Forest Service learned from this. They now assert that the agency is not about making money, and that program expenses do not have to cover costs as long as the programs achieve the goal of ecosystem management. The extraction of trees is no longer presented as the goal of forest management, as it was before TSPIRS, but as a means to an end, the end being

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more biodiversity, protection of endangered species, the maintenance of a healthy forest, anything that the agency suspects the public cares about.

Early successional habitat is created when big, older trees in a forest die, or when storms blow down trees. Dense overstory canopy is opened up, more light reaches the forest floor, young trees start sprouting, and many other plants start growing that need a lot of sunlight. The birds, mammals, insects, and amphibians associated with early successional habitat are different from those that you would find in a more mature forest with a closed canopy. Early successional habitat is also created through logging, especially through clear-cutting.

In its 2006 planning documents for the Wayne National Forest, the Forest Service stresses that early successional habitat is declining: "In 1968, 25 percent of NFS land was comprised of early successional forest habitat, whereas only 5.4 percent is covered by early successional forest today." The solution to this problem is logging, according to the Forest Service, and especially clearcutting, to make sure that there is sufficient habitat in the forest for species that prefer early successional habitat.

However, the Forest Service itself, in a different publication, the 2007 Interim Update of the 2000 Renewable Resources Planning Act Assessment of Forest and Range Lands (RPA), while affirming that early successional habitat is declining, explains that the larger expanses of early successional habitat in the past which are now declining were solely the result of earlier heavy logging pressure, and are therefore not a reason for alarm. In addition, the RPA provides a statistic that shows that timberland between 0-19 years in age still makes up 23% of eastern forests!

The provision of early successional habitat is therefore not an important national priority, and actually, it requires no human intervention at all. Nature provides plenty of early successional habitat, through storms that mow down trees, and many other natural disturbances.

On the other hand, biodiversity assessments of the region show clearly that old growth forests are extremely rare. The RPA statistic that states that 0-19 year old trees make up 23% of the eastern forests, also states that 100-199 year old trees make up 4%, and that trees older than 200 years score at 0%. Naturally developing forests, undisturbed by human logging, mining, and other activities, and their associated biodiversity, are almost nonexistent. Logging doesn't help promote the protection and increase of scarce, older, undisturbed forests; it slows it down.

So far, we have conducted a qualitative analysis based on relative scarcities. Our findings are, however, also supported by recent attempts by economists to put dollar values on forest ecosystem services, like air purification, regulation of water quality and flow, climate control, and provision of habitat refugia to ensure the survival of native biodiversity. Generally, the capacity of forests to provide those services decreases as portions of the forests are logged.

Forest ecosystem services provide public benefits that reach far beyond the forested area. But they are usually not valued in the marketplace, as are ecosystem goods like timber. The fact that

there are no market prices for such benefits, like ecosystem services, can create a bias towards undervaluing them, or to assume their value to be zero.

Putting a dollar value on ecosystems

To fill this gap and help make decisions involving ecosystem services more transparent, economists developed a set of techniques that help establish dollar-values for ecosystem services. These techniques are described in some detail on the following website: www.ecosystemvaluation.org. To give a few examples: The water purification services of forest lands can be established by what it would cost to build a water treatment plant. The value of flood control provided by forests can be established by assessing the damage that is avoided because of the presence of forests.

These methods certainly cannot claim to capture the full value of forest ecosystems, because they are clearly centered on the value of forests to humans. But even this very limited approach has yielded some pretty interesting and maybe surprising results.

Of particular interest to us, as we are comparing the benefits from logging to other benefits derived from the forest, is the comparison of the dollar value of ecosystem goods (including timber) and ecosystem services. The following table provides an overview:

	Forest value per acre/year (in 2004 U.S. Dollars)	Freshwater Wetland (forested) value per acre/year (in 2004 U.S. Dollars)	Riparian Buffer (forested) value per acre/year (in 2004 U.S. Dollars)
Ecosystem Goods	\$238	\$244	\$118
Ecosystem Services	\$1,476	\$11,568	\$3,383

Source: "Valuing New Jersey's Natural Capital," Part I (Overall Results), Table 5, p. 17

The Forest is worth much more than the Trees.

The value of the services far exceeds the value of the goods, like timber. And as we show in our study of the Wayne National Forest, by far the most valuable ecosystem service provided by forests is the provision of habitat /refugia. This gives additional support to our reasoning above, that the value of undisturbed public forests in protecting native biodiversity exceeds any value that could be derived from logging.

The case for ending logging on public forests is strong. The income and employment benefits from logging are minimal, and replaceable. The potential benefits of our public forests, if managed for native biodiversity, and for other ecosystem services, far exceed the benefits generated by logging. And, they are rarely available anywhere else. △

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Money is Destiny

New Currencies for New Times

John Rogers ©2008

SEKAI WAS A ZIMBABWEAN REFUGEE who lived on the streets of Cape Town for several months. He was not someone to be defeated. One day he met members of the local Community Exchange System (CES) (<http://www.community-exchange.org/>); they encouraged him to trade. In exchange for his handyman services he got everything he needed to furnish a shack, but then lost everything in a fire. CES members soon helped him get back on his feet in another shanty town; then robbers raided his home and he lost everything again. After each setback, he lifted himself up through the exchange and ended up in a better place than before. Finally, he was able to rent an apartment in Cape Town's exclusive Marina da Gama overlooking the lake and away from the violence and poverty that he had experienced before. Through CES he is now connected to local exchanges in 15 countries. All this through giving and receiving equally with others.

While world leaders were discussing "innovative financial instruments" for sustainability at the 2002 Earth Summit in Johannesburg, members of the CES were doing it for real. Their efforts help to strengthen communities, create jobs, reward volunteers, combat isolation, keep people active, encourage new friendships, protect and improve the local environment, and change lives.

If something needs doing it gets done because [in CES,] currency is always sufficient so long as people are willing to work.

What exactly do they do in CES? The same as many thousands of people around the world who have discovered the power of local currency: they use the currency of their labour as an asset to improve individual and community lives instead of waiting for scarce money to arrive and create jobs; they exchange service for service; they connect their assets to others' needs. If something needs doing it gets done because [in CES,] currency is always sufficient so long as people are willing to work.

People have set up community currencies amongst businesses, neighbours, young and retired people, housing associations, credit unions, and on the Internet, ranging in size from a few people to thousands of participants. They have used them to grow community and support local economic development in Africa, Asia, Australasia, Europe, North and South America.

From free to community currency

When an exchange does not involve money we call it free. So why not just help each other? In the last few years various movements have grown up to encourage free exchange:

Freeconomy—(www.justfortheloveofit.org) encourages people to share skills, tools, space, and land;

Freecycle—(www.freecycle.org) helps its millions of members to recycle their goods by offering them to others;

Book Crossing—(<http://bookcrossing.com>) asks its members to leave their unwanted books in public places for others to enjoy and pass on again.

Free exchange is an ideal way to get our gifts moving. It celebrates interdependence, keeps goods out of landfills and grows connections between people. But a struggling business or someone on low income has to be careful with their assets; rewards can motivate them to help others, thus releasing much greater amounts of potential social energy for positive change.

One effect of the global 'credit crunch' is a lack of currency to do real work, like an electric appliance waiting for a current before it can be used. The good news is that communities can create new currencies that use local assets to meet local needs and reward people who share their gifts. The idea is not new; people have used local currencies for thousands of years; they helped many communities in the USA and Europe during the early 1930s (www.depressionscrip.com) and in Argentina during the collapse of the national currency in 2001 (www.trueque.org.ar/).

A community currency acts like a circulation system for the community's gifts and assets; it acts like an immune system to protect the community against shocks from outside. It provides an information system to record and value assets: personal skills, services and goods, communal under-capacity in businesses, community halls, leisure centres, and public buildings; it provides a reward system for those who share their assets; it gets assets flowing to solve personal and communal problems, meet urgent needs, and achieve important goals. It acts as a medium of exchange more than a store of value because currency in motion is currency at work. Trust, reputation, and friendship are deepened through every exchange.

Community currencies in action

Some community currencies support local businesses by staying in a region instead of flowing away like money to distant shareholders: examples include Ithaca HOURS (www.ithacahours.org) and Berkshares (www.berkshares.org) in the USA, Chiemgauer in Germany (www.chiemgauer.info), Talente Tauschkreis Vorarlberg in Austria (www.talentiert.at), and business barter networks worldwide (www.irta.com). More customers

are attracted to spend in both national and local currency at existing businesses, and people try out new business ideas by growing a loyal customer base using local currency.

Other systems aim to grow community by giving people support networks and a safety net for hard times: examples include Time Banks (also known as time dollars in the USA) (www.timebanks.org, www.timebanking.org), Local Exchange Trading Systems (LETS) (www.letslinkuk.org), and Fourth Corner Exchange in the USA (www.fourthcornerexchange.com). Neighbours help neighbours and volunteers assist community projects. People do everyday jobs like dog walking or shopping for each other, they buy local food from local growers, they get involved with planting trees or running local cafes and community centres.

Intentional communities like Findhorn in Scotland and Damanhur in Italy have created currencies that serve both residents and visitors.

Tourists can buy some local currencies with national currency, which remains in the region until the former are redeemed; many tourists take their local notes home with them as souvenirs; then the national money is invested in local projects: Salt Spring Island Dollars in Canada, for instance (www.saltspingdollars.com).

Other currencies have been created around particular themes or groups: a youth court in the USA; New York's Elderplan and Japan's Fureai Kippu for elderly people; healthcare at a doctor's surgery in London, UK; microcredit backing a community currency in Brazil (www.strohalm.net/en/bonus.html).

Climate change, the end of cheap oil, and a dysfunctional financial system create big challenges requiring innovative thinking and solutions, just as the world is learning to self-organise; the Internet, social networking, and open source software show new ways for people to act together; local businesses, citizens, and community groups build their own life-boats to sail the storms. Two years ago the UK town of Totnes sparked off a global Transition movement of citizens teaching each other how to prepare for a world with changing climate and less oil. Many Transition communities have launched their own currencies: Totnes Pound (<http://transitionnetwork.org/totnespound/home>) and Lewes Pound (www.thelewespound.org) are up and running;

LINKS & RESOURCES:

- Film: *La Double Face de La Monnaie* ("Two Faces of Money"). http://mareauxcanards.ouvaton.org/films.php?choix_film=25.
- Complementary Currency Resource Center and worldwide database of CCs. www.complementarycurrency.org.
- Thomas Greco. *Reinventing Money*. www.reinventing-money.com.
- Bernard Lietaer. *Future of Money*. <http://transaction.net/>.
- Roy Davies, Exeter University, UK. <http://projects.exeter.ac.uk/RDavies/arian/money.html>.

communities in New Zealand may soon follow suit (<http://transitiontearao.org.nz>).

Some of the most advanced experiments aim to encourage consumers to reduce their overall energy consumption and increase their use of energy from renewable sources: Kilowatt Cards in the USA (<http://kilowattcards.com>) are gift cards that pay for 10 kilowatt hours of electricity and can be traded; Sonnenchein in Germany (www.sonnen-scheine.de/eine-seite/) issues tokens bought with Euros that circulate as currency, while the Euros are invested in the development of local renewable energy sources.

**One effect of the global
'credit crunch' is a lack of
currency to do real work,
like an electrical appliance
waiting for a current before it can be used.**

Some systems record all transactions, others have circulating notes, coins, or vouchers with designs by local artists and security features; some systems issue currency as 'mutual credit' when people exchange, others are issued by a central authority and backed by services or bought with national currency.

Several systems exploit the power of the Internet to create platforms for the exchange of several currencies: Community Exchange System (www.community-exchange.org), Open Money (<http://openmoney.ning.com>), and Ripple (<https://ripplepay.com>), for instance.

Learning the lessons

New York baseball coach Yogi Berra joked that "In theory, there is no difference between theory and practice; in practice, there is." Several decades of practice have taught some important lessons about organising sustainable community currencies: (a) designers work closely with a local community to identify their goals and assets; (b) they design around local operating conditions rather than trying to parachute in a system that worked somewhere else; (c) they choose a currency mechanism that serves the local goals and conditions; (d) they create an effective organisation to govern and manage a viable currency that will be respected and valued by its users.

Money travels easily. It goes anywhere and does anything. Community currencies also travel light as they blaze new trails to exchange. But they build in restrictions: specific goals, size of trading area, type of membership, desirable activities, trading rules to encourage fair play. Boundaries make CCs attractive to people who use the currency to carry their values—mutuality,

honoring people as assets, sustainability, fair trade—and each exchange embeds those values into community life. This is an ecological approach to currency design.

Money may also be limited in its uses through ethical funds, charities, micro-credit, cooperatives, or social enterprises, but it can always leak out of a region or activity to go somewhere else again. Community Currencies stay where they are. These limits enable collective supervision of one of humanity's most powerful tools: currency. On our journeys to sustainable futures the community currency passport is stamped: 'Admitted.'

Boundaries make CCs attractive to people who use the currency to carry their values...and each exchange embeds those values into community life. This is an ecological approach to currency design.

Community transformation

Birthing a Community Currency is an act of social and economic justice. We are so conditioned by the availability of money in both our personal lives and our community economies, that our thinking about potential realities is often maimed by it. As Edgar Cahn, developer of time banking, puts it: "The real price we pay for money is the hold that it has on our sense of what is possible—the prison it builds for our imagination."

Sekai in Cape Town is just one of many who has used his imagination and the power of exchange to improve his life chances. As communities all over the world wake up to their own potential to match assets to needs, community currencies will mature into being part of normal life in the 21st century. △

John Rogers is kept busy with consulting and training people around the globe about organizing community currencies. He works through Value for People which can be found at www.valueforpeople.co.uk. One option for training is the "Let's Make Money" webinar, a quick and clear look at the process, benefits, and perils of a community currency project and includes an interview/chat series with global community currency leaders. This article was first published on the Value for People website and is reprinted here with permission from the author.

One small step for a community...

Rhonda Baird

Fresh out of our Transition Town's Great Unleashing, a colleague and I registered for the "Let's Make Money" webinar offered by John Rogers and Value for People. Having read a little on community currencies and being familiar with my town's previous failed attempt at a currency modelled after Ithaca Hours, I was eager to join in and not quite sure where it would lead.

In the five-week webinar format, my colleague and I were linked with people around the globe from Germany to Canada to Brazil and Australia. And each person was a resource for the others. We were able to talk about the distinct situations and characteristics of our communities and the efforts and successes of their currencies as well. John Rogers presented clear material about how to organize and maintain a currency. Other experienced community currency organizers joined in from around the world to talk about their own projects. Between the mix of novices in the field and those with many years under their belt, the conversation was often quite lively.

Within minutes of speaking with Tim Jenkins of Community Exchange Systems, my colleague and I applied to start a new exchange. Within two days of the webinar, the Bloomington Community Exchange (BTCE) was up and running! Community members and related small businesses have been joining into the web-based format which is controlled by our own community.

This seemed to me an audacious move, but in reality, people in Bloomington, Indiana interested in local exchange and currency had been meeting off and on for two years prior. We knew that we wanted a form of Local Exchange Trading System (LETS) that would create channels for exchange whether or not an actual paper currency project grew from it. We were also concerned about the safety, administration, and other logistics of a LETS system. The Community Exchange group that formed at the Transition Bloomington Great Unleashing in April had already approved the finding and testing of a LETS format.

Testing is the operative word. A small number of people have tested the Exchange and granted initial approval. Now we are ready to make the next moves—recruiting local businesses and organizations and marketing the project to the larger community. Our group fully recognizes that this is one of the biggest hurdles we face. Especially so because the progressive businesses in the community are wary: they were the ones left holding the bag when the first currency failed seven years ago. Yet our group is also recruiting the local BALLE leader and a local goods advocate, the City's new Director of Sustainability, and a good number of others. I'm pleased as punch to be a part of it. △

Trading When There is No Money

Community Exchanges Build Solidarity

Stephen DeMeulenaere

“**T**ERIMA KASIH!”, THE LADY SAYS after I bought a slice of pineapple on a hot and dry day in central Java, Indonesia. These words mean “thank you,” but there is a literal meaning to this expression of gratitude. *Terima* means “give” and *Kasih* means “receive” in Indonesian, thus “thank you” in Indonesian literally means “give and receive” or, “what comes around goes around.” Few Indonesians are aware of the literal meaning, even though they say “you’re welcome” with the word *kembali* which means, “returned” or “come around again,” or *sama sama*, meaning “same same,” we’re even.

Since the Asian Economic Crisis descended upon Indonesia in 1997, it hasn’t been easy to keep money and goods circulating, although there is no shortage of skilled people, nor of goods. People returned to their traditional exchange system, *Gotong Royong*, to take care of each other and to meet their basic needs. However, *Gotong Royong* is more of a system of cooperating than a system of exchange. What has been lacking is a useful means for exchanging these goods, and recording the purchase so that the seller can buy something else. Otherwise, the value of goods bartered has to be exact, each has to have what the other wants, and the trade usually has to take place at the same time. If

What Are Community Exchange Systems?

Community Exchange Systems are community-based networks of sharing that encourage mutual aid, reciprocation, self-reliance, local production, community planning, and socio-economic solidarity by providing a means of exchanging goods and services for the meeting of needs, cultural revitalization, socioeconomic harmony, and rural reconstruction.

These can be self-help groups which encourage people to work together, barter and community currency systems, revolving loan groups, savings clubs, producer/consumer cooperatives, or any group of people who come together to decide, plan, and carry out activities for the improvement of the members of the group and the benefit of society.

Giving people the right and the means to cooperate is essential to alleviating poverty and seeing new opportunities. Often, governments, donors, and NGOs forget to value the opinions and efforts of the people they are trying to help. This results in externally-driven development, projects imposed on communities, projects which benefit only a few, corruption, and ultimately failed attempts.

Community cooperation, using internally-driven, asset-based development is the key to solving the myriad of problems faced by communities not only in the third world, but everywhere.

these conditions aren’t met, the trade usually falls apart.

Several communities in Asia have begun experimenting with a new means of exchange, called a Community Coupon. It functions very much like a credit card, without the card. Instead, credit is received in the form of notes that look very different from the national currency, but are valued in the same denominations. Most people who use this system have never even heard of credit cards, nor have they heard of traveller’s cheques, but it makes no difference to them. It works, and that’s all that matters.

A collective process of mapping your community geographically, socially, environmentally, and economically is a good first step...

Community Exchange or cooperation?

Each community has a different mix of assets, concerns, and abilities to work together. A collective process of mapping your community geographically, socially, environmentally, and economically is a good first step in laying the foundation for a variety of solutions to the community’s concerns.

A community meeting at which people talk about what they have: what they can do or make at home for themselves and others, what their hobbies and interests are, what they studied at school or like to learn about at home, their life experiences identifies the assets that build on the foundation. This is not a meeting to sit around and talk about how bad things have become, if that is the case, but to talk about what people have.

Later, the community can talk about their concerns: is theft, vandalism, or violence on the rise? Is garbage being dumped in the wrong place? Is the road in need of repair? Is there difficulty in finding childcare or in repairing your home? Is there a lack of money or high unemployment? This is the meeting to raise these kinds of concerns, and rank them so that people know what is of greatest concern.

With this knowledge, people may come forward voluntarily, or be invited to a meeting to discuss solutions that suit the community best.

From South to North and back again

The modern global economy had its not-so-humble origins in ancient Babylon, some 5,000 years ago. Originally, communities, temples, and producers issued tokens representing goods they were willing to trade. Sometimes they wrote cheques on clay tablets, or provided receipts for stocks of grain held in storehouses, as in ancient Egypt. Originally, there was no interest charged on this money, because it would be like charging your friend interest and that is taboo, even today.

This was sufficient to coordinate local trade, but as regional and international trade grew, these groups began charging interest to cover the risk involved in transporting their goods over longer distances. This brought in so much wealth that new classes of privilege were formed; others wanted the idea introduced into their own communities. Soon, people who could not repay their debts would be enslaved, family members sold, their land taken from them. So there used to be an old law to “clean the slate,” to wipe out all debts past and present and to reset the economy on an even keel again.

In the modern world, people have become so greedy that they don’t wipe the slates clean anymore, and we see the great majority of the world’s people and nations in debt so deep as to be unrepayable, owed to a tiny fragment of the world’s wealthiest

people, banks, and nations. This inequity contributes profoundly to global political and economic instability. By the 1920s, the

How Does a Community Exchange System Work?

1. It depends on your community.

At first glance, many communities look similar, but scratch the surface and you will see many differences between them. A community exchange recognizes these differences and designs a system to suit each community.

2. It depends on your community’s assets.

Each community has a different mix of assets which are the social and natural capital that feed its physical and financial capital. Community exchange systems work with the social and natural capital of a community, laying the foundation for moving to other forms of socio-economic development.

3. It depends on your community’s concerns.

Many communities share the same concerns: crime, poverty, violence, environmental degradation, housing, health, nutrition, agriculture, water. Which have priority in your community in the short-, medium-, or long-term?

4. It depends on your community’s willingness to work together.

Is your community healthy? Do people lend a hand when you are fixing your home, planting your garden? Do they help take care of your children or grandparents? Do they do favors for you? Or, is your community more divided, with people keeping to themselves, not talking with each other very often? Either way, there is a solution.

Designing a community exchange system will require you to consider these questions and many more. Perhaps some simple games and pilot projects can help you test the waters before embarking on bigger programs. You and your neighbors know your community best: no expert can tell you what to do. However, there are people around who can help with the process. △

Poor Baby! Here, Let Me Help...

Systems for promoting Community Exchange and Cooperation are easy to design, implement and manage. They promote the formation of transparent and democratic organizations, and community leadership. They have to be that way so that the community has full control over its own development.

To keep development resources in the hands of external professionals, consultants, and managers is like treating the community like a baby that can’t feed itself.

The result is a community that describes itself in the worst possible terms in order to try and get the most amount of money, of citizens who must ask and beg and sit idly until the resources are doled out to them.

Externally-driven development creates a permanent self-fulfilling demand for its services, and will never solve the problems many communities face.

Only when the community has control over money, the power to make decisions, and the responsibility for its own solutions will we finally begin to see lasting programs to end poverty. △

economic crises had become so bad that communities in many northern countries started issuing their own money, while in the south many communities maintained their traditional forms of exchange.

By the 1990s, there were community exchange systems in all of the wealthy countries of the world, in Japan, North America, and Europe. Some 4000 communities manage their own complementary currencies today.

In 1995, efforts began in several southern countries to try these models out or to test their own solutions. In Mexico, Turkey, Senegal, and Argentina, different communities, unknown to each other, began experimenting with community currencies. When they found each other, they realized they were using very similar approaches. Some efforts, especially in Argentina, did so well that they far surpassed the best and largest systems in the North! Today many countries in the global South combine modern methods with traditional know-how to create what some

describe as a New Traditional Economy.

In 1999, several community exchange organizations came together to launch the Latin American Socio-Economic Solidarity Network, and this network model is now being promoted in Europe.

Where to Begin? Start an Exchange Club! by Heloisa Primavera, Argentina

Purpose: To introduce the concept and mechanism of the RGT (*Red Global de Clubes de Trueque Multireciproco*) Exchange Club.

Materials: Photocopied notes denominated in the value of the national currency or in hours of time.

Process:

1. First meeting: There must be a minimum of 20 persons.

2. Using a bulletin board or going around in a circle, each person says three things they would offer if they joined, and one thing they need. Everyone must have at least three things to offer.

3. Each person receives an amount of photocopied notes, for example, US\$10 equivalent. They go to the person who offers what they want and make a sample negotiation in the local currency. At the end, the remainder is returned to the accountant who records the new balance next to each person's name.

4. Discussion of the program. People are asked to bring goods to trade at the next meeting, or to be prepared to negotiate for real goods and services to be traded at the next meeting.

5. At the second meeting, the group is organized. They choose the coordinator, secretary, treasurer, timekeeper, moderator, Quality Control Group (3-4), Price Control Group, the receptionist who receives and assists new members, 2-3 for each role to rotate during the market.

6. These groups each receive an equal amount to begin trading. All subsequent members must wait 2-3 months before they receive theirs. They agree on the next date of the market.

7. The trading begins. During the first market, the coordinators put up the tables, and ensure that particular types of products are concentrated in groups.

8. At the end of the market, the credits are returned and recorded in the name of the person. The credits are counted up to be sure that none have been taken home.

Complementary—not alternative—currencies

Systems for promoting cooperation and exchange use currencies: some record hours spent on a project; others pay money for work done. A currency records the exchange of value and recognizes it.

Complementary currencies function alongside the national currency of the country. Complementary currencies strengthen the foundation of the economy. If people can get what they need, at least in part, using complementary currencies, the national economy will be in better shape to weather economic crisis, and the government will be happy that people are working to improve their situations. In this report, we are talking only about Complementary Currencies.

The best way to coordinate productive activity in a local area...is to have a currency that circulates only at that geographic level.

Alternative Currencies are different. They are designed to function independently of the national currency, even to displace it. True alternative currencies are very rare, and are usually found only in areas of civil war or liberation struggles, where organized opponents of the established order may issue a circulating currency for areas under their control, and require everyone in the area to use that currency.

When we talk about Community Currencies, we mean Complementary Currencies. A healthy economy needs both domestic and international trade. International trade is best handled with a national currency although we have some solid recommendations for reform in that area, and certainly a lot of domestic trade takes place with the national currency as well. However, we think that a dual currency system, one in which the complementary currency and the national currency circulate together, works best for all.

This is because, if you think about it, the majority of exchange, including the work of women, household production, mutual aid, community cooperation, as well as regular trade involving buying and selling goods and services, takes place at the local level. The best way to coordinate productive activity in a local area, as we have seen with the great city-states of the world like Singapore and Hong Kong, is to have a currency that circulates only at that geographic level.

What we need to know about money as it is

Money is full of contradictions: it's the root of all evil but ev-

eryone uses it; everybody complains about it but everyone needs it; economists say money is neutral but few get very rich at the expense of many; there are booms and there are plenty of busts. There are four things about money, meaning national currencies, that we need to know:

1. Money comes...and goes. Money is meant to move around. It only works to help trade happen when it changes hands. It goes from the customer to the store, to the supplier, to the manufacturer, to the employee, to the bank. But national currencies by their nature can move anywhere, even overseas. So whenever you spend your money, it can leave the community, and in the globalized world this happens more and more.

2. There's never enough! There isn't a limitless amount of money—how could it work if there were? But how come there is never enough? Why do people and resources sit, waiting for money to complete the exchange?

3. Interest is charged on it. Most national currencies are loaned into circulation by banks, even to governments, but no money is created to pay interest, even though interest is charged on almost all loans. So we compete with each other for what money there is. Borrowers—which is most people—play a distribution game of musical chairs: When the money arrives here, that means it's gone from someplace else. If the amount of borrowing slows down, the amount of money begins to shrink, so when the music stops, someone will always be without a chair—bankrupt. We have to pay interest on the money we borrow, or we have to pay prices that include the cost of interest that someone else has to pay. Either way, we all pay, and it is not possible for all of us to pay off all of our debt. Somebody may win, but people definitely lose.

4. It's not our money. The money supply is controlled by the central government. Their first concern is the value of their money on international markets. The more scarce their money is, the more valuable it is. However, we need the same money as a medium of exchange to pay for our daily bread. This fundamental contradiction means that people and resources sit unused, unsaleable, or unemployed for a lack of money. Their money is not in our control, either as individuals or communities, no matter how much political power

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Advantages of the Community Exchange/Community Cooperation Approach

Systems that promote community-level exchange and cooperation are not the only way of mobilizing community assets to deal with community concerns or to turn a declining local economy around. Other approaches can be just as effective, and this works very well with these approaches too. With that in mind, promoting community exchange and cooperation offers many advantages, including:

1. Community Exchange Systems promote bottom-up, asset-based, internally-driven, appropriate development, which is essential in ensuring long-term development, sustainability and suitability of efforts, and the ultimate success of projects at mobilizing local resources for meeting local needs and concerns. Control and responsibility are put back in the hands of the people.

2. Community Exchange Systems keep exchange of basic needs going when the regular economy is in a downturn. Using a community currency, a coupon for facilitating three-way exchange can help keep national currency around longer, increasing the exchange of all goods and services and the multiplier effect which can protect communities from external fluctuations in prices and money supply during economic crisis. This also means that these systems promote a counter-cyclical tendency, when the economy goes down, use of these systems goes up.

3. Using the Coupon for exchange of basic goods and services saves scarce national currency for more important purchases, meaning increased savings, local capitalization, and economic activity. Stocks of unused goods become mobilized, people become employed, and those traditionally at the “bottom” of the economic barrel, like homemakers, farmers, and unskilled laborers, find a place in the economy, and through it, in society. Multi-sector development is promoted and the need for people to leave rural areas for the cities in search of money—when everything they need to live can be found locally—is greatly reduced. Opportunities for local import substitution are increased.

4. Systems for promoting community exchange and cooperation promote socio-economic solidarity and mutual aid, strengthen social relationships and community bonds, increase the willingness to work together, fostering individual self-esteem and local self-reliance. By increasing access to money by the poor, the gap between the richest and poorest members of society is reduced. Community relations and standards of living improve.

Traditionally undervalued activities increase in social, cultural, and economic importance, as now they can be properly recognized and compensated. △

we have. So when we’re out of money, we’re out of it until someone sends some more.

Some conclusions

- **The present global economic system is unstable and unsustainable.**

The money supply, both nationally and internationally, is constantly expanding. This means that prices continue to rise over time. Think about it, how much did you pay for a dozen eggs, a pack of cigarettes, a bottle of milk ten years ago? How much is it now? Although prices keep rising, this excess money does not stay in the productive economy. Instead, it filters into the financial markets, where it now sloshes around the world’s capitals, causing monetary and economic crises in many countries, especially the weakest ones.

- **Political Democracy - Economic Democracy = Ø.**

In the ancient democracies, slaves were not allowed to vote. One point of view says the wealthy thought that the poor were too stupid to vote. Another way of seeing this is that the poor are dependent on the rich for their livelihoods, and therefore were not in the same position of being able to vote freely.

Poor individuals and poor countries have few political choices when they are economically dependent on rich people and countries. Economic democracy is essential for political democracy to flourish.

- **What you have is much more important than what you don’t have.**

The philosophy of charity is based on describing the situation as being as bad as possible in order to receive charity: what you do not have is more important than what you do have. This sets up a cycle of dependency that is very hard to break. Why bother trying if you get what you need by not trying? However, when communities look at what they have, their assets, they can decide together on how to best mobilize those assets for their own good, and the good of their communities.

- **Action is necessary.**

Rights are not given to people, they must be taken by the people and upheld. Your economic rights, to life and livelihood, to credit, to an available means of exchange, to have a say in economic decisions affecting your life, are but a few of your economic rights.

What we have talked about in the previous pages is about taking action. A community that works together, using its assets to overcome challenges, is on the road to success!

More ideas at www.complementarycurrency.org. △

Stephen DeMeulenaere has been working with complementary currency systems since 1991, in West Africa, Central and South America, and Asia. Currently, he is the coordinator of the Complementary Currency Resource Center. He has been based in Ubud, Bali, Indonesia for the past eight years. This piece was originally published as “Socio-Economic Solidarity and Community Exchange in Asia, Africa and Latin America, 2002.” Reprinted with permission. www.appropriate-economics.org.

Appropriate Technologies Lead the Recovery

The New Green-Collar Economy

Abel Kloster

HERE IN THE COAST RANGE of western Oregon, signs of the economy of bygone days are imprinted on the landscape in a checkerboard mosaic of clearcuts and Douglas fir plantations. A once prosperous logging and mining town, Cottage Grove, like so many other Oregon towns, was founded on the promise of plenty from intensive resource extraction. Now Habitat for Humanity builds housing for those who work (or used to work) in the timber industry, and the last mill in the region tooled for old growth holds onto its inventory for some future windfall, yet deferred.



Various forms of solar energy collection are working hard at Aprovecho Institute providing benefit to the system and an education for those that come for courses and workshops.

Cottage Grove, where I live and work, is home to the Aprovecho Institute, an appropriate technology research facility much influenced by permaculture. Permaculture thinking encounters problems and attempts to turn them into solutions. As in so many parts of the world, the problem of the economy here is a lack of access to meaningful work and the means of self-reliance. Resource extraction on the industrial model, which propelled the local society for many decades, has largely run its course, leaving behind a blighted landscape and depressed communities. The solution to the economic problem lies in finding creative ways to channel people's energy towards repairing the landscape (the resource base) and building a resilient and sustainable culture that can thrive once again from those natural resources. That work should also return value to the individuals doing it in the form of income.

In western Oregon, any design for a new economy has to bridge the social gap between unemployed loggers, high school drop-outs, and educated permaculture-inspired activists. It starts with an assumption that people in economically disadvantaged situations are also looking for ways to live more sustainably, and not merely seeking to repeat the dependent and dead-end patterns

of the past.

"We have come down through time," the poet and author Wendell Berry says, "on the tireless horse-track of greed." But despite this, as Bill Mollison puts it, "Though the problems of the world become increasingly complex, the solutions remain embarrassingly simple." We have before us all the strategies and techniques necessary to build a sustainable society and restore the earth. As Van Jones points out in his inspiring book, *The Green Collar Economy*, this will require a mobilization from the neighborhood to the international level. It will also require that we make unconventional alliances that transform historical "enemies" into partners for change. This is why we at Aprovecho are excited to be fostering relationships among groups with seemingly disparate interests. The population in rural Oregon which we serve largely lacks access to fee-for-service workshops, a common vehicle for transferring the technologies of sustainability. We are attempting to engage our local community in a variety of other ways.

Permaculture in the partnerships

In part, permaculture design succeeds by creating and nurturing relationships, the kind of work that will be needed to lay the foundation for the green-collar economy. We already work with diverse stakeholders, from architects to excavators, from land owners to watershed councils, and of course, the occasional educated skeptic. We think we can help facilitate the "Great Turning" of our local economy and society away from the reduction of nature in pursuit of control, and towards a new culture of communion and regeneration.

This past summer, Aprovecho, together with the local school district and the Oregon Bureau of Labor and Industries (BOLI), began a program to train workers for a green economy. The Institute served as a project site for a federal Workforce Investment Act (WIA) grant that provides paid summer work and hands-on experience to graduating high school students, exposing them to emerging technologies in construction and design while inspiring them to develop a career in sustainable professions.

Over the summer, eight young adults, ages 16–22, were paid through the grant to work on four projects. We constructed a 10,000-gallon ferrocement rainwater catchment tank, built a circulating aquaponics system for raising tilapia in a solar greenhouse, installed a solar hot water system, and did finish carpentry and earthen plastering in our newly constructed community meeting hall.

The students gained an array of skills that remain foreign to most adults while Aprovecho's property got a big boost in educational capacity and self-reliance. Very few people have hands-on experience installing passive water harvesting systems or in the biological treatment of greywater. This unique collaboration brought together our small but innovative non-profit with public

authorities and public money to show that traditional and hybrid technologies developed in low-income countries and regions, and transferred by permaculture's worldwide educational network, can become valuable elements of a new green Main Street economy in the US.

Once school got back into session in the fall of 2009, the WIA funds paid for the development of an in-classroom trade-skills program at Cottage Grove High School. Working with the all-women's engineering and technology class, Aprovecho taught two three-week courses. The first session performed engineering tests, such as resistance to fire, water, and pressure, on various mock walls of conventional and alternative building materials.

The class began with a visit to our site for a tour of our straw-bale dormitory and community hall built of wood and clay harvested from our land. Then the students went back to the classroom to construct models for testing. The class then ran tests on the durability of traditional and alternative building materials (clay, sand, and straw in different compositions), as well as fiberglass insulation and sheet rock, using Oregon State University's materials testing lab at Corvallis. On the final day, representatives from BOLI, parents, and the media gathered at the school to see students torch the sample walls with fire, impact them with bowling balls, and subject them to moisture. The results demonstrated the safety and stability of earthen plasters with blown cellulose or straw-bale insulation. The fiberglass and sheetrock wall was shown to have less durability in almost every case. In the end, especially after burning the sheetrock and fiberglass wall and smelling the resulting horrible fumes, the students said they would rather build with natural materials in their future homes.

The second course focused on rainwater systems engineering. The first half of the course looked at rainwater runoff and bio-filtration. The students learned basic surveying and plant identification techniques, as well as the benefits of biological filtration. At the end of the module, the students installed a bio-swale in the high school parking lot. The second module examined rainwater catchment. After calculating household use, and the catchment potential of the high school building and the whole paved area of Cottage Grove, each student constructed her own 55-gallon rain barrel. Students were introduced to the issues of water use and reuse by action learning. This year, we hope to extend this program



A student works to finish a solar water heater for part of the Institute campus.

by bringing a few students into the design of rain gardens and bio-swales for Cottage Grove's newly constructed Bohemia Park.

The U.S. Department of Labor honored South Lane School District for its exemplary summer work program. One of our student workers, Jon Williams, was invited to Recovering America's Youth Summit in Dallas, Texas last December to give a presentation on the projects at Aprovecho. "Without sounding corny, I see Aprovecho as a shining light of hope." said Jon. "We don't need everything that society tells us we need. We pretty much just need each other."

...we can bring a new, and much needed, ecological perspective into conventional trades and careers.

The programs mentioned above are beginning to find a larger place in schools around our county in the form of trade-skills classes. Aprovecho is getting involved at two levels. We lead work-groups to restore county wetlands, collect seed for restoration projects, and plant roadside drainages to clean and absorb runoff and reduce the temperature of water flowing into streams. We also work with Cottage Grove High School to develop a program that brings the students into the community as builders and designers in the hope of fostering sustainable vocations. We plan to involve students in the design and implementation of permaculture projects in our area.

If all goes as planned this year, the first project under the trade-skills curriculum will be the construction of a new road on Aprovecho's property. The students will learn how to engineer a road for water harvesting, install bio-swales for treatment of runoff, learn about different construction methods, and spend a day at a training school for large equipment operators outside of Eugene. This is a great example of how we can bring a new, and much-needed, ecological perspective into conventional trades and careers.

This is the task of our generation: to aid in the transition out of ecological and economic disaster wrought by an extractive and inequitable economy and toward regenerative practices with equity and justice for all. We hope that harnessing the energies of a new generation will have powerful and lasting results. By sponsoring projects and mediating relationships in our communities, we can train the next wave of young workers to ensure that the emerging economy is grounded in the ethics, principles, and practices of permaculture. △

Abel Kloster is the Land Steward and Co-director at Aprovecho, a sustainable living education and organizing center, located outside of Cottage Grove, Oregon. More info at www.aprovecho.net. He also co-manages Resilience Permaculture Design, www.resiliencepermaculture.com, with his partner Tao Orion.

Enterprise models to regenerate the planet

Permaculture Design for Finance

Gregory Landua, Eric Toensmeier, and Mary Johnson

THE TASK AT HAND, in Middle Tennessee as in many regions, is to create profitable businesses and invest in regenerative local endeavors. Our small team, working as the Financial Permaculture Institute (FPI), have adopted a strategy to grow change by empowering individuals, friends, family, and communities to invest in projects that matter to them, to buy and bank locally—or within a clear ethical and strategic framework, and to build businesses that contribute to local resilience.



Fruits of Nuestros Raices, a successful permaculture venture empowering Hispanic farmers and business people in Holyoke, Massachusetts.

Permaculture is rooted in the effort to decentralize human economies, using the methods and universal understandings of science to ground them again in the resources and knowledge of localities and bioregions. Conventional systems of finance—which have caused so much havoc around the world of late—are subject to the monopolizing influence of markets, so we must find ways to decentralize power and wealth in order that people and communities can make well-informed, well-resourced, and locally appropriate decisions. We approach this enormous problem in three ways:

1. **Participatory design** was developed in the international aid context to empower stakeholders in a creative process that helps improve their lives. It can tap into the wisdom and fresh thinking of previously unheard voices, and generates supportive cultural change to accompany technical and economic transitions.

2. **Land-based businesses using permaculture** as the foundation of their design, production, and distribution are a necessary basis for any viable economy.

3. **Investment in local enterprise** can create financial intimacy, helping to create closely knit and resilient communities.

We focus on doing what is possible now. It is valuable to

think about meta-scale transformation, however, permaculture has taught us the wisdom of the slow and the small. We understand this to mean creating invisible structures that mimic ecosystem function and nutrient cycling within our sphere of influence: at home, in business, and within the family and community.

Design process and tools

We use two primary tools to design enterprises that yield surplus which can be channelled into regenerative projects: Participatory Design (PD) and Holistic Management (HM). By combining these we can create businesses that are well adapted to the needs and limits of a local area. Applying a solid investment strategy and financial transparency can generate revolutionary results.

Facilitating successful PD is an art form, requiring expertise in both process and content. The Transition movement offers an excellent example of its effectiveness. In our experience, the nine phases of successful PD are:

1. Framing the discussion and design
2. Building community cohesion
3. Mapping the financial ecosystem (or other context)

Greening a Rural Southern Town

Hohenwald, Tennessee is a small town nestled into rolling oak-hickory hills of the Highland Rim. Local values of independence, hard work, and family make it fertile ground for economic renewal. As in many towns across America, church groups are the foundation of how most people communicate and cooperate, not just how they worship.

The last two courses of the FPI, organized by local permaculturist Jennifer English, have brought participatory design to bear on creating a new green economy for Hohenwald. We began by asking the community what it needed. We approached churches, citizens, business people, and government officials.

The first year of the financial permaculture course in Hohenwald yielded a suite of four business plans which were presented to town stakeholders and visiting leaders from elsewhere in Tennessee. These included: a natural building cooperative, an ethanol plant, a green business incubator, and a farm-to-food enterprise. Of the four businesses planned during the event, three have moved forward: natural building has been integrated into the county's low-income housing system; a farmers market and community garden were started, and a green business (Access Consulting) focused on helping start-ups get formed.

By last summer, Hohenwald's city council had issued a proclamation supporting local green business, and was starting the process of becoming a Transition Town. This is a good example of how permaculture and participatory design can cut through class, politics, race, and gender to help people take community economic health into their own hands. △

4. Brainstorming
5. Narrowing the options
6. Digging into the details
7. Presenting the final projects to each other
8. Articulating achievable next steps and generating responsibility for them.
9. Celebrating success.

Process is the use of novel and participatory methods to liberate community creativity. These may include “world cafe”—or bringing together diverse participants, open space technology—a way of drawing agendas from the group, consensus-building facilitation, appreciative inquiry, “think-and-listens,” and fishbowl discussions. These methods, when properly applied, allow people to voice their ideas and concerns within a dynamic structure of connectedness they can trust.

Content is the vast territory of ecological knowledge covered by permaculture design, as well as the measurement and market insights of economics, business, and finance. To bring them together requires a team of experienced and flexible thinkers familiar with waste re-use, ecological land management, and organizational design. Being able to switch from crunching numbers on the viability of a forestry enterprise to discussing the potential of a complementary currency requires access to a wide range of information and a willingness to dive into a creative efforts the outcome of which may not be clear.

Holistic management is a design and decision-making system created by Allan Savory. It offers a wide range of goal-setting and decision-making tools to assess and analyze complex systems. We have found that HM, with its roots in observation of the natu-

Farming for Economic Development in New England

Nuestras Raíces (“Our Roots”), a community organization in Holyoke, Massachusetts, has developed a series of interconnected projects and businesses to serve the needs and employ the abilities of Holyoke’s low-income, Puerto Rican residents. Author Toensmeier has been a board member (nine years), staffer (five years), and consultant for the group.

The Nuestras Raíces farm, on a 30-acre site just a few miles from downtown, began with a permaculture design integrating goals set by community members, a detailed site analysis, and market research. Much of the farm was set aside in parcels for new farmers, a group which has grown to include immigrants and refugees from around the world. A smaller portion was designed as a cultural and agro-tourist destination. A suite of land-based business ideas was drafted to be leased as concessions: Nuestras Raíces would develop the infrastructure and seek community entrepreneurs to run the businesses. These were designed to: minimize competition, benefit the environment and the community, celebrate Puerto Rican culture, use each other’s waste products, and, provide mutual support by drawing customers for the whole group.

The design anticipated that each business, by marketing its own operation, would attract customers to benefit other enterprises and the farmers as well. Businesses currently on-site include 22 farm parcels, a pig roaster, a farm store, *paso fino* equestrian operation, a petting zoo with heritage Caribbean breeds, and cultural events drawing up to 3,000 visitors for live music, theater, and folkloric dancing. Several greenhouse businesses are under development, with heat provided by waste vegetable oil from another restaurant downtown. △

ral world, is a good companion to permaculture design in creating sustainable business plans. HM Financial Planning takes a group with shared equity through a year of financial decisions, helping to define the profit they seek, and showing them how to control expenses so that can be achieved. All income and expenses are outlined for the year ahead, noting which expenses will generate wealth, which are inescapable, and which are for maintenance.

Funding permaculture ventures

Investing and circulating capital is a key aspect of restoring local economies. The following four investment models support our design aims of decentralization and resiliency.

- Catherine Austin-Fitz, of Solari, Inc., developed a process for creating small peer-to-peer investors’ groups which she calls “financial intimacy.” Through mutual financial disclosure, cooperative learning and research, and vision-oriented investing, participants move towards an economic future they design. It’s a quick way to move financial capital into local businesses and permaculture projects. On the downside (and please note: the problem is the solution!), it challenges us all to communicate clearly with friends and family about taboo subjects.

- The Grameen Bank, Kiva.org, and others international ventures use micro-finance and social collateral to launch promising small business ideas. Credit can be extended by individuals within a community, or from a resource pool.

- Crowd sourcing is an exciting innovation made possible by web 2.0 technologies. It enables people to pitch good ideas to a diverse group of potential funders who may then choose an amount to invest or donate. Businesses like Kickstarter.com are showing how this approach can be profitable for all involved. No Kickstarter proposals are funded and no money changes hands until the project’s budget is fully pledged.

Pioneers of permaculture’s application to finance in North America have also, of course, created the Permaculture Credit Union (www.pccu-online.org), to provide loans, credit cards, and other financial tools for permaculture practitioners and other world changers.

A promising two-year beginning

Members of the FPI team have found that by identifying strategies to create profit from right livelihood and investing profit back into the community, we can give rise to actionable ideas that bring us closer to a regenerative future. △

Gregory Landua is a permaculture designer and founding member of the Financial Permaculture Institute and Terra Genesis International. www.gaiaemerging.com. Eric Toensmeier, co-author of Edible Forest Gardens and author of Perennial Vegetables, has also worked extensively in business planning for start-up farmers. Eric is a founding partner of Terra Genesis International. www.perennialsolutions.org. Mary Johnson is a permaculture design and holistic management consultant and trainer working with Terra Genesis International. <http://wrci-nashfield.wordpress.com>.

For more information, visit www.financialpermaculture.org

Movement Musings

Considerations for Permaculture Institutes, Certificates, and Diplomas

Rosemary Morrow

IN REFLECTING ON THE PRESENT STRUCTURE of permaculture education and practice and their evolution, I offer the following notes as a draft for discussion. The context of these remarks is the permaculture movement in Australia, but I believe that they have relevance for practitioners and teachers everywhere.

Quality of PDC graduates and teachers

Most educators look at the quality of the students' output and their competencies as a measure of the effectiveness of teaching. Others evaluate teacher performance through knowledge and delivery of the syllabus. Permaculture practices are very diverse and could stay that way. However, now seems a very good time for several reasons to look at what we do, and to see if we want to improve it.

I believe assessment of the quality of student work is the best measure of outcome for PDCs because permaculture is an applied science discipline: it requires observable practical outcomes.

I cannot see that familiarity with the *Permaculture Designers Manual* makes for a good graduate, although it may be a necessary basic condition for teaching.

In the spirit of permaculture and by working from principles and practices, I suggest that the following criteria, derived from the ethic of Care for People, will assist teacher competency.

- Show respect for students as exemplified by fair and equitable behavior.
- Exhibit knowledge and competence in all fields of permaculture.
- Remain accountable to students for support and guidance.
- Uphold an agreed standard of design work.

Quality of teaching and PDC graduates

Presently, PDC certificates are given for attendance and participation in a group project. I don't know what indicators for methodology are used to determine teacher competence. However, as an adult educator, I work to the following aims to ensure high quality outcomes:

- Engage students in discussion during the course.
- Observe group and design work.
- Discuss their use of the design principles.
- Assess their learning as they present two pieces of work.
- Ensure they have achieved a demonstrable standard when they receive their certificates.

- Monitor and have input to their on-going learning.

In most educational systems, student competency is determined by a series of specific, measurable indicators often using K.A.P.S., i.e. Knowledge, Attitudes, Practices, and Skills. I require every student to demonstrate this proficiency through the presentation of two permaculture designs, and further, to demonstrate:

- analysis of landscape problems and potential,
- use of permaculture principles, and
- synthesis of knowledge and experience as presented by the student through two assignments of different scale.

I believe assessment of quality of student work is the best measure of outcome for PDCs ...

Individual designs require each student to do the following four things:

1. Discuss and justify solutions to problems.
2. Demonstrate increased abundance of water, soils, forests, and biodiversity.
3. Apply zone-and-sector analysis.
4. Restore a landscape to resilience.

Of course there are individual variations among students such as an ability to verbalize, draw, and use knowledge; however with all these, a good standard is always discernable.

The question of conferring diplomas

When it comes to the diploma, I am convinced that we need a series of institutes across Australia. Each of these would specialize. This has already begun. We already have institutes tending to specialize in:

- rural permaculture
- ecovillages

- urban permaculture
- water or land shaping, and so on.

Not all institutes have to teach; they may produce materials or information, etc. However, the teaching institutes would work together cooperatively and collegially to ensure an agreed quality in teaching and standard of design work in PDCs and diplomas. Students enrolling at any institute could be sure of the same quality of their PDC and diplomas. Each Institute could establish its reputation through the quality of work of its graduates and diplomats.

Representatives of institutes would meet regionally or nationally to exchange information and check that “we are all sailing on the same pond.”

In Australia, I foresee a Diploma of Permaculture Design offered by all institutes. And, at diploma level, action research and project work is infinitely preferable to assignments. Each institute would offer one or more specialist fields according to its strengths. By concentrating on these, institutes could develop excellence.

Critical to this model is the need for mentoring of diploma students. Presently this is a weak area in permaculture. All institutes presently have a stable of PDC graduates known to them with strengths and expertise which they would be willing to share. Mentors themselves would require training in mentoring.

Accreditation of diplomas currently has several pathways:

• APT (Accredited Permaculture Training) through TAFE
(Ed.: Technical and Further Education institutions—similar to the American community colleges) and similar institutions

- submission to the Permaculture Institute
- UK model of academies, mentoring, peer support, and accreditation
- action research through overseas Chaordic Institute and Gaia University
- specialised institutes
- peer review per the Skandia model

These are all suitable for people from developed countries and who have English. They are all fairly expensive and, from the above list, it is not easy to compare whether the standard set by one diploma is equivalent to another.

Only the Skandia model is suitable for people from both developing and developed countries and carries a very low cost. It is the most democratic and transparent. The Skandia model has set such high standards of permaculture diploma work that tertiary colleges and universities have asked to include the permaculture teaching in their courses. This is the opposite of endeavoring to get a formal educational institution to accept permaculture and sometimes having it undesirably modified.

I propose that, to achieve an agreed standard, diploma work is conferred through

- action research and project work,
- guaranteed quality mentoring,
- evaluation by specialists in their field,
- results published on-line or through papers so others may share the knowledge, and
- a process with as low a cost as possible.

I see diplomas in new and enlarged fields such as:

- GEN (Global Ecovillage Network)

- development
- relief

I prefer the Skandia model where a student presents their project findings at national or regional convergences after a two-year monitoring process and a peer review. The value of this model is its:

- transparency,
- accountability,
- effective dissemination of results,
- low cost, and
- democratic nature.

Representatives of institutes would meet regionally or nationally to exchange information...

All institutes would publish their project outcomes on the web to carry forward the knowledge of permaculture in all its different fields and to be available to everyone. If anyone was unsure of the standard of work then they could discuss it with the mentors.

Outside Australia

My concern is for all those people, in some cases thousands, who don't live in the Western world but who have completed permaculture courses and have become superb practitioners, yet

- Do not speak English.
- Do not have access to computers.
- Are not literate.
- Do not have mentors or access to written materials.

These people are completely omitted from the options being put forward. They are my focus. I am working on ways to get them recognition and respect without loss of quality or standards.

For a good discussion on the Diploma it is valuable to refer to Peter Bane's article, “PC Diploma Returns with New Face” in *Permaculture Activist, No 53, Autumn 2004*, page 58. This covers the history of the diploma, the new proposal for bioregional centers, mentoring, action learning as the mode, and the experience of Mark Krawczyk.

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Rosemary Morrow has taught permaculture to communities recovering from war and ecological calamity in Albania, Afghanistan, Cambodia, East Timor, Ethiopia, Uganda, and Vietnam. She is the author of The Earth User's Guide to Permaculture, now in its second edition (1993, 2006) and The Earth User's Guide to Permaculture, Teacher's Notes. Contact her at rowemorrow@bmpi.com.

Reviews

Far Better Than None

Review by Peter Bane

PETER NORTH

Local Money: How to make it happen in your community

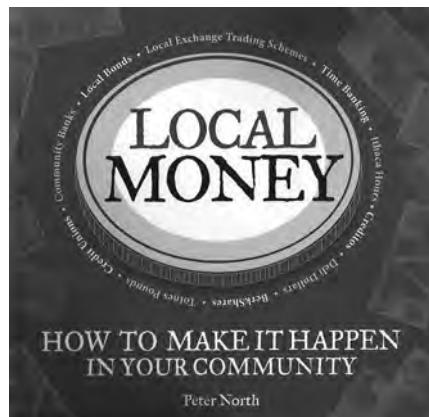
Green Books. Totnes, Devon, UK. 2010. 240 pp. paper. illus. \$22.95.

LOCL MONEY brings a splendid title and excellent scholarship to the slender library of Transition resources. The author and his allies are doing all they can to encourage local groups to take up the necessary and hopeful work of relocalizing economies. A local complementary currency, intended to co-exist with national or continental money, is one of the necessary and, with the publication of this book, more accessible tools.

Peter North is a genial geography lecturer at Liverpool University. He here joins the small fraternity of learned writers who, over the past generation, have undertaken to peel back the blinders of political prejudice surrounding the dastardly business of money. Margit Kennedy, architect and author of *Interest and Inflation-Free Money*, may have been the first to gain the attention of permaculture designers on this subject in 1983, as she was a co-founder with husband Declan, a permaculture teacher, of the pioneering ecovillage Lebensgarten in north Germany. Tom Greco, an American businessman and student of the esoteric, wrote a series of books from 1989, including a seminal one titled simply *Money*, and more recently, *The End of Money*, exploring every aspect of money creation and its historical path. Richard Douthwaite, the Irish writer and economist, offered two particularly sprightly investigations of money in relation to growth and localization in the 90s, *Short Circuit*—still one of the best—and *The Growth Illusion*, a rousing and lucid exposé of economic orthodoxy that prefigured the explosion of awareness around Peak Oil. Bernard Litaer, a Belgian banker, brought out the well-regarded *Future of Money* in 2001. It seems fair to say that membership in the money professions is not a disqualifier for this challenging task; neither is it a requirement. What does seem needed is a clear, logical mind, and a willingness to delve into areas kept purposely hidden from the public. Writing openly about the creation and meaning of money today is not unlike Galileo's exploring the movement of the planets in the 16th century. It seems straightforward and innocent only from the perspective of the future.

North is a good teacher, he knows how to stress the important points and repeats them frequently. He's marshalled excellent material,

including reports from the most recent Transition Town currency rollouts: Lewes, Totnes, Brixton, and Stroud, all in the UK. He is not a stylish writer, nor even an especially careful one, but he is readable, and the format of the book—with many sidebars, strong subheads, two-color printing in the body, and graphics throughout—is very forgiving of an author far from lyrical. I confess a peeve: if no one ever again used the execrable noun-verb, “incen-tivize,” I would praise the silence. Far better words exist and have been pushed aside by this high-falutin’ coinage of the business press and



the bureaucratic minions whose jobs depend too much on politics. What has become of “stimulate,” “reward,” or even “bribe,” which comes closest to the meaning this ghastly euphemism is meant to obscure? North is guilty, but only his tongue is corrupt, not his mind. He has rendered an excellent service in writing this very useful book, so we shall have to forgive him. What he does show—as if anyone could

it’s hard to detect any hint of the mysterium about it, despite holographic markings. This obligatory debunking—which is the point, of course—may follow or precede a historical review of money creation that can reach back to the cuneiform warehouse receipts fossilized in Sumerian clay. North spares us most of the ancient history but gives an admirable account of efforts in the modern world to create currencies outside the banking system, from Robert Owen’s ‘labour notes,’ to the Social Credit parties of Canada and New Zealand to Ralph Borsodi’s non-inflating “Constant” based on a basket of commodities.

Though seldom strictly banned, these efforts when promising, have typically been opposed, sometimes subverted, or even nationalized, as with the Depression-era bank holiday, when Roosevelt took the U.S. off the gold standard, printed billions in greenback scrip, and shoved aside a host of local currency experiments then gaining traction out of necessity. The Austrian central bank did something similar with less notoriety, and in doing so, pointedly shut down the local tender of the town of Wörgl which had issued a demurrage or “rusting” scrip to pay employees, accepting it back in payment of taxes. The Wörgl schilling made a fine local currency and brought a good bit of prosperity back to a depressed town—other municipalities had begun to emulate; the small monthly fee that bought a stamp to be affixed to validate each note ensured its rapid circulation. Trade picked up and times looked better...until the bankers got involved again. Enter Adolf Hitler.

North argues that necessity is knocking on the door now and we had better respond, lest

Writing openly about the creation and meaning of money today is not unlike Galileo's exploring the movement of planets in the 16th century.

still doubt it—is that bad English is not the sole prerogative of Americans, but has infected even the source domain.

The format of books attempting to unmask the god of money is somewhat predictable. There is a section explaining that money is merely trust, belief, information, or some form of credit (from the Latin, credo, or ‘belief’): ‘In God We Trust,’ and all that rubbish. North does a particularly good job of making this seem completely obvious. After all, most of us can pull a dollar, pound, or euro note out of our pockets (if we even carry them anymore) and see that it is just fancy paper covered with symbols that bespeak authority. When money is reduced to plastic cards—as so often today,

more people begin to starve for want of money. How can you doubt him? Any person over the age of 50 not yet drooling in his oatmeal has lived enough years in the heyday of Keynesian pump priming to remember that hard money has always been the bitter tonic served up to the poor by the rich: ample circulation, invariably by government, the antidote. This nation and the world learned in the 30s at the cost of economic collapse, fascism, and world war, the tin-eared wisdom of the gold standard: Every single time hard money has been tried, it has delivered the same lousy results—economic contraction and a rupture of the social contract. Hoover trumpeted this siren song in 1931, and the Republican Senate, in the baleful voice of

Mitch McConnell, is singing the same chorus today: "Pay the debt," just like Snidely Whiplash, the melodramatic cartoon villain of my youth, used to intone, "Pay the rent," as he tied the heroine to the railroad tracks. Hand me the rotten tomatoes, please. We need to get these bums off the stage.

Any institution in which we place some trust can effectively issue currency: grocery store coupons, department store gift cards, airline frequent flyer miles. So can a respected local group. Governments, of course, have the highest claim, surrounded as they are by both the symbols and the instruments of authority.

is well-peopled with a laissez-faire hippie lot, they will do quite well with soft money, that is, money that tends to equalize social values: time dollars, units with funny or irreverent names, non-exchangeable scrip. But if the culture is driven by small business people, there will be a much greater response to "hard" money: convertible to national currency, marked by "moneyness," or symbolic authority, widely accepted, perhaps even backed by local financial institutions. Neither is "right"; either can work quite well.

As North admits toward the end of the book, almost any currency is better than

Most of what makes for success—and he does offer a synopsis of the lessons at the end of the book—consists of careful preparation and follow-through. Find a way to fund the effort; volunteer steam runs out, but currency needs to stay the course to be useful. Arbitrage on electronic transactions is a promising new possibility: it would be easy to undercut the banks' 4% and still support a small administration. Talk to everyone and incorporate their views. Get business buy-in: a wide assortment of accepting merchants goes a long way to ensure a strong launch, which is *sine qua non* for new currencies. There's seldom a second wind—you have to be first out of the gate and strong all the way. Keep exchange fees and demurrage very modest and in the background: merchants won't support a currency that cuts too much into their profits or adds complicated handling; on the other hand, some fees for exchange and expiry dated notes are certainly possible and can be a source of funding the currency. Choose a strong set of local symbols and consider using a unit parallel to national or continental currency: Toledo Talents or Cincinnati Steamboats should ideally be a plausible substitute for Federal Reserve dollars. Keep in touch with and take care of your largest transactors: if a main grocery or department store is willing to take the local currency, counsel them to restrict acceptance to the amount they can regularly spend back. Movement is the key: you must keep the currency from getting 'stuck,' pooling in a few hands.

The chief aim, and one which has been

Every single time hard money has been tried, it has delivered the same lousy results—economic contraction and a rupture of the social contract.

But fancy banknote paper, watermarks, serial numbers, metallic embossing, and a host of printing arcana are readily available for hire. One needn't even use notes for small local systems. LETS, or Local Exchange and Trading Systems, have been flourishing since Michael Linton invented them in western Canada in 1987. You can write checks for face-to-face trades, or you can just call in your information to the bookkeeper's answering machine. In Kenya, mobile phones and a loose network of shops, kiosks, and service stations are being used to move money around, demonstrating that technical innovation scarcely requires a high standard of living. Smart cards are supporting a quite sophisticated multi-billion dollar business-to-business exchange network in Switzerland, and the cost of the hardware keeps dropping.

North's purpose in writing this book is to get more groups to enter the waters. To that end, he presents a double handful of case studies of recent currency issues and critiques each one against the measures of hard or soft quality, range of circulation, and usefulness to local business and consumers. He also analyzes the start-up and follow-on processes for lessons learned. We get a good look at a wide range of possible pathways besides the Transition Towns cited above: LETS and Time Dollars, Argentine barter networks—which arguably saved hundreds of thousands of lives when the peso collapsed in 2001, German regional currencies, Ithaca Hours, and Berkshares. It's all a vast experiment with no certainties, but some lines of clear thinking have emerged over recent decades.

The very nature of currency is intimately bound up with the ethos and economic conditions of the community it serves. If your town

none, so long as it isn't simply bumwad. The American Revolution and the Civil War, on both sides, were financed by unbacked paper currencies, and depending on your geographic proclivities, both were remarkably successful endeavors. The Confederate "greybacks," of course, lost all value with the collapse of the South's cotton economy and the demise of the issuing authority, but while Jefferson Davis

Most local businesses are not buying from other local businesses...yet. They're sourcing from the global economy, so amping up their trade without redesigning its connections would lead to more growth of the sort we don't want.

and his cohorts persisted, the scrip served to field an army. Indeed, before the discovery of gold on the American River in 1849, a large portion of the money circulating in the United States consisted of counterfeit bank notes. Small fortunes were made in publishing regular guides to the authenticity of money, and people often accepted money they knew, tacitly, to be a fraud. Frequently, the fake notes were of superior quality to those actually issued by the banks, and a significant cottage industry of printers and engravers flourished on the Quebec-Vermont border for decades, as this was the preferred route of introduction to the nation's market centers in New York, Boston, and Philadelphia. And of course, every bank also issued notes, but not all banks—as we have been recently reminded—are sound and honestly run.

little realized yet, must be to relocalize the economy. And this must not be merely a Buy-Local booster campaign. Most local businesses are not buying from other local businesses... yet. They're sourcing materials from the global economy, so amping up their trade without redesigning its connections would lead to more growth of the sort we don't want. North advises that local currencies and their supporters must find ways to stimulate local production. Jane Jacobs, whose excellent works on city and regional economies he cites, writes that working local currencies provide the feedback necessary for local economies to fill in their gaps. The process is called Import Substitution, or more expansively—L.O.I.S. (think of it as the counterpart to Clark Kent, a local-economy superhero in drag), Local Opportunities for Import Substitution—slipping around tall hurdles by

any path that works. In the memorable words of Mrs. Rai, a Nepali boarding schoolmistress and forest gardener extraordinaire explaining the secret of her success, “If I needed it, I planted it.”

Permaculture has long offered the tools for creating self-reliant household economies. In spawning Transition, it has lifted its game to the equally urgent work of creating resilient local economies. Along with growing and harvesting our own food, shelter, and energy, local money is one of the four pillars that hold up the temple of economic sovereignty. Brothers and sisters, let us pray.

△

Swinging the Hammer for Justice

Review by Peter Bane

STEPHANIE MILLS

On Gandhi's Path:

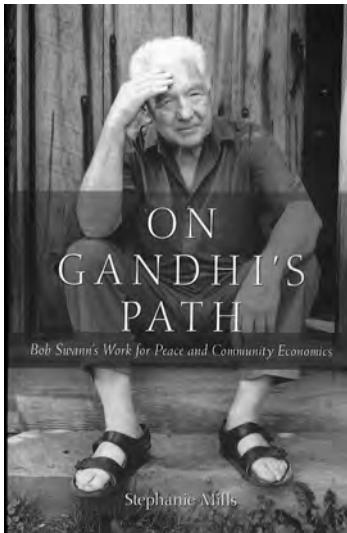
Bob Swann's work for peace and community economics
New Society Publishers.
Gabriola Isl. BC. 2010.
149 pp. paper. photos. \$16.95

BOB SWANN MAY BE the most important pioneer for a just world whom you've never heard of. A war resister and peace advocate, practicing economist, builder, developer, and the creator of the community land trust (CLT) in the United States, Swann founded the E.F. Schumacher Society in Great Barrington, Massachusetts. He worked tirelessly over a long life to bring together practical structures for economic justice, land reform, rural investment and credit, complementary currencies, and education. Swann, working with his long-time companion Susan Witt—who now directs the Schumacher Society, laid the groundwork for the successful rollout of Berkshares, a community currency for the Berkshire region of Massachusetts and New York, where the Society is headquartered, by helping to create both Berkshare Farm Notes and Deli Dollars, two small but successful community enterprise funding efforts based on local scrip.

Stephanie Mills, an accomplished author of seven books, including *Epicurean Simplicity* and *Turning Away From Technology*, has given us an elegant, short biography of Swann's monumental life. The comparison to Gandhi is apt. Not only had Swann, a largely self-taught man, studied Gandhi's life and work, but he too was committed to righteous action for peace and justice. Gandhi's memory will always be associated with India's achievement of independence from Britain—the righting of an historic injustice, but the non-violent methods he practiced, which so influenced Martin Luther

King and others, were specific in their focus on deep change. Gandhi broke the British Raj's monopoly on salt, by marching to the sea with his followers to make salt in defiance of the imperial tax on this essential of life. He lived simply and spun cotton thread for weaving into cloth, a gesture both symbolic and practical in asserting India's economic independence from the manufacturing interests of Lancashire and their garrison armies, and one still proudly enshrined (the spinning wheel) on the Indian national flag.

Swann too, helped to forge a path for practical change. He was a big thinker who focused on the needs of the small farmer and merchant, inner-city residents and rural and small town dwellers: those who made their living by bread labor and community service, often close to



Against a backdrop of empire and militarism, economic giantism and inequity that colors the story of the United States since at least World War I, Swann's life stands out as a brightly colored contrast to the dominant and somber tones of oppression.

the land. He lived his life in the mood of the question, “And how can this be made better?” Much of his research and practice lay in the realm of land tenure, where his major innovation, the CLT, was intended to wed community values to security for the cultivator. The vehicle he invented nearly 40 years ago, now used by hundreds of organizations nationwide, has been adapted to conserve low-cost housing, healthy forests, and farmland under threat of development.

Swann forged his ideas in the crucible of practice. He worked with leaders of the black community in Mississippi in the 60s to help

displaced black agricultural laborers and farmers secure land to farm again, and he helped put together a million-dollar project in Georgia for cooperative farming by African-American families. But Swann's interests were broadly in all forms of what in permaculture are called “invisible structures” to support economic justice. He was an innovator in the field of money and currencies as well as land and enterprise development, working with Ralph Borsodi in the 70s on the Constant, a private currency backed by a basket of commodities and designed to be non-inflating in a period when inflation threatened to undermine even the national economy.

Swann had an abiding interest in all aspects of rural and local economic development: microcredit, socially screened investment—which he saw as a way to fund social and economic change, local currencies, and land trusts, and he innovated in all these areas. His life touched nearly all the decentralist pioneers of the 20th century: Arthur Morgan, Helen and Scott Nearing, E.F. Schumacher, Ralph Borsodi, Bayard Rustin, Dorothy Day, Kirkpatrick Sale, and J.P. Narayan. Under the auspices of the Schumacher Society's annual lectures, Swann and Witt brought together a stellar cast of thinkers, writers, activists, and culture makers, among them Wes Jackson and Wendell Berry, Francis Moore Lappé, Jeremy Rifkin, Leopold Kohr, Hazel Henderson, Thomas Berry, David Orr and David Brower, Ivan Illich, Paul Hawken, Winona La Duke, Jerry Mander, Chellis Glendinning, David Korten, Amory Lovins, Cathrine Sneed, Oren Lyons, and Judy Wicks. The Society's small quarters at Great Barrington became a hub of intellectual ferment for decentralist

politics and economics. Swann and his life of selfless service lay at the center of it all.

Mills renders this very public life sympathetically and deftly with just enough touches of the personal to ground this good man's visionary ideas in his real struggles. Although her subject is nominally the man, his life was so identified with the causes for which he worked: economic justice, decentralism, rural renewal, and international peace, that the book is as much a story of the persistence and flowering of these noble efforts in 20th century America as it is about Bob Swann.

In the early years we see the young man of

Cleveland Heights, Ohio on his path of interest in art, design, and building, unable because of the Depression's effects on his family's fortunes to attend university, but auditing classes nonetheless. Drawn to the populist architecture of Frank Lloyd Wright, Swann was a carpenter all his life. He firmly believed in and worked for self-help and the notion that, given a fair deal, all people could better themselves and contribute to their communities.

Against a backdrop of empire and militarism, economic giantism and inequity that colors the story of the United States since at least World War I, Swann's life stands out as a brightly colored contrast to the dominant and somber tones of oppression. I would suggest that he walked among the angels of our better nature, and when we are finally down so far that there is nowhere to look but up, we will very much need to reclaim the history he and

The Human Experiment

Review by Albert Bates

JAMES BRUGES

The Biochar Debate:

Charcoal's potential to reverse climate change and build soil fertility

Chelsea Green Publishing Co.

White River Jct. VT. 2009

120 pp. paper. illustrated. \$14.95

"Since greenhouse gas concentrations are already above a figure that can be considered safe, and may have to be reduced to pre-industrial levels, we are facing a crisis. So it is not enough just to reduce emissions; the concentration of these greenhouse gases already in the atmosphere must be reduced. The potential for using charcoal to extract carbon dioxide from the air is one of the few options open to us, and the only one that is immediately available."

—*The Biochar Debate*

WHILE SCIENTISTS FRET and economists quarrel, politicians dither and business leaders derail, there is an expanding disconnect between physical reality and political reality. We are ignoring the clear and unambiguous signs Gaia is sending us about the shape her atmosphere is in.

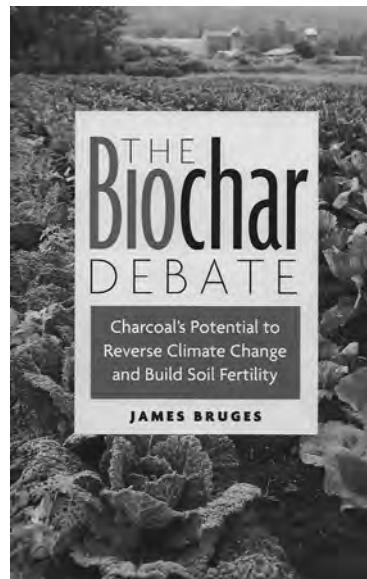
Do we imagine there has ever been an instance that politics trumps climate physics? Anyone who witnessed the debacle in Copenhagen last December, when politicians were sent on a science errand, can tell us that doesn't work, at least not for very long. Politicians are the Sorcerer's Apprentice, they tend to overdo

others helped chart for us: a road not so heavily traveled, but a real and true path forward nonetheless. Permaculture, for all its odd Aussie origins, belongs to that path and that community of visionary and creative naysayers. Let us celebrate one of our own, a quiet and unsung hero.

Mills has a graceful way with words and

she has given this story a simple structure that nonetheless captures the essential features of a notable life. The book, which is superbly researched and documented, reads quickly, and I have to recommend it to all younger readers of conscience especially, for whom it may be a first introduction to their true elders and to a history they may not know they deserve. △

[Swann] firmly believed in and worked for self-help and the notion that, given a fair deal, all people could better themselves and contribute to their communities.



choose between more worse or less worse options. Persist and perish or change and stand a chance. That will be one debate.

Bruges' centerpiece, biochar, is a second, more tactical debate. While he can count as allies David Holmgren, James Lovelock, Bill McKibben and many more, aligned with Bruges' opponents we find Vandana Shiva, Frances Moore Lappé, and scores of public interest and environmental organizations. In Copenhagen, the anti-biochar side was led by EcoNexus. *The Permaculture Activist* sat politely through an hour of EcoNexus presentations against various bad practices in agriculture (including the mistaken lumping of organic no-till with chemical no-till) until the microphone arrived in front of Deepak Rughani of Biofuelwatch.

Pointing out that 14 governments and the UN Convention to Combat Desertification have endorsed biochar, Rughani said that biochar was being fast-tracked through the Clean Development Mechanism without adequate

We are ignoring the clear and unambiguous signs Gaia is sending us about the shape her atmosphere is in.

any good thing until it transforms into something exceedingly bad.

James Bruges has got this right. In a carefully structured paper for the Schumacher Society now enlarged into a book for Chelsea Green, he avoided the dishonesty of the quick fix and dashed the hopes of anyone who thinks we can simply continue economic growth in our habitual ways. His subject is named The Biochar Debate for good reason. People will be recruited to the difficult process of earth restoration not by promises of instant gratification or shiny new consumables, but by glimpsing reality in its demonic aspect and, after digesting the full horror, deciding to personally

vetting. He said it was like releasing a new pharmaceutical product without clinical testing. He enumerated several "false claims" that he said were going unexamined.

First, carbon negative cooking and heating. Rughani said that with any fire, you only get the energy out that you put in, so if you get a third to half out as biochar, that means you have to find a third to half more fuel, which in many parts of the world is already unsustainable and leading to deforestation.

We all know the bad health effects of inhaling soot, endemic in Africa and Asia, and when you add the handling of biochar from stoves,

this problem will only worsen, he said.

Second, carbon negative agriculture. We are seeing large clouds of black soot when biochar is broadcast to the fields, Rughani complained, showing dramatic photos. This is only adding to the climate problem, not to say global dimming, and of course some of that carbon is swept up by the wind and carried aloft.

When you spread these large swaths of biochar across the ground you turn the field black. Fine for Japan, where they want to warm the earth, but in Africa the last thing you want is hotter soils.

Third, long retention, *a la terra preta*. Rughani asserted that microbial breakdown is what will determine whether the biochar will stay in the soil or not. He claimed up to 72 percent will oxidize and go back to the atmosphere as CO₂ within 20 years. He based this on the misconception, and some isolated and unreviewed case studies, that microbes metabolize biochar and turn it into CO₂, which better science has pretty well established to be untrue. The only place that biochar works to improve crops is in the tropics, Rughani said, and turning the Amazon soils into inorganic carbon is disastrous.

Knock. Knock. Who's home?

Review by Rhonda Baird

RADICAL HOMEMAKERS: *Reclaiming Domesticity from a Consumer Culture*

Shannon Hayes

Left to Write Press

Richmondville, New York, 2010.

300 pp. paper. illus. \$23.95

THIS BOOK LANDED in my hands in a moment of complete synchronicity. I'd been deeply meditating and acting upon the concept of the home system since dropping out of my second tour of graduate school, taking my permaculture design course, and apprenticing as a permaculture teacher. Implementing the home system is what we permaculturists do. So, years into it, I was engaging with the literature emerging on being a homemaker and what it meant. Along came Shannon Hayes and away we went. What I came to find is that the radical shift I'd gone through is more common than I thought. The movement documented by Hayes is picking up steam.

The foundation of our future is not just in the green collar economy or the landscape level restoration of ecosystems around the world, but the very personal choices and lifestyles that color every home. The real edge of our cultural evolution requires an evolution of our lifestyles from consumption, individualism, and mindless participation the corporate-ruled mainstream culture, to home-based production, commu-

The nutrient loss, much of which will be vaporized, he argued, means that people will become more dependent on industrial fertilizers, and the more you strip away the topsoil in the tropics, the more vulnerable these soils are to erosion, degraded soils. It is the safest solution available to get us back south of 350 parts per million atmospheric carbon, on decadal timeframes, safer by far than the no-action option dictated by the precautionary principle.

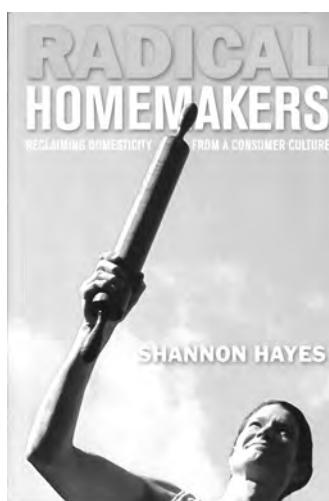
The EcoNexus rap at Copenhagen displayed much more global dimming than biochar will. While there were some legitimate concerns—all ones that are being addressed by the biochar policy community in a considered and deliberate fashion—there were a huge number of false or misleading statements sprinkled through Rughani's talk. Raising spectres of giant tree plantations that displace indigenous societies, an industry that crushes local initiatives, enhanced addictions to fertilizer, and destruction of soil humus on a massive scale, Rughani employed virtually every faulty syllogism in the propagandist's handbook.

Applied permaculturally, biochar is one of many tools to build soil, build community, and

soothe Gaia's fevered brow. If there is a legitimate concern, it is that biochar will be excluded from the UNFCCC process, and excluded from any cap-and-share or clean development mechanism. In that event, Biofuelwatch's worst nightmares could be realized. In a Wild West scenario, where there are no certification standards, no requirements for life-cycle analysis, no feedstock and product characterization, and no need for continued research on soil biology and plant results, precisely the monocropping, toxicity, displacement of the poor, and all the rest become possible, even probable.

Bruges takes us a step further in the debate than his critics did. Biochar offers us a last chance to cheat death, he points out, but we'll only be given one try. It is not enough to reform agriculture to focus our eyes on the carbon prize. Civilization has to invent a post-capitalist, steady-state, local-scale economy in the Fritz Schumacher/Leopold Kohr mold. Succeed in that endeavor and Jeffersonian democracy (with its nations of farmers) can burgeon and bloom. Fail, and our epitaph will be a hard black layer writ in the strata: Here Lies the Human Experiment, R.I.P. △

[Hayes] draws our attention to the intentional manipulation of home life from convenience appliances...to the change in education from "Home Economics" to "Consumer Sciences."



nity cooperation, and generosity of spirit that empowers and enables others to join in, too. While some might object that what happens in the home is the most sacred and private place and shouldn't be manipulated or infringed upon—the truth is that our home life has been the subject of increasing manipulation, moral haranguing, and outright preaching for several centuries. Permaculture, and allied movements such as the radical homemakers, unfurl their

banners and join in the debate. And thank goodness! The home is the seat of freedom. If our collective future hinges on the future of making a home, then this book gives us a greater understanding of the historical context, and the dynamics at play now.

Hayes' book is based upon her theoretical analysis and her field research interviewing self-identified radical homemakers. The first part entitled "Why" takes us through the history of homemaking since the rise of Industrial Society. She doesn't skimp on the impacts of the extractive economy that developed as a part of the industrial society. A clear picture emerges of exactly how, first men left the home and homemaking, then women and domestic work were paired together and denigrated in the emerging modern culture. We glimpse the clinical and moral writing that encouraged women to be better, stronger matrons tending the hearth and home and the increasingly despairing and manipulated housewife who emerged. Then there is the reaction and rise of Second Wave feminism. Hayes' treatment of Second Wave feminism is the touchstone for describing what Radical Homemaking is and how it responds to the lies that have been transmitted culturally since women increasingly left

the home to become full-time components in the corporate machine.

Again and again, Hayes gives voice to the values that radical homemakers identify: a longing for fulfilling lives and careers which contribute to society and provide: 1. Ecological sustainability; 2. Social justice; 3. Values of family; and 4. Values of community. These values mirror our permaculture ethics and also speak to the real needs that were identified by M. Max-Neef. Throughout the analytical sections, the author returns to these core tenets and uses them to assess the dynamics of our

part of the book, "How," lays out through example the way in which Radical Homemakers have broken their bondage to mainstream culture. The glimpses we have into the Radical Homemakers' experiences, motivations, and successes are fascinating. Hayes draws together evidence that counters the lies she identifies in the first part of the book. In doing so, we are empowered to draw upon our own creativity and ability to overcome obstacles to becoming radical homemakers ourselves. Many of these, such as the belief that a household needs two incomes to finance a house or land or the abil-

ity to care for oneself in retirement, are examined with such detail and personal examples, that it is hard not to sit down with oneself or another and make an action plan right away. And this is her aim, to encourage and empower us to do the same.

Hayes is drawing on literature from David Korten, Riane Eisler, Thomas Berry, Wendell Berry, Bill McKibben, and many others. Her synthesis and language suggests that this book is the publication of her Cornell dissertation for the general public. At times she waxes academic, but this is tempered with a warm and accessible writing style. Do not let it dissuade you, because her writing is full of pithy phrases one wants to hold on to for future reference. The second half of the book is extremely personable and concludes with a passionate and eloquent call to join in the movement for the benefit of all life.

I heartily urge everyone to read and take to heart the labor of love that this book is, and more importantly to tend your own home with creativity, love, a sense of common purpose, and joy. △

The real edge of cultural change requires [a shift] to home-based production, community cooperation, and generosity of spirit that empowers and enables others to join in too.

shift in homemaking culture and the resulting impacts on local economies, community culture, and ecological commons. She draws our attention to the intentional manipulation of home life from convenience appliances to the decline of nutrition to the change in education from "Home Economics" to "Consumer Sciences." The consequences of our increasing individualism and pressure to live the "successful life" are documented in increasing mental illness and suicide statistics, as well. Hayes is thorough in her examination.

Behind it all, like the sound of a stream in the background, is a look at the importance of the relationship between home economics and formal economics. The consequences of working in the formal economy have been written in the annals of history. Labor history is full of the struggles, often bloody, over the control of the means of production. However, even Labor History, has not really questioned the scale of production and the externalized costs in terms of mental health, physical health, and quality of life that come with an industrial, extractive economy. Hayes lays it out on the table for all to view.

Radical Homemakers, those individuals who return to the hearth and tend it faithfully and creatively, turn their backs on the corporate, mainstream culture and economy. They are finding a new path away from destructive institutions and traditions toward life-serving ones. Along with this comes a shift in defining "wealth" and "well-being." Quality of life becomes much more important, and is often defined in terms of personal freedom to determine activity.

Whether these homemakers are permaculturists or not (and most aren't), the people joining in this movement share the same values. It is encouraging that the changes they come to many of the same conclusions. The second

Food Forestry For All Review by Peter Bane

MARTIN CRAWFORD
Creating a Forest Garden
Working with nature
to grow edible crops
Green Books.
Totnes, Devon, UK. 2010.
384 pp. hardback. full color
throughout. \$49.95

When Dave Jacke and Eric Toensmeier brought out *Edible Forest Gardens* in two volumes five years ago, I thought we had seen the last word on the subject for a decade if not a generation; at eight years in the writing and with over 1000 pages, their work seemed encyclopedic. Dave, who was the senior writer and penned most of the text (Eric compiled much of the tabular material on plants), is brilliant, and witty, and a spectacularly good teacher. The intellectual vistas *EFG* opened up were breathtaking.

Without vaulting over their accomplishment, Martin Crawford has managed quietly to walk up to the head of the line and stand abreast of his American colleagues with quite a different but utterly impressive book. If Dave and Eric had erected a magnificent pavilion on top of the hill with sweeping views of the ecological terrain of forest gardening, Martin has taken in those views appreciatively, and walked out the back door and down what will likely be the main garden path toward success and satisfaction for most people. If you follow in his steps, he'll tell you every plant along the way, which ones



CREATING A
FOREST GARDEN

WORKING WITH NATURE TO GROW EDIBLE CROPS



MARTIN CRAWFORD

are productive, which are fiddly, how to get them to grow, in what order to plant them, how much it will cost you, how much time it will take to establish, where to get the seed, what parts to eat, when to harvest, where you have choices, and how you will know that you're over the hump.

Martin Crawford, working almost completely alone on a two-acre plot at Dartington Manor in southwest England and an eight-acre field site across the valley, has steadily, and with remarkable thoroughness for the past 20 years researched, planted, tended, harvested, and documented the temperate world's foremost forest garden. *Agroforestry News*, which Martin has published quarterly since 1992 is just this summer completing its 18th volume (subscriptions available in North America from Permaculture Activist). He has carved out an indispensable and distinctive niche in the tiny field of permanent agriculture

and tree crops while making research into temperate climate forest garden species and methods pay for itself as he established his own garden.

Creating a Forest Garden is long on detailed information (two-thirds of the book is plant profiles and commentary), thrifty in its use of text, and pointedly practical in its recommendations. It is, for all of its four-pound heft and fill-your-lap spread, highly accessible. You can open it up, find what you need, read the essentials, and have a pretty good summary understanding of almost any aspect of forest gardening in a very short time. You are left with the impression that forest gardening is as easy as Martin makes it look. Don't be fooled, however. The gardening itself may be easy, but the work that went into making it successful, and making this book the valuable reference that it is, required long hours of research, reading, and testing ideas from the literature.

Martin, now in his 40s, came to horticulture from software engineering, and despite the seeming incongruity, has been well-suited to the job he took on: he's steady, patient, thorough, and oriented to results. He's combed the literature on perennial plants from around the globe to identify and secure seed or stock of all those that might plausibly flourish in his zone 9 garden in a section of southern Britain swept by salty winds. Then he planted them and reported the results. The moderate climate there has been favorable to a huge number of species. And because many of them have only been available as seed, he's learned to propagate them by running his own nursery. The nursery and a seed catalog, along with workshops in recent years, plus the journal have provided his income. A small number of visionary patrons, plus the support of the Dartington Trust, which steward the thousand-year-old manor where he works, have made his

a very short introduction to the theory of forest gardens as symbiotic ecosystems designed for maximum human benefit, and then a quite sober and practical examination of climate CHANGE and its likely trajectory (vineyards in England, drier summers). Then there's a good discussion of the forest environment and soils, followed by a chapter on fertility. I loved the systematic and flexible listing of nitrogen sources: moderate croppers like juneberries, hawthorns, and elder need each year (per square meter of canopy) 0.2 square meter of companion nitrogen-fixing plant nearby (in full light), twice as much of that if the nitrogen-fixing is in half-light, four cut plants of comfrey applied as mulch, a kilo of fresh seaweed, three-tenths kilo of manure, four-tenths kilo of

Chapter 7 describes methods for establishing a forest garden, including how to achieve good results without letting weeds take over the ground while you take several years to get going. Plant the canopy species first (the taller trees that will form the backbone of the forest garden), then mulch out grasses and weeds, and get your groundcovers in place. Then fill in shrubs, then perennial and biennial herbs. Work out from a controlled front; don't bite off more than you can chew. You can work with 4000 square feet (50'x 80') or five acres. The scale of your plantings will change; small gardens will have more intensive understory usage while larger gardens may devote expansive areas of ground to plants that are not harvested like mint and other herbs for

***Creating a Forest Garden* is long on detailed information (two-thirds of the book is plant profiles and commentary), thrifty in its use of text, and pointedly practical in its recommendations.**

compost, or half a human bladder full of pee. Any of those will do just fine. You see that kind of thinking throughout the book: fresh and friendly methods described with scientific care and precision—what we have long sought and what permaculture has needed to defend itself against unwarranted methodological attacks by reductionist science.

Creating a Forest Garden validates permaculture theory right and left; it has immense utility for and shows enormous influence from permaculture design training

ecosystem support.

Much of the body of the text consists of page after page of plant profiles organized by size and ecosystem niche. Each gives a color photo, a brief description, and information about growth habit, climate tolerance, sun and shade preferences, performance, fertility requirements, size, soil conditions, uses, harvest and storage, cooking and processing, propagation, and maintenance. Each of the several main layers of the forest garden from canopy to ground cover is introduced before the plants which would occupy it. How and when do you establish the shrubs, what will they need, etc. Around the edges of this main material we get chapters on design, soil preparation, windbreaks, fungi (a kind of layer in themselves), clearings, pathways, maintenance, harvest and preservation, how to do further work, and propagation, complete with tables. The appendices are rich and offer tables of edible yields by month, bee forage plants, and lists of suppliers, publications, and useful organizations.

Martin Crawford has produced a spectacularly useful guide to new horticultural and ecological terrain of great importance: tested theory and personal experience, practically organized, and attractively packaged. With a little care, the book might last as long as it takes you to see all the layers of your forest garden feeding you, say a decade or three. There should be no more excuses. Get it, and get going. △

[The book] validates permaculture theory right and left.

job easier than it might have been, and we are in their debt as well as in his.

The book is a pleasure to behold and to work with. It's printed in large format with hard covers and color plates and color printing throughout. The photos and the findings were all taken in Martin's garden in Devon, which is the most astonishing aspect of the whole thing. You could say this is a digest of a 20-year research project into a holistic system of perennial food production, carried out by a working scientist, and written for the lay gardener by a regular bloke himself. The order of subjects follows the order of establishment and understanding of the forest garden. There is

and practice, but Martin is very clear to state respectfully that what he does is not permaculture, but simply forest gardening. And it is true that he's not attempting to integrate animals (other than wildlife and soil fauna) into his garden—no chickens or sheep foraging under the shrubs, no community currency (though he certainly has access to the Totnes Pound), no passive solar homes, nor bicycle-powered seed grinders. Just plants, thank you...oh, and of course birds, bees, butterflies, and worms. It's quite enough to have done that. Measuring even more complex systems adequately may be a task for which science is not yet prepared.

Telling an Ancient Story

Review by Peter Bane

PATRICK WHITEFIELD

The Living Landscape

How to read and understand it

Permanent Publications. East Meon, Hamps. U.K. 2009.

332 pp. illus. color plates. \$37.95.

PERMANENT PUBLICATIONS, publishers of our sister journal, *Permaculture Magazine*, have brought out a series of fine contributions to the permaculture bookshelf, and Patrick Whitefield, an established instructor, is one of their most prolific and capable writers. He is the author of *Permaculture in a Nutshell*—a back-pocket synopsis of the permaculture system, *How to Make a Forest Garden*—one of the first organized descriptions of forest gardening to extend Robert Hart's intuitive explorations, and a magisterial work on permaculture design, *The Earth Care Manual*. In this latest book he shares his deep knowledge of the British countryside, acquired over a lifetime of passionate involvement in agriculture, and two decades of teaching.

The ability to read and interpret landscape processes—both natural and cultural—is the stock-in-trade of permaculture designers. You cannot extend or renew the story of a place without first understanding it. Patrick has spent many seasons thoughtfully observing the hills and dales of the British Isles in the course of farming, homesteading, staring out of train windows, and hiking the highways and byways of that green and pleasant land. His understanding is reflected here in a myriad of detail that might well escape the casual observer, along with interpretations of the dynamic that generates change in different environments. He uses entries from his journals as a window into ecological processes of succession, the name we give to the growth and destruction of complexity in natural communities.

This is indeed the key to understanding the world around us; it reveals the dynamic and context of the present landscape. We have to know what came before the visible present, and how that ensued from even earlier phenomena, in order to see the direction in which change is taking us. This kind of knowledge is based on long association. One's acuity in reading landscape is a function of the number of observations one has made and the breadth of terrain and seasonality through which one has worked. Climate is changing. Some species are on multi-year or even generational rhythms such that their patterns cannot be known firsthand without long study. Trees and forests are particularly long-lived, but even more so are human communities and their cultural artifacts, including agricultural practices, roads, and

pathways. This is especially true in Britain, where the countryside has been spared the worst destructive effects of modern warfare.

It has not gone without change, however. Whitefield identifies at least four main eras in British land use, including the Roman period—of which little evidence remains above ground but persists in place names and other palimpsests, and the Medieval period, still strongly visible in many parts of the countryside in the form of ditches, banks, plow patterns, field divisions and hedgerows, and even ancient coppice stands of trees. With the onset of new economic patterns in the early modern era, this countryside gave way to larger fields often involving enclosures of common land for pasture along with the removal of tenants. The late Industrial era, from the mid-19th century to the present has brought its own dramatic changes, especially in what the author calls “the Planned Countryside,” more to the east and south of England, where a succession of 20th century

and the removal of some former hedges. This process has continued with mechanization replacing draft animals. Modern agriculture's use of phosphates, which accumulate in soil, has changed wild plant communities. Some woodland species are indicators of ancient woodland (by definition—appearing on maps in the 18th Century), for they occur nowhere else.

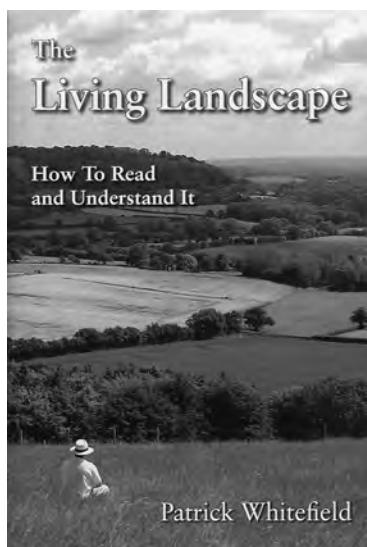
Wild animals too reveal important aspects of the landscape story, and Patrick draws vivid pictures of the creatures of the British countryside and their individual niches, including images of their tracks and descriptions of their scat, their burrows, and their diets. Each has associations, from which the skilled landscape reader can infer ecological and cultural processes at work.

The Living Landscape covers the main types of ecosystems and environments found in Britain: woodlands, grasslands, moorlands, heaths, water, hedgerows, and roads and paths. It also takes a closer look at individual trees and the concept of niche, which is the ecological job description of a species.

The central chapter of the book and its principal message revolves around the process of succession or ecological change, how species composition and even soil biology changes with time. Even more than succession—which is fundamental to the understanding of ecology, this book is about disruption, for succession proceeds from disruption, whether that be an historic windstorm or flood, a fire, a war, the introduction of an exotic species, a change of government, or fluctuations in the market price of wool. To these we now have to add climate change, which is rapidly complicating the environmental picture everywhere.

Britain's nature as an island close to the continent of Europe, its political stability, the conservative nature of its society, and the stately unfolding of its well-recorded history provide ample support for the landscape reader who would see the effects of cultural and historical processes on the countryside. Helpful too, in the author's attaining a comprehensive grasp of the various environments and plant communities that occur in his country, is its relative paucity of endemic species.

The British were world leaders in the movement of plant species around the globe, which is not a little ironic because their own ecosystems are so relatively simple and comprehensible. In saying this, I take nothing away from Patrick Whitefield's quite remarkable grasp of what is, overall, a very complex landscape. But when the whole of Europe has only 20 native tree species, and Britain even fewer (the chestnut, so important to coppice forestry, is considered an exotic brought in by the Romans), it is at least possible to imagine systematically learning all the main variations on their occurrence, including which plants grow with them, which soils they prefer, and how they compete for dominance.



British governments have built whole new towns as the nation's population burgeoned.

Patrick begins his book with bedrock and its effects on plant communities and landform, explaining the essentials of soil chemistry along the way. The weathering of bedrock, of course, provides the original basis for soil fertility or the lack thereof, onto which plant communities and humans impose their own signatures. By layers, the author builds up a picture of how environments are formed: climate and microclimate play a role, which he illustrates by comparing regions of the country and parts of the terrain. History must be taken into account, for some things make no sense unless you know what humans were doing at certain periods in the past. The social change from group cultivation in the village infield-outfield system towards more proprietary relationships to land, for example, involved a growth of the horse population and a diminishing of the number of peasants working the land. It also led to the expansion of fields

This level of simplicity, or relative uniformity in the landscape was, of course, brought about by recent glaciation and the even more recent isolation of Britain from the Eurasian mainland, and has been compounded by cold climate. We think of Britain as mild, green, and not subject to harsh weather, which has been largely true of the southeastern half of the island where most of the people live. But climb the low mountains of Snowdonia or Wales, let alone the Highlands of Scotland, and you quickly realize that Britain spans similar latitudes to Alberta. As a consequence, plant communities are strongly stratified by altitude, even in the rolling country of the south and east.

The process of succession is much the same in all terrestrial ecosystems: wind-borne annu-

large part from English usage. The temperate zones of the Northern Hemisphere have similar flora for geologic reasons—North America, Europe, and East Asia were once all connected by land bridges. The earliest works of geology and biology in English came from British writers and addressed the ancient landscapes they knew well. The model of succession Whitefield presents is universal and the detail he provides enables us to look at it carefully and comprehensively. Indeed, a limitation of this book—that the flora and fauna of the British Isles are dramatically less complex than those of North America—gives it a kind of strength of character. When Whitefield writes about trees—and he does so extensively—he mainly refers to seven or eight species: oak, beech,

settlement, an agricultural savanna—95% farmland, worked by horses, oxen, and mules. Parts of it today are little more than GMO deserts.

By mastering a limited range of environments and species, the author has been able to differentiate their subtle variations more systematically, and this I think makes his work a useful study. I doubt we will see anything like it written for our continental-scale nations on this side of the pond anytime soon, but there are valuable regional and topical guides to reading landscape. May Thielgaard Watts has written one of the classics, and of course the Peterson Field Guide series offer reliable looks at wild species. Few, however, are the authors who have successfully illuminated the complex interactions between humans and landscape that shaped North America—the literature is scattered through history, anthropology, evolutionary biology, and agriculture, richest at the edges where they meet. It's a fertile field for exploration by permaculture designers.

Because he's a good teacher, a clear writer, and a keen observer and analyst, Patrick Whitefield's book has much to offer permaculture designers everywhere. The text, because of its detailed reporting, requires careful reading. The style is engaging and thorough, the simple illustrations, in the author's hand, make visual examples of the book's many ecological theses. There are tables of plants and soil associations, several dozen color plates enliven the book, and the line drawings are frequent, but the text is long and many pages are dense. In general, the layout, editing, and production values are high, as we have come to expect from Permanent Publications. I have two small complaints: In discussing historic land use, Whitefield employs a number of Ordinance Survey maps, topographic and cultural at the same time, but I frequently found these hard to follow and would have wished for more detailed captioning. Whether the broader landscape patterns are too exotic to a non-native, or the level of detail to which Whitefield refers too subtle for my untrained eye, I think this represented one of the few cultural barriers to my full use of the text. The other thing I would have wanted are Latin binomials for species, if only in an appendix—a good permaculture and horticultural practice generally. Leaving them out is a not-too-subtle way of saying ‘English is the first language and if you don't know it as an insider, this isn't for you.’

Even if oak, beech, lime (or linden), plantain, ryegrass, badgers, and grey squirrels are but a small subset of the species that make up your ecosystems, there is much to be learned here about important players in the temperate world. Be prepared for a long and fascinating journey when you open the pages of *The Living Landscape*. You'll be in very good hands. △

The ability to read and interpret landscape processes—both natural and cultural—is the stock-in-trade of permaculture designers.

als establish a beachhead on bare soil, seizing sunshine and available nutrients to produce seed and propel themselves to the next opportunity, perennial grasses follow, and amongst these patchy swards, some woody shrubs and small trees take hold. Larger and longer-lived canopy species germinate beneath a now dense brush cover to wait their chance to reach the sun. In the tropics, everything is taller and faster, including decomposition. In drylands, succession is sometimes arrested at the scrub stage with a patchwork of small trees scattered amongst grasses, or even at the perennial grassland stage. In true deserts, particular species adapted to drought, such as cacti, replace most trees as the long-lived elements, while most animal activity takes place underground or at night.

And the details of succession are everywhere different: this is the local knowledge without which no agriculture and no civilization can endure. Whitefield has mastered the details of his landscape by walking the land and by batting about with other brilliant observers, gardeners, and farmers like Oliver Rackham, Britain's premier chronicler of trees, foggage pioneer Arthur Hollins, and Robert Hart.

The most obvious thing to say about this book, especially to a North American audience, is that it's a lot of patterns-to-detail about a foreign land. Yet not so completely foreign. Many of the Eurasian weeds that populate the British countryside hitchhiked their way across the Atlantic to the US and Canada, literally stuck to the heels of English, Scots, and Irish immigrants. The language by which we name our common plants and animals derives in

lime, hazel, pine, chestnut, maple, rowan, and a few others. The Appalachian Mountains, an area comparable to the British Isles in size and range of climate, is home to over 130 tree species of many more genera than are present in Britain. This book could not have been written in this country, even by a veteran observer. The historical record of land use, even in New England, doesn't go back as far. The disruption of native cultures here was immense, traumatic, and prevented most Americans from seeing the effects of their colonization and destruction of ecosystems until quite recently. The subject remains controversial: how did Amerindians manage the land? Did they? (Well yes, of course...) Glaciation had far more complex impacts here than in Britain. What Whitefield calls wildwood, or primary landscapes, persisted far longer here than there.

It's not impossible to understand North American landscapes, but the drama of change here is far more heightened, its signature more garish, less believable without a shift of consciousness. Disruption in North America is far more the norm than the exception. This makes reading landscapes here a worthy and intellectually exciting pursuit, but by no means a settled study. My *Natural History of Indiana*, a book with considerably more heft than *The Living Landscape*, reveals this small crossroads province of the Eastern Hardwood Forest to be several times more biodiverse than Britain—a land four times its size, but also tells a story of almost unbelievable catastrophe. Once a landscape of glacier and tundra, then a thundering forest of two billion hardwood trees, the Hoosier State became, within three generations of white

EVENTS

Permaculture Design Course Kootenay Mountains, BC

Dates: August 15-28

Location: Winlaw, BC

Description: This intensive traditional design course combines theory with practical, hands-on learning. Topics include principles of design, site analysis, soil fertility, organic gardening techniques, growing, gathering & use of herbs and medicinal plants, fruit and nut trees, water uses, and ecological buildings.

Instructors: Gregoire Lamoureux & guests

Cost: Cdn \$975

Contact: Gregoire Lamoureux
Kootenay Permaculture Inst.
spiralfarm@yahoo.com
www3.telus.net/permaculture

Permaculture Design Course Baja, Mexico

Dates: December 6-19

Location: Baja Sur de California, Mexico

Description: Please join us at Buena Fortuna Botanical Garden, a dry, tropical plant paradise featuring rare species gathered from around the world by renowned botanist, Seeds of Change co-founder, Gabriel Howearth.

We will cover the 72-hour curriculum applicable to all climate zones, while experiencing and enriching systems for dry, tropical regions. This course is fully bilingual Spanish-English and uses a variety of teaching formats in a beautiful outdoor classroom setting. Our site is within walking distance of a beautiful beach, with nearby hot springs and waterfalls!

Our highly experienced teachers bring a wealth of knowledge gleaned from an array of settings: disaster relief scenarios, working with NGOs, homestead and community garden, educational center and ecovillage design and implementation, as well as involvement in multiple international projects.

Instructors: Andrew Jones, Bruce Horowitz, Stefan Hetz, Kitzia Danel, with special guests.

Cost: \$1,300 if registered by Sept. 30. Includes camping and garden fresh meals.

Contact: rawpermaculture@yahoo.com
www.rawpermaculture.org

Permaculture Design Course Alaska

Dates: August 9-22

Location: Homer, AK

Description: Join us for Alaska's first design course led by Rick Valley of Lost Valley Educational Center in Oregon. It promises to be an informative and exciting course located on a beautiful 160-acre Wilderness School site. The 72-hour course will include hands-on activities and field trips to working sustainable farms so you can experience theory in action.

Additional evening workshops are planned to further your knowledge on permaculture related topics. Homer is studded with world-class scenery, kayaking, hiking, and other outdoor opportunities.

The venue offers newly constructed facilities including a classroom, dining room with a professional kitchen, and fully-furnished yurts and wall tents.

Instructors: Rick Valley, Lisa DePiano, and guests.

Cost: \$1,250 after July 15.

Contact: Terri Brown
terrib@artlover.com
907-344-0935
<http://akpermaculture.wordpress.com>

Advanced Course:

Forest Gardens

Southern Oregon

Dates: September 11-18

Location: Ashland, OR

Description: This is an in-depth course on ecological garden design. Forest gardening is an ancient practice, yet also represents a radically new, post-modern way of seeing our home landscapes and our world. Taking nature as a model we can grow many different useful plants together in mutually beneficial groupings that are largely self-maintaining. Plants with edible, medicinal, and other useful qualities can combine to supply our daily needs, just as we support theirs. We will explore the design continuum from urban renters' container gardens to farm-scale applications. A permaculture design certificate is required.

Instructors: Chuck Burr and Larry Korn

Cost: \$800 before 8/13: \$850 after;
\$200 deposit

Contact: 541-941-9711
www.sopermaculture.org

Advanced Design Course Central Oregon

Dates: September 7-24

Location: Corvallis, OR

Description: This course is open to both enrolled Oregon State University students earning credits and to the general public. We will dive deep into permaculture with an intensive design and implementation project, an extended field trip to southern Oregon to meet with advanced teachers and see some of the most developed permaculture sites in the state, and an array of other guest presenters from the best that our region has to offer.

We will cover in depth from the permaculture perspective agroforestry and social forestry, seed breeding and production, farm-scale water catchment and distribution, natural building and village design, perennial polycultures, forest garden design, and more.

Our design project will be broadscale: the western agricultural portion of the Oregon State University campus, and we will use the planning and mapping resources of the University wherever possible. Permaculture Design Certificate or comparable introductory course is required. Field trips to Mountain Homestead, Cob Cottage Company, and others.

Instructors: Andrew Millison with guests Tom Ward, Larry Korn, and others.

Cost: \$900. Students provide their own food and housing while in Corvallis. Housing provided during field trips.

Contact: 541-752-9118
amillison@gmail.com
www.beaverstatepermaculture.com

Teacher Training Course

Southern Oregon

Dates: September 20-24

Location: Ashland, OR

Description: This course is for those holding a design certificate who would like to explore the rhythm and rigors of formally teaching permaculture to others. This course looks at vocation and self-evaluation, working with others, teaching the standard permaculture curriculum, teaching formats, and establishing yourself as a teacher amongst the permaculture community.

Instructors: Chuck Burr and Larry Korn.

Cost: \$550 before 8/13: \$600 after;
\$200 deposit; \$100 discount if combining this course with the advanced design course on Forest Gardens the week prior to this course.

Contact: 541-941-9711
courses@sopermaculture.org
www.sopermaculture.org

Send Event and Calendar Listings for Issue #78

Water

for the September 1st deadline to:

Address: pcaeditor@comcast.net

11th Annual
Permaculture Teaching Course
Central Oregon

Dates: August 8-14, August 16-17

Location: Cottage Grove, OR

Description: Empower yourself to advocate for change through whole systems design and teaching.

In this dynamic and interactive course, you will learn significant teaching techniques to communicate permaculture principles and strategies in a wide variety of settings. This teacher training unfolds as a design methodology and advocates the permaculture design course curriculum.

We are committed to encouraging and inspiring your unique strengths and talents by demonstrating diverse teaching modalities such as lecture, facilitating class discussions, storytelling, and using visual aids. In this setting of active learning, you will experience essential hands-on practice by preparing and co-teaching several presentations. As a final course project the class will organize, promote, and present a workshop to the public: An Introduction to Permaculture sponsored by the Cottage Grove Permaculture Guild.

This is a certificate course offered by the Cascadia Permaculture Institute in collaboration with the Permaculture Institute USA.

Instructors: Jude Hobbs and guests.

Cost: \$775-\$725 for course, \$225 for practicum. Includes course materials, camping, and meals.

Contact: cascadiapc@gmail.com
www.cascadiapermaculture.com

Advanced Design Course
Colorado Front Range

Dates: 10 Thursday evenings,
Sept. 16-November 18,
plus September 18, Oct. 2

Location: Boulder, CO

Description: A unique, locally-based certificate course offered by seasoned instructors. Opportunities for in-depth design of physical sites and invisible structures. Case studies and design charrettes bring course material to life. Projects range from broad conceptual design to nitty-gritty detail, as students work individually and on teams. The local nature of the course will facilitate implementation of the designs, as well as the evolution of teams over time. Participants are asked to commit four hours per week outside of class for assignments.

Instructors: Sandy Cruz, Marco Chung-Shu Lam, and Alison Peck.

Cost: \$700 if paid in full by 8/16;
\$800 after 8/16

Contact: Sandy Cruz
303-459-3494
www.hialtpc.org

Earth Activist Training
Northern California

Dates: January 8-22, 2011

Location: Cazadero, CA

Description: Two weeks that can change your life and change the world! A permaculture design course with a grounding in earth-based spirituality, and a focus on organizing, activism, and social permaculture as well as urban and rural land-based systems. Learn how to heal soil and cleanse water, how to design human systems that mimic natural systems using a minimum of energy and resources and creating real abundance and social justice. Explore the strategies and organizing tools we need to make our visions real, and the daily practice, magic, and rituals that can sustain our spirits. Participatory, hands-on teaching with lots of ritual, games, songs, and laughs along with an intensive curriculum in ecological design.

Instructors: Starhawk and guests.

Cost: \$1,400-\$1,800 until 11/1.
\$1,500-\$1,900 after. Work trade and scholarships avail.

Contact: 800-381-7940
earthactivistraining@gmail.com
www.earthactivistraining.org

Permaculture Design Course
Northern California

Dates: September 18-October 1

Location: Occidental, CA

Description: A two-week residential course in land-use design at the beautiful Occidental Arts and Ecology Center, based on the sustainable living philosophy of permaculture.

Topics to be covered include theory, food diversity, soil enrichment, water use, erosion control, natural building, organic gardening, forest farming, and more.

Instructors: Brock Dolman and guests.

Cost: \$1,500/\$1,400 if registered two weeks in advance.
Includes meals and lodging.

Contact: 707-874-1557 x201
oaec@oaec.org, www.oaec.org

**Quick-Start
Booklet Series**

\$7 each postage paid, \$25 for all 4.

- **Water in the Home Landscape**
- **Building Living Soil**
- **Beekeeping Simplified**
- **Wild Fermentation**

Compiled by the PcActivist and chock-full of information from the best minds in Pc.

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24th Annual
Permaculture Design Course
Central Rocky Mountains

Dates: September 12-25

Location: Basalt, CO

Description: The Institute site at 7200' in the Roaring Fork Valley displays mature forest gardens, sophisticated greenhouse systems, and a history of entrepreneurship. During the first week we'll cover the essential elements of permaculture, followed in the second week by a full-spectrum design project. Exhibiting permaculture's international reach and strength of solidarity, Guatemalan guest instructors will bring village-tested technologies to the curriculum, which includes a wide range of subjects from soil structure and water catchment to the invisible structures of our economy and society.

Instructors: Peter Bane, Jerome Osentowski, Adam Brock, Kelly Simmons, Sarah Montgomery & guests.

Cost: \$1,295 includes camping, materials, and organic meals.
Discount for couples.

Contact: Jerome Osentowski
970-927-4158
jerome@crmpi.org
www.crmpi.org

Permaculture Design Course
Interior Northwest

Dates: August 16-28

Location: Kamiah, ID

Description: This course will be held on the FNA Ranch, a 44-acre developing permaculture site near the Nez Perce Reservation. The course will include footage from a 2008 course with Geoff Lawton and Bill Mollison. The course will also include a question and answer session by Skype with Bill Mollison.

Instructors: Julie and Kim Pagliaro

Cost: \$995

Contact: 208-935-7793
kamiahpermaculture@mac.com
www.kamiahpermaculture.com

NW Permaculture Convergence
Puget Sound

Dates: September 17-19

Location: Seattle, WA

Description: Permaculturists from Washington and Oregon will gather for learning and celebration at South Seattle Community College, building on the successful WA State Convergence of 2009. Next year's event will move to Oregon. Camping is available at nearby Camp Long; home stays may be arranged.

Cost: \$80 till Sept. 15, \$100 at the door. Work/trade positions available.

Contact: Pennie
permaculture@earthlink.net
www.nwpermaculture.org

Permaculture Design Course

Northeast Texas

Dates: September 25-October 9

Location: Bonham, TX

Description: Join us for a fantastic experience on the Upper Blackland Prairie of northeast Texas.

This course will cover all of the accepted permaculture curriculum, and will expand into other areas of sustainability and invisible structures. We will cover ecological design, forests, water catchment and storage, soil building and erosion repair, gardening, orchard work, forest gardens, broadscale systems, economics, community-building practices, and many, many more subjects during our time together.

Instructor: Patricia Allison, Dylan Ryals-Hamilton, Mateo Ryall, and guests.

Cost: \$1,100 due by September 1st.

Contact: Melissa Thurmond
828-669-7632
melissathurmond@gmail.com
www.patriciaallison.net

Permaculture Design Course

Upper Midwest

Dates: October 9-16

Location: Stelle, IL

Description: Designing our lots and lands to be environmentally and economically sound. This is the standard design course taught over eight days with a pre-course individual study. We will incorporate work in Stelle with field trips into Chicago. With a focus on suburban and urban permaculture applications, this course will offer an advantage to many of us working on collaborative projects in those areas.

Instructors: Bill Wilson

and Wayne Weiseman

Cost: \$1,295 includes camping and meals. Some area lodging available at an extra cost.

Contact: Becky Wilson
815-256-2215
midwestpermaculture.com

Permaculture Design Course

Great Lakes

Dates: August 14-21

Location: Columbiaville, MI

Description: Designing our lots and lands to be environmentally and economically sound. This is the standard design course taught with over eight days with a pre-course individual study. We focus on making our small lots and lands economically productive, increasing their natural health and vitality, designing long-term, productive systems, minimizing work and fossil fuel use, and creating long term security for ourselves, our neighbors, and for those who come after us.

Instructors: Bill Wilson

and Wayne Weiseman

Cost: \$1,295 includes camping and meals. Some area lodging available at an extra cost.

Contact: Becky Wilson
815-256-2215
midwestpermaculture.com

Back Issues of *The Permaculture Activist*

- I,1 July '85 **Permaculture in Oz**
II,1 Feb. '86 **Garden Design**
II,3 Aug. '86 **2nd Int'l Pc Conference**
II,4 Nov. '86 Fukuoka, Keyline, Genetic Conservation, City Farms, Oceanic Pcs
III,1 Feb. '87 Networking, Natural Farming, D-Q Univ., Children's Permaculture
III,2 May '87 **Wild Land Restoration** III,3 Aug. '87 **Annual Planting Cycle**
III,4 Nov. '87 **Trees for Life** IV,1 Feb. '88 **Marketing Pc Products**
IV,2 May. '88 **Urban-Rural Links**, Economics & Community Development
IV,3 Aug. '88 **Social Forestry**, Gabions, Jap. Org. Ag., Producer/Consum. Coops
IV,4 Nov. '88 **Multi-Story Tree Crops**, Greening Dominican Repb., Runoff Gdns
V,1 Feb. '89 *Permaculture: A Designers Manual*, Tree Bank, Water in Pcs
V,2 May. '89 **Plant Guilds**, Roof Gardens, Small Livestock
V,3 Aug. '89 **Rainforest Conservation** in Ecuador, Gaia, Weed Gardens
V,4 Nov. '89 **Earthworks & Water Conservation**: Small Dams, Ponds, Keyline
VI,1 Feb. '90 **Household Greywater Systems**, Soil Imprinting (\$5 each to here)
VI,2 May. '90 **Insectary Plants**, more Greywater, Land Use for people _____
VI,3 Aug. '90 **Water**: Forests & Atmosphere, Catchment, Pond Design
VI,4 Nov. '90 **Urban Permaculture**: EcoCity Conf., Soil Detox, Suburbs & Pcs
#23 May '91 **Politics of Diversity**, Greenhouse Market Gdn, Pc in Nepal
#24 Oct. '91 **Creativity in Design**: Case Studies; **Index to Issues #1-23**
#25 Dec. '91 **Design for Community**: CSAs Restoring Forests; Garden Ecology
#26*May '92 **Soil**: Our Past, Our Future; Fertility, Worms, Cover Crops
#27*Aug '92 **Integrating Pc**: Deconstructing Utopia, Grassroots Organizing, Garden Polyculture, Pattern Learning, Living Fences
#28*Feb. '93 **Structures**: Comm'ty Dsgn, LETS, Industry, Strawbale/Timber-frame Bldgs.
#29/30*Jul.'93 **Networks**: Media Revw, Rural Reconstruction, Leaf Concentrate, Comm'ty Food Inits, Palestine Pc, Do-Nothing Educ, Feng Shui, Pc Academy
#31*May '94 **Forest Gdng**: Energy & Pc, Mushrm Cultvn, Robt.Hart's F.G., Spp for No. Cal., Alders, Agroforestry in Belize & China, Honeylocust, N-fixers
#32*Apr. '95 **Animals & Aquaculture**: Animal Polyculture, Small-scale Cattle, Goat Dairy, Keyline, Feral chickens, Bee Plants, Constructed Wetlands
#33 Dec. '95 **Cities & Their Regions**: Green Cities, L.A. Ecovillage, MAGIC Gdns, CoHousing, Micro-Enterprise Lending, Suburban Conversion
#34 June '96 **Useful Plants**: Bamboo Polyculture, Medicinals, Pest Control, Root Crops, Oaks, R. Hart's F.G., Russian Plants, Regl. Plants, Sources
#35 Nov. '96 **Village Design**: Pattern Language, Consensus Democracy, Conflict, Historic & New Villages, Planning for Tribe, Village Economics
#36*Mar. '97 **Climate & Microclimate**: Climate Change, Windbreaks, Low-Tech Sun Locator, Drylands, Cool Slopes, Straw-Clay Bldg, Round Beehive, Water Catch.
#37 Sept. '97 **Tools & Appropriate Technology**: Dowsing, Workbikes, Scythes, Japanese Saws, Nursery, Ferrocement, Greywater, A-frame &
- Bunyip Levels, Ram Pump, Solar Toilet, Log Yoke, Cookstoves
#38*Feb. '98 **Economic Transformation**: Speculation, No Middle Class, Coops WWOOF, Global Warm'g, Hol. Fin. Plan'g. Land Use, Adopt-a-Hive
#39 Jul. '98 **Knowledge, Pattern & Design**: Pc Way of Seeing; Native Consvn Sand Dunes, Language-Worldview-Gender, Patterning Process, Land-Use Planning, Teaching Pc, Vietnam, Holmgren on Pc
#40*Dec. '98 **New Forestry**: Regl. Devl., Horselogging, Menominee Reservation, Forest Investing, Restoration, Old Growth, Homestead Tenure, Forest Soils, Forest Farming, Woody Agric., Rainforests, Windbreaks, Coppice
#41*May '99 **Natural Building**: Oregon Cob, Cordwood, Bamboo, Thatch, Ethics, High Winds, Origins of Conflict, Greenhouses, Ponds, Adobe, Road Bldg, MicroHydro, Bldgs. That Live, Under \$20K Houses, Dreams
#42 Dec. '99 **Self-Reliance & Community Cooperation**: Co-Intelligence & Self-Orgn., Archetype Design, Sovereignty, Samoa, Mondragon, Natural Hous'g, Comm. Gdns., Zone Zero, Solar Electric Tractor, Beekeeping
#43*June '00 **Food & Fiber**: Hunger, Ferments, Seasonal Salad, Heirlooms, Fencing Self-Fertile Gdns, Rice Revolt'n, Cold-Climate Food, Edible Insects, Chilis, Food Origins, Garlic, Ethnobotany, Wild Food, Bamboo, Hemp
#44 Nov. '00 **Earthworks & Energy**: Spreader Drain, Horse Swales, Earth Dams, Machinery, Carpet-lined Ponds, Constr. Wetlands, Biogas, Windmills
#45 Mar. '01 **Medicine & Health**: World & Self, Healthy Home, Designing Care, Ayurveda, Agents of Decay, Comm. Health Centres, Women Trad. Med. 4th World Apothecary, Healing Weeds, Medicinal Crops, Hawaiian Bot'l's
#46 July '01 **Good Work & Right Livelihood**: Pc Golf Course, Downsize Cost of Living, New Forest Economy, Energy Currency, Buddhist Mktg, End Wage Slavery, What's Surplus?, Urban Community, Enterprise Facil'n
#47 June '02 **Watersheds**: Water4Sale, Basins o'Relations, Watershed Devl, Gabions, Urban Runoff, Beavers, Skywater Ctr, Consvn. Investmt, Peat Bogs, Rabbits
#48*Sept '02 **Making Changes**: Co-Intelligent Activism, Webs of Power, Urban Food, How to Change, Teaching for Change, Global Transform'n, City Repair, Escaping Job Trap, Argentine Recovery, Costa Rica Pc
#49 Dec. '02 **Where is Permaculture?** Land-Rent Reform, 10 N. Amer. Sites, Cuban Ag, Rainbow Vall. NZ, Cacti/Succulents, Animal Self-Meds, Challenge to Pc
#50 May '03 **Ecosystems**: Holmgren on Pc Mvmt, Hazelp & Syng. Ag, Chestnuts/ Pigeons, Oak Savannas, Root Crop Polycultures, Alders, Fungal Ecosys. Humans & Wilderness, Indoor Ecosystems, Humid Tropics
#51 Jan. '04 **Trad'l. Knowledge & Regeneration**: Cataclysm & Collective Memory Genome Wisdom, Waru Waru, Biosculpture, Inuit Medc, Ferment'd Stimulants
#52 May '04 **Aquaculture**: EcoAquac, Fish4Health, Dowsing, Pond Design, Greywater Biotreatment, N. Amer. Polyculture, Manage for Native Spp, Integrated Village Fisheries, Vietnam

Weekend Permaculture Design Lower Ohio Valley

Dates: October 15-17, 29-31,
November 12-14,
Feb. 18-20, 2011, March 4-6

Location: Bloomington, IN

Description: Join us as we roll up our sleeves, get our hands in the soil, and explore the patterns that shape and move our natural, built, and cultural systems. Bloomington has acknowledged the challenges of Peak Oil and Climate Change and is embracing Transition. Learn the art and science of ecological design that will shape our world to come. With good humor, great conversation, shared work and design projects, we will cover the 72-hr. curriculum from new perspectives. A passionate teaching team drawing on experience in environmental and social justice, engineering, horticulture, natural building, ecovillage design, and community organizing provides a rich depth of insight into the world around us.

Instructors: Peter Bane, Rhonda Baird, Keith Johnson, and guests.

Cost: \$750. incl. mtls. and Sat. lunches

Contact: Rhonda Baird, 812-323-1058

rk.baird@yahoo.com

Permaculture Design Course Eastern Pennsylvania

Dates: August 19-29, 2010

Location: Wallingford, PA

Description: Pendle Hill, a Quaker retreat center just thirty minutes southwest of Philadelphia, will host its first permaculture design course. This course includes field trips to local organic farms, teachings in nearby Swarthmore Woods, and guest speakers such as Phil Forsythe of the Philadelphia Orchard Project.

This course is co-sponsored by Greener Partners, a Philadelphia area non-profit dedicated to local agriculture.

Instructors: Andrew Goodheart Brown, Benjamin Weiss, and Joel Fath.

Cost: \$1,500 for commuters (includes breakfast and lunch), \$2,000 for a shared room, \$2,500 for a private suite.

Contact: bazzrad@yahoo.com
www.pendlehill.org

Permaculture Design Course Upstate New York

Dates: August 8-20

Location: Paul Smiths, NY

Description: With a stunning setting in the Adirondacks near Lake Placid, Paul Smith's College hosts its second annual design course. The school, with an excellent library of resources to support permaculture training and a near-term aim to achieve carbon neutrality, offers degrees in resource mgmt., forestry, liberal arts, hospitality and culinary arts. College credit is available and the course is open to non-students. Our team brings together more than 30 years of national and regional excellence in teaching to present a design intensive program. Theory and practical work are balanced, and we'll visit St. Lawrence Nursery, a working tree crops research station.

Instructors: Peter Bane, Mark Krawczyk, and Keith Morris

Cost: \$1,190 includes text, mtls., field trip, and some local food lunches. Housing, camping, and full meal plans available.

Contact: Tom Huber. 518-327-6330
thuber@paulsmiths.edu

Back Issues of *The Permaculture Activist* (continued)

- #53 Aug. '04 **Education:** Lifelong Learning, Edge-uation, Albany Free School, Indigenous Ed. & Ecology, Ecocentric Pedagogy, School Gardens & Dances, Ecology of Learning, Brain Gym
- #54 Nov. '04 **Fire & Catastrophe:** Design Beyond Disaster; New Opportunities; Globalization; Invasion Biology; Street Orchards; Community Food Security, Floodwaters Rising, Disrupted Climates
- #55 Feb. '05 **Learning from Our Mistakes:** Petrol Dependency, Village Design, Australian Lessons, RTFM!, Trial&Error, Forestry Experiments, Owner-Bldr, 10 Mistaken Ideas in Pcs
- #56 May '05 **Tree Crops & Guilds:** Pine Nuts, Tree Vege, Acorns, Am. Chestnut, Honeylocust Silvopasture, Broadscale AgroFor, Bamboo, Willow, Socl. For.
- #57 Aug. '05 **20th Anniv.:** Challenges & Changes, USA Pcs, Hawai'i Retrospect; Permaculture; Pcs's Soft Edge; Gaia U; PINC; Oil Depl; IPC-7; Retrofit Suburbs
- #58 Nov. '05 **Urban Pcs:** Urban/Rural Futures; City Zones & Sectors; Growing Food; Detroit Visionaries; Rebldg. New Orleans & Everywhere; Transforming a Military Base; Workers Co-op; Energy Descent.
- #59 Feb. '06 **Peak Oil:** Eco-Collapse & Trauma; Thom Hartmann; Pathways for Energy Descent; How Cuba Survived; Oil & Food; Biofuels; Algae for Fuel; Relocalize!
- #60 May '06 **Land Use Past & Present:** Sust.Ag an Oxymoron?, Negev Bedouin, East. Woodlands AgroForestry, Pcs Heals in India, Arcosanti Land Plan, Pop. Growth/Land Hunger, Mex. Reforestation, Rocky Mtns.
- #61 Aug. '06 **Unseen Kin-doms:** Observation as Design Tool; Soil Food Web, Bees, Mycelial Internet, D-I-Y Mycorrhizal Inoculum, Cover Crops as Bee Forage, Earth Energies, Local Currencies, Dead Zones, Birds at Risk
- #62 Nov. '06 **Art of Permaculture:** Painting, Writing & Pcs; Ecoartists; Art, Activism & Cmty; Street Theatre; Art & Bioremediation; Living Willow, Body as Zone 0; Art of the Found; Water Magic; Pcs in Pop Culture
- #63 Feb. '07 **Building & Technology:** How to Dwell? Natural Bldg & the Law, Bldg Code, Strawbale in China, Cob in Armenia, Integrated Solar Heating, Cooking, Pumping; Self-Build, Nation-Scale Pcs in Brazil
- #64 May '07 **Waste = Food:** Throwaway Econ, Strategy of Salvage, Peak Soil, Pigs & Waste Mgmt; Bikes, Soil & Garbage; Farm as Organism, Opportunistic Plants? Simple Biodigester, Waters of Spain, Vermiculture
- #65 Aug. '07 **Climate Change:** Shrinking Seas, Forests' Role in Climate, Urban Forests, Making Trees Pay, Rainwater Harvesting, Indoor Gdns, Water Filtration, Changing Human Climate, De-Stabilizing Climate
- #66 Nov. '07 **Animals in Design:** Jumbo Shrimp, Pawpaw Patch, Alpaca, Insects as Food, Bees, Integrated NH Farm, Pastured Poultry & Rabbits, Urban Livestock, Predator Restoration, Complementary Animals, Agrichar
- #67 Feb. '08 **Kids in Pcs:** School as Ecosystem, Pcs Education, Pcs to H.S. Students, Tlaxcalan Kids Make Seedballs, Gardening Kids, Fostering Research Skills, Bottled Water Boycotts, Feeding 8 Billion
- #68 May '08 **Plants on the Move:** Rethinking Non-Natives, Forest Migration, Black Walnuts, Saving Seed Savers, Grow a Cmty. Gdn, Neighborhood Greening, Healthy Honeybees, Biofuels & High Food Prices
- #69 Aug. '08 **Permaculture at Home:** Hawai'i Cmty; London Forest Gdn; Suburban Renaissance; Calif. Campus; Phila. Orchards; Drinking Roofwater; Floating Island Bioremed.; Bike Transport; Mississippi Pcs
- #70 Nov. '08 **Ethics at Work:** BAU is the Enemy; 13 Princ. of People Care; Pcs in Business; Ecovillages; White Man in India; Uganda Boarding School, No Waste Principle; Qual. Control; City Farming w/Runoff; Amaranth
- #71 Feb. '09 **Working w/Earth:** Hopewell Mound Water Mgmt, Belize, Road & Dam Bldg, Keyline, NW AgroFor, Pcs&Landscape Arch, Earthbag Bldg, Low-Watt Fridge
- #72 May '09 **The View from Abroad:** War, Oil & Snails in Nigeria; Green Tech Future, Ethiopian Water Mgmt.; Shrinking Forests; Food Exploration in Caucasus; Maya Agroforestry/Biochar; Pcs to Trinidad; Bridging Cultures in Brazil & India, Pcs Schools in Africa; BuggerBug in Liberia
- #73 Aug. '09 **Bioregionalism:** New Paradigm; Rocky Mtn. Wildlands; Wild Elephants; Organizing Houston; Heirloom Seeds; L.A. Gdns; Reclaiming Commons; Transition Hohenwald, Tenn.; BioCongress Saga; Diversity at Home
- #74 Nov. '09 **Energy Descent:** In the Home; Transition Communities; Pcs in Mexico; Biochar; US Consumption Dropping; Making Fuel Alcohol No More Throwaway Economy; EcoTechnic Future
- #75 Feb. '10 **Local Food:** A City & Regl. Food System; Working Family on 5Ac; CSAs & Wild Foraging, City Backyd Gdns.; Food Bank Gardens & Orchards; Salt Collecting; Growing Regional Staples; City Grains.
- #76 May '10 **Soil Fertility:** Permaculture Way of Soil; Biochar; Sheet Mulch; Hawai'i Soil Building w/ Worms; Demystifying Humanure; Urine as Fertilizer; Crop Rotations; Mushrooms and Soil

Back Issue Prices & Ordering

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*except the following: Vol. I,1-VI,2 & #33-35 -\$5 each; #26-32 & 36, 38, 41 -\$8 ea; #40, 43, 48 -\$10 each. ^^Can/Mex. +\$45, Overseas +\$75

Permaculture Design Course

Mid-Atlantic

Dates: August 13-29

Location: Freeland, MD

Description: Earn your permaculture design certificate with Dancing Green during our summer residential immersion! Dancing Green offers the whole permaculture design course curriculum through educational experiences of integration, collaboration, consensus, and self-empowerment within the context of land-use design. The 17-day residential program allows you two levels of enhanced focus: the routines of daily life are set aside—freeing and enhancing your attention; the process is predominantly collaborative. Dancing Green can be found on the Web at www.sustainableagriculture.org.

Instructors: Dawn Shiner, Patty Ceglia, Karen Stupski

Cost: \$1,750 including room and board. Financial aid available.

Contact: Karen Stupski
410-357-9523
education@heathcote.org
www.livingmandala.com

Permaculture Design Course

Southeast USA

Dates: August 12-23

Location: Nashville, TN

Description: This is a 10-day course with a 2-day break. Course covers the fundamental elements of permaculture and integrative design with an emphasis on creating viable permaculture businesses, urban permaculture forest gardens, and permaculture applied in the Southeast US. The course will include a regional permaculture guild gathering and several tours of local sites.

Instructor: Matthew English, Cliff Davis, Kevin Gunther, Jennifer Dauksha-English, and Albert Bates.

Cost: \$600-\$800 sliding scale

Contact: Jennifer Dauksha-English
888-878-2434 x2
jennifer@financialpermaculture.com
www.financialpermaculture.com

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Permaculture Fundamentals

Southeast USA

Dates: August 21-September 5

Location: Asheville, NC

Description: Join us for an experiential, hands-on work at Laughing Waters Retreat Center at Hickory Nut Forest in Asheville. This is for home-owners, gardeners, students, farmers and others interested in learning the basics of landscape analysis, water conservation and use, soil health, orcharding, gardening, ecoforestry, natural building, aquaculture, alternative energy, animals in the home system, and many other subjects. Every afternoon will be devoted to practicing the work of our morning classes. This course carries credit toward certification.

Instructor: Patricia Allison

Cost: \$1,200 incl. meals & camping

Contact: 828-712-7797

john@hickorynutforest.com
marcia.ghidina@gmail.com

Permaculture Design Course

Southeast USA

Dates: September 18-30

Location: Americus, GA

Description: The venue is Koinonia Farm, a 67-year-old intentional Christian community and working 570-acre farm. Members are active in peace and social justice work, carrying on the legacy of the community's historic role in the Civil Rights Movement. Koinonia is now implementing a long-term permaculture plan. Current projects include converting pecan groves to organic care, rotational grazing, organic gardens, large-scale water harvesting, construction of a demonstration village, and more. Koinonia has several thousand visitors every year, and we are working to spread the word and grow the network. Come join us and become a part of history in the making!

Instructors: Wayne Wesiman, Bill Wilson, Bob Burns, and guests.

Cost: \$900 including dorm-style rooms and meals. Work trades and scholarships available.

Contact: Sarah Prendergast
877-738-1741
sarah@koinoniapartners.org
www.koinoniapartners.org

Please send your notice of permaculture events to Rhonda Baird, pcaeditor@comcast.net. The deadline for issue #78 is September 1st.

3rd Annual

Financial Permaculture Course

Southeast USA

Dates: September 24-26

Location: The Farm, Summertown, TN

Description: Healthy ecosystems enable thriving economies! Learn how to create financially and ecologically sound businesses that regenerate the full living community in your life-place. Learn business planning and finance. The course will teach you how to make your permaculture business profitable, how to make your profitable business permaculture, and how to invest in your community.

Instructors: Eric Toensmeier and guests.

Cost: \$400-\$500 sliding scale incl. materials, accommodations, and meals.

Contact: Jennifer Dauksha-English
888-878-2434 x2

jennifer@financialpermaculture.com
www.financialpermaculture.com

Permaculture Teacher Training

Southeast USA

Dates: September 16-27

Location: The Farm, Summertown, TN

Description: An intensive professional permaculture teacher training course led by Dave Jacke, with an integrated 3-day course in financial permaculture! This autumn our institute brings together two courses that support each other to develop the field of financial permaculture—and they're led by none other than the co-authors of *Edible Forest Gardens*! Practice the permaculture design process in the classroom and for your business. Apply now to engage in this cutting edge teacher training and showcase yourself at the 3rd annual financial permaculture course. Application for the course is required.

Instructors: Dave Jacke, Kay Cafasso, Chris Jackson, Kim Almeida, and Trent Rhode.

Cost: \$1,700-\$2,100 sliding scale for 12-day course, including the financial permaculture course, materials, meals, and accommodations.

Contact: Jennifer Dauksha-English
888-878-2434 x2
jennifer@financialpermaculture.com
www.financialpermaculture.com

Books and Videos

to help you prepare for the future, available from

PermacultureActivist.net
PO Box 5516
Bloomington IN 47407 USA

Calendar

August 1-6. Bolinas, CA. Ecology of Leadership. Regenerative Design Institute. 415-868-9681. info@regenerativedesign.org.

August 6-15. Schellsburg, PA. Permaculture Design Course. Kim Walsh, kim@wildmeadowsfarm.com. www.wildmeadowsfarm.com.

August 7-14. Boonville, CA. Natural Building: Straw and Earth Construction. 707-972-3096. workshops@emeraldearth.org. www.emeraldearth.org.

August 8-14 & 16-17. Cottage Grove, OR. Permaculture Teacher Training. cascadiapc@gmail.com. www.cascadiapermaculture.com.

August 8-20. Paul Smiths, NY. Permaculture Design Course. Tom Huber. 518-327-6330. thuber@paulsmiths.edu.

August 9-22. Homer, AK. Permaculture Design Course. Terri Brown. 907-344-0935. terrib@artlover.com.

August 12-23. Nashville, TN. Permaculture Design Course. 888-878-2434 x2 jennifer@financialpermaculture.com. www.financialpermaculture.com.

August 13-15. Sedalia, CO. Indigenous Permaculture Convergence. Woodbine Ecology Center. ipc@woodbinecenter.org. www.woodbinecenter.org/ipc2010.

August 13-29. Freeland, MD. Permaculture Design Course. Karen Stupski. 410-357-9523. education@heathcote.org.

August 14-21. Columbiaville, MI. Permaculture Design Course. Becky Wilson. 815-256-2215. www.midwestpermaculture.com.

August 15-28. Winlaw, BC. CANADA. Permaculture Design Course. Kootenay Permaculture Institute. spiralfarm@yahoo.com. www3.telus.net/permaculture.

August 16-28. Kamiah, ID. Permaculture Design Course. Julie Pagliaro. 208-935-7793. kamiahpermaculture@mac.com. www.kamiahpermaculture.com.

August 17-19. Nethen, BELGIUM. European Permaculture Convergence. convergence@festivalpermaculture.be.

August 19-21. Lafayette, IN. North American Fruit Explorers Annual Meeting. Ed Fackler, cefackler@gmail.com.

August 21-September 5. Asheville, NC. Permaculture Design Course. 828-712-7797. john@hickorynutforest.com.

Send your Letter to the Permaculture Activist

Write Rhonda Baird at
pcaeditor@comcast.net

August 19-29. Wallingford, PA. Permaculture Design Course. bazzrad@yahoo.com. www.pendlehill.org.

August 22. Boulder, CO. Rocky Mountain Permaculture Convergence. Sandy Cruz. 303-459-3494. www.hialtpc.org.

August 23-28. Seoul, KOREA. Intl. Union of Forest Research Organizations. XXIII World Congress. www.iufro2010.com.

August 24-29. Sequim, WA. Cob Farm House Workshop. workshops@earthenhand.com.

September 3-18. Bolinas, CA. Permaculture Design Course. Regenerative Design Institute. 415-868-9681. info@regenerativedesign.org.

September 4-10. Hohenwald, TN. Gaia University Orientation program. 931-442-1770. valerie@gaiauiversity.org.

September 5-15. Summertown, TN. Gaia Southeast: University Orientation. 888-878-2434 x1. jennifer@gaiauiversity.org. www.gaiasoutheast.org.

September 7-24. Corvallis, OR. Advanced Permaculture Design Course. 541-752-9118. amillison@gmail.com.

September 11-18. Ashland, OR. Edible Forest Gardens Workshop. 541-941-9711. www.sopermaculture.org.

September 12-25. Basalt, CO. 24th Annual Permaculture Design Course. Jerome Osenowski. 970-927-4158. jerome@crmpo.org.

September 14-25. British Columbia, CANADA. Permaculture Design Course. Suuz, 250-366-4395.

September 16-27. Summertown, TN. Permaculture Teacher Training. 888-878-2434 x2. jennifer@financialpermaculture.com. www.financialpermaculture.com

September 16, 18, 23, 30, Oct. 2, 7, 14, 21, 28, Nov. 4, 11, 18. Boulder, CO. Advanced Permaculture Design Course. Sandy Cruz, 303-459-3494. www.hialtpc.org.

September 17-19. Seattle, WA. Northwest Permaculture Convergence. Pennie, permiculture@earthlink.net. www.nwpermaculture.org.

September 17-25. Hohenwald, TN. Gaia University Financial Permaculture Course. Valerie Seitz. 931-442-1770. valerie@gaiauiversity.org.

September 18-30. Americus, GA. Permaculture Design Course. Sarah Prendergast. 877-738-1741, sarah@koinoniapartners.org. www.koinoniapartners.org.

September 18-October 1. Occidental, CA. Permaculture Design Course. Philip Tymon. 707-874-1557. oaec@oaec.org.

September 19-October 1. PUERTO RICO. Earthbag Dome Training. workshops@earthenhand.com.

September 20-24. Ashland, OR. Permaculture Teacher Training. 541-941-9711. www.sopermaculture.org.

September 23-26. Bloomington, IN. Midwest Permaculture Convergence. Rhonda Baird. 812-323-1058. rk.baird@yahoo.com.

September 24-26. Summertown, TN. Financial Permaculture Course. 888-878-2434 x2. jennifer@financialpermaculture.com. www.financialpermaculture.com.

September 25-October 9. Bonham, TX. Permaculture Design Course. Melissa Thurmond. 828-669-7632. melissathurmond@gmail.com. www.patriciaallison.net.

October 9-16. Stelle, IL. Permaculture Design Course. Becky Wilson. 815-256-2215.

October 14-16, 29-31, Nov. 12-16, 2010; Feb. 18-20, Mar. 6-8, 2011. Bloomington, IN. Permaculture Design Course. Rhonda Baird. 812-323-1058. rk.baird@yahoo.com.

October 23-Sept. 2011. Bolinas, CA. Permaculture Design Course. Regenerative Design Institute. 415-868-9681. info@regenerativedesign.org.

October 29-November 7. TRINIDAD. Permaculture Design Course. www.wix.xom/WaSamaki/wasamaki-ecosystems.

November 8-12. Occidental, CA. Intentional Communities Course. Philip Tymon. 707-874-1557. phil@oaec.org.

December 6-19. La Ribera, MEXICO. Biligual Permaculture Design Course. rawpermiculture@yahoo.com.

January 8-22, 2011. Cazadero, CA. Earth Activist Training. 800-381-7940. earthactivist-training@gmail.com.

January 28-February 13. Hudson Valley, NY. Gaia Northeast: Action Learning Orientation. 800-458-5658 info@gaienortheast.org www.gaienortheast.org.

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RESOURCES

Neighborhood Gardening Initiative Launched

Fifteen Thousand Farmers, organizing in Louisville, Kentucky, is a neighborhood-based, organic gardening initiative. The website, <http://15thousandfarmers.com>, includes easy-to-understand instructions based on Mel Bartholomew's Square Foot Gardening concept. The group hopes to improve local food security by low-cost means.

Ecoregional Planting Guides Support Pollinators

A new series of ecoregional planting guides has been created to help farmers and ranchers, land managers, and garden-

ers select plants to increase the number of pollinators in their area.

It is estimated that animal pollinators—bees, butterflies, birds, bats—are needed for the reproduction of 80% of flowering plants and one-third of human food crops. Each of us depends on these industrious pollinators to provide us with a wide range of foods we eat. In addition, pollinators are part of the intricate web that supports the biological diversity in natural ecosystems.

Unfortunately, pollinators are declining. They are threatened by habitat loss, disease, and the excessive and inappropriate use of pesticides. A number of pollinator species are at risk.

This series was created by the Pollinator Partnership (P2), to which the Forest Service is affiliated, along with several other federal agencies. These 28 guides are tailored to specific ecoregion provinces in the U.S., as mapped by the Forest Service, and are available for downloading, free

of charge, at <http://www.pollinator.org/guides.htm>. An Ecoregion Locator enables viewers to find theirs by zip code.

Robert G. Bailey, PhD
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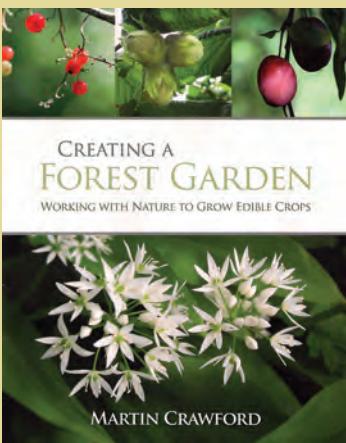
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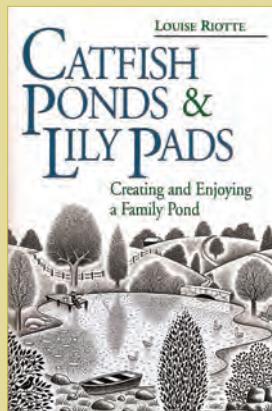
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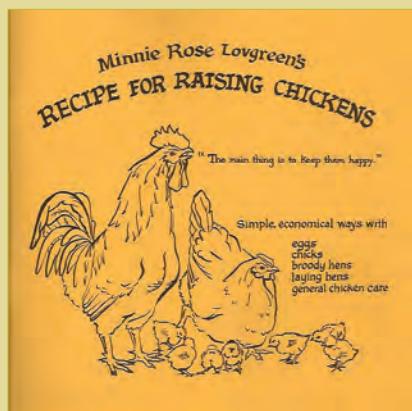


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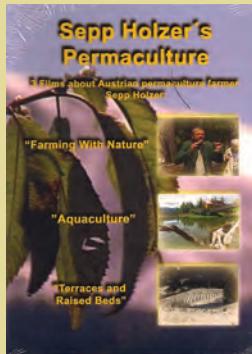
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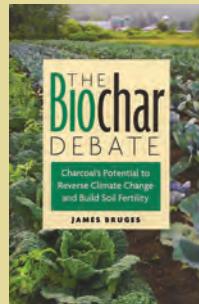
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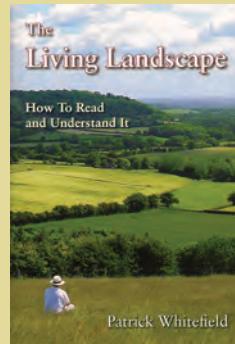


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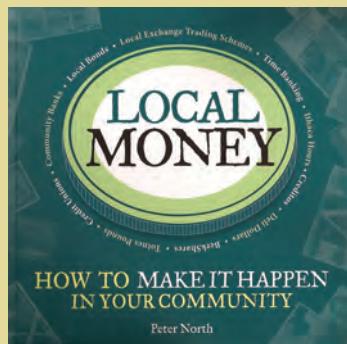
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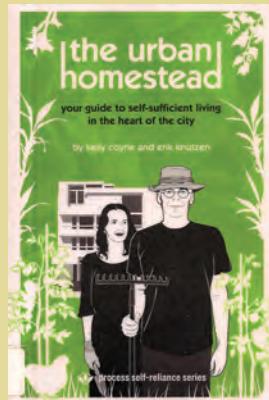
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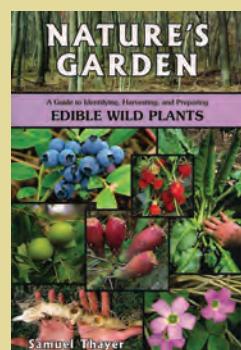
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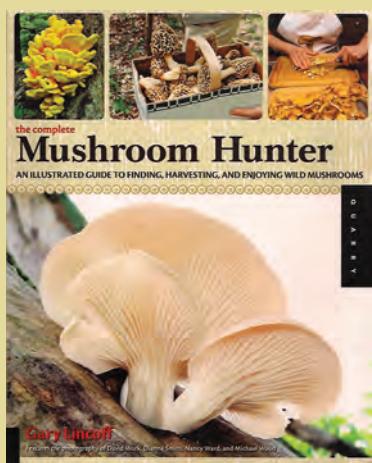
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