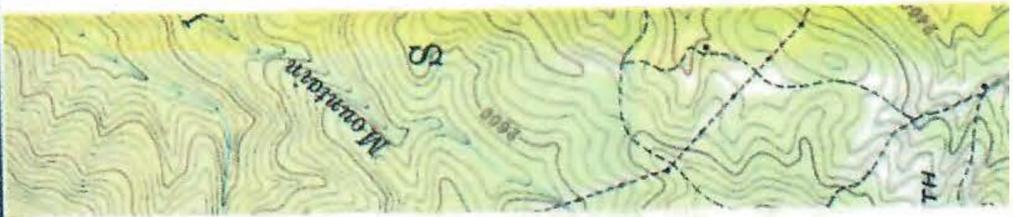
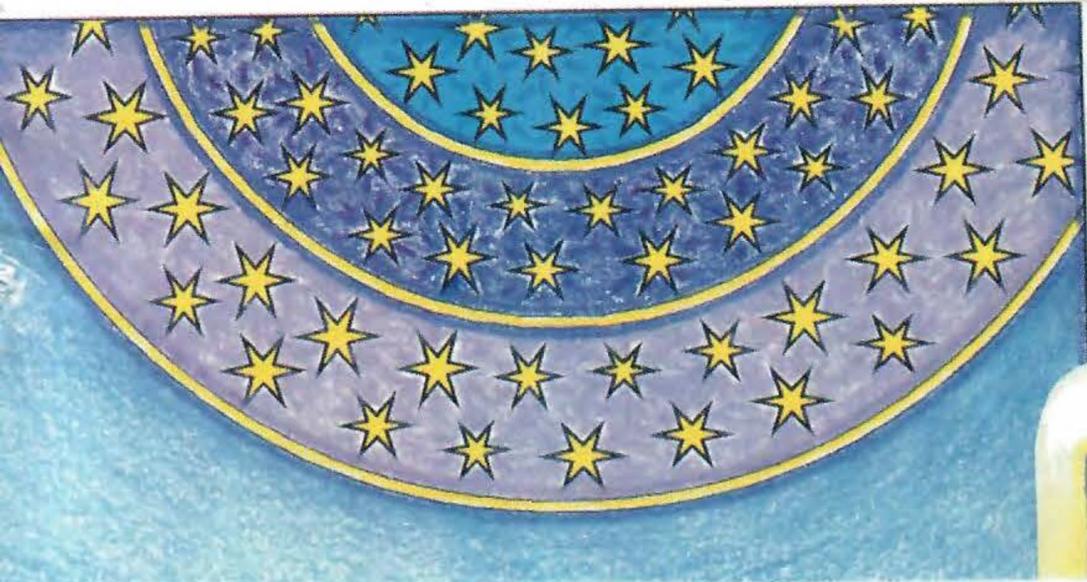


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# Taking Stock: the Generation of Permaculture

Peter Bane

Permaculture remains as relevant today as when it was an exciting new idea for David Holmgren and Bill Mollison 30 years ago. And it faces larger challenges than ever.

Anticipating the global resource crisis of the 21st century, Permaculture's founders postulated a system of design that would bring human patterns of settlement into alignment with the demands of nature: to capture and organize ambient energy flows, to recirculate all material wastes within the immediate area, and to meet the needs of all the plants, animals, humans, and their structures from the yields of the local environment into which those elements are embedded. It was the genius of these men, and Bill in particular, to popularize this system and to ensure that it would be taught by ordinary people within their own communities, thus ensuring its propagation in a world where centralized authority would become increasingly derelict or corrupt.

That cultural material, and the fearsome future world for which it was created, are what we have inherited today. Along with these talismans come the magical acts performed with them over the past three decades by Permaculture's plain-faced heroes.

This issue takes a look at some of the evidence for Permaculture's success. As well it offers a look at the process by which that success has been won and asks some hard questions about what more must be done to meet the rising global crisis.

Permaculture's early practitioners faced the need to test a vast range of plants, animals, and local environments against a coherent but untried theory of ecosystem design. The first wave of designers to go to ground outside Australia spent most of the 80s doing just this kind of grassroots science. What worked, what didn't? These questions circulated passionately in the early journals, in private, through design courses and convergences, and by the work of "runners" who spread the news.

The Internet made this sort of handshaking easier just as much of the primary work had been accomplished. We know which plants and animals will sustain humans in the various bioregions of the world. We know what kinds of housing and energy are appropriate for a wide range of climates, cultures, and landforms. And we know how whole systems design that incorporates appropriate technologies and species can create fully-featured human settlements, from rural villages to urban neighborhoods. We've done all these things in one generation.

But the world to which we offer our gifts has become even more divided; global ecosystems are massively disturbed; the distribution of wealth and income is more extreme, and the plunder of the world's resources and the exploitation of the poor by the rich has grown more intense. How do we respond? As ever, by applying what we have learned (from nature, science, traditions, and our own experience) to what we create. Only now we must not stop at systems, but must turn our design skills to metasystems: economies, governments, bioregions.

Unable to tell but a tenth of what we know is going on in North America, we have put together a kind of slow-motion picture show. Like our cover it is a collage of seemingly disparate elements, but one connected by unseen threads. Shirley-Anne

Hardy's passionate essay on Land Rent Reform issues a call to action that places Permaculture squarely in its historical and political context. We are struggling against enclosure and for justice in the distribution of Gaia's gifts: land, water, soil, minerals. From this bold opening we glimpse the promise of Permaculture success in Darrell Frey's lyric evocation of Three Sisters Farm. While here we can taste the harmony of humans with nature, the fine essay by Ann Hancock reminds us that even progressive Americans fall far short of the real mark, measured against energy and materials consumed. Chris Adams lays down a hint that pattern is key, while from the opposite end of San Francisco Bay Weston Miller shows what good design and 20 years' determination can do with the waste of a rich society. From the Left Coast we return carriage to the Right and begin Permaculture's long ascent from the sidewalk cracks of Brooklyn. Phil Forsyth is the new kid in town, though in real life he is neither naive nor unprepared for what he will meet.

The development story continues, and if you miss it in the reading, I'll let you in on a secret: enough of our authors have been students at CRMPI, and in enough stages of work, to show a real pattern of succession. Can you see it?

From urban pioneer we progress to Chris Jagers' pilgrimage to farm sustainability, through Kirby Fry's buoyant optimism for a newly established system, to Michael Pilarski's studious look at a model small farm already showing promise, and then to Mark Shepard's exploding entrepreneurial success in modeling a wholly new perennial agriculture for the Corn Belt. These stories reveal longer and longer perspectives. My sketch of Jerome Osentowski's million-dollar acre and Will Hooker's paean to beauty as revealed by Joe Polaischer's New Zealand lease on Paradise conclude our look at individual efforts.

Four more stories lift our view to collective design projects. Three show what has and can be done: Brian Skeeel's prospectus for permaculture-informed cohousing in Santa Fe, Chuck Marsh's update on Earthaven, now eight years old, and the remarkable account of Cuba's turn toward urban and organic farming. Gathering the missing evidence, Michael Kramer asks us what must yet be done to obtain that justice which is ours to secure.

Cindi Engel, Richard Herman, and Keith Laurie bring attention back to the plants and animals that connect us with the source.

We hope you will add your own story to these brave tales, and help us all to answer the question, "Where is Permaculture?" Δ

We point out new subscription rates (page 67), a bonus for holiday book and magazine buyers (page 19), and an early sign that more ecovillage pioneers are gathering (see the fine print...).

And we send you our best wishes of the season, and for the New Year ahead may Peace prevail.

## — Future Issues: Themes and Deadlines

#50 Ecosystems: Succession and Evolution	January 15
#51 Traditional Knowledge: New & Old	April 1
#52 Aquaculture	June 15
#53 Education	September 20

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# *The Road to Globalisation:* **Where Stands Permaculture?** **Where Stand We All?**

Shirley-Anne Hardy

**T**HE INTRODUCTORY column at the front of each issue of *Permaculture Activist* tells of its primary goal as being “to provide information useful to people actively working to establish permaculture systems ‘on the ground.’” There are plenty of people in Scotland bubbling with aspiration to do just that! But we live in a country of locked-up land.

Moreover, where the fundamentals of life (security of home and work) remain—on account of this monopolised land—dependent upon the good graces of another party, who is thus able to tie up people’s tongues along with their homes and work, we surely have a humanly-constructed stumbling block to intelligent action on this Planet! This fundamental chokehold on freedom of speech makes for a de-MOCK-racy indeed! Meanwhile this root monopoly wastes no time in working its way up through every level of our economic activity, as poisons work up the food-chain, multiplying at every stage. For the primary requirement for all human activity is, of course, **access to land**. Thus is innocent capitalism (every man sitting under his own vine and fig tree, as the prophet so beautifully put it) converted into its extremely ugly counterpart, **MONOPOLY** capitalism.

## ***Access to land the key to justice***

What a pity that those shouting in Seattle, Genoa, and elsewhere could not diagnose a right society’s present ills, and so hit the real mark with those globalisers! Let us pause and ask ourselves: just how could a society be expected to act in any moral fashion, which is built on the immoral foundations of **MONOPOLY**? We groan at globalisation, but fail to see the origin of this phenomenon of our times, as also of the GMOs and so much

else, including the water crisis (issue 47). For these things are all simply helpful reflections staring back at us out of our own mirror, pointing the finger at our staggering on-going nonchalance—our apparent ability to ignore the very first question every society must solve: how to institute **JUSTICE** in access to land.

(Note: in economics the term “land” includes all natural resources.) For this sin of omission we now find that instead of having built a society on the foundations of **SHARING**, we have reared a society on the hideous premise of snatch-and-grab! The original snatch-and-grab is well-known to us in the term “land monopoly.” (“To prove a legal title to land, one must trace it back to the man who stole it.”—Lloyd George.) Under land monopoly we were going global from the word go!

I am an enthusiastic subscriber to *Permaculture* publications in both Britain and America, for the movement provides us with an array of excellent, stimulating, and often highly fascinating articles. Of recent ones, I must especially mention Nick Routledge’s—on so many levels—in issue 46, and of course (since I live right above one), the wonderful saga of the transformation of a golf course, “Designing the Permaculture Links.” Then how marvelous (with Scotland’s monsoon summer, and our water management nowhere) to have Water as the focus of issue 47. However, I find that articles in *Permaculture* publications may be rendered a bit superficial, on account of the movement’s ignorance in general on the fundamental matter of rights to land.

Take the question of “Right Livelihood”—the focus of *PCA* issue 46. What an opportunity to open this important matter up to its foundations! Yet nowhere in that issue did it occur to anyone to ask: What kind of a livelihood

is made by those who hold onto more land than they can use? It is land that the rest of us sorely need; and, on a planet where all land is already taken up, they are then able to extract from us, in exchange for essential land access, an ever-growing slice of our earnings, in payment of land rent or land price.

Did these landowners make the land, that they should reap a “livelihood” purely from others’ use of it? Or, to open the scene up a bit further: what kind of a “livelihood” is owed to those who deliberately speculate in land, withholding it from use altogether, until the desperate need of the landless shall push its price even further up? No wonder we have a problem with homelessness! Have we lost our wits, that we actually legitimise such preposterously anti-social behaviour at the very root of our dealings with one another? No wonder if—as so many despair today—our society worships at the altar of greed. We have set **GREED** as our god at its base! Gandhi spoke of “enough for everyone’s need, not for everyone’s greed.” It is high time, then, that we grounded those words, which have roamed the upper atmosphere for far too long. Land had no cost of production, so what are we paying these “owners” of it for? In solemn landowner-speak, the landowner becomes “the provider of the land”—but I seem to hear some ripples of laughter from Gaia at that!

The real role of these ersatz “providers” is, of course, the very opposite: that of standing in the way of those who would make use of the land. And we pay them for that role! This distorted piece of dealing, upheld by false human law, has naturally a very unsavoury reverse side to it. For if some get something for nothing, then others get nothing for something—i.e., labour is

massively underpaid.

We must find our way to establishing a just principle of landholding, for with this radical clearing-out of injustice at the root of our dealings with one another, the whole pattern of our living on this earth will change. Consequently, there will change then, too, the things we choose to produce (maybe in harmony with the earth?) and the kind of society we choose to build (maybe one of real sharing?) For all depends, naturally, on the foundations, the ground floor. Thus we would not simply rid ourselves of a whole host of problems, social and ecological, which are due entirely to our distorted building. In particular, our stressful oversized cities, which proliferate problems of every kind, have all grown up on the basis of the dispossession of the people from the land.

#### **People sundered from the land**

A deep, if unconscious, awareness of this last makes it highly understandable that people should wish to re-root themselves in the countryside. And were the land to be freed, it would be natural that small rural communities—which have died out under our Gaia-grabbing culture—should spring up once more, to enjoy, widespread, the happiness of “meaningful work” (issue 46). Capital, in turn, might free itself gradually from the ugly clutches of monopolism, which is the real underpinning of the stock markets of today’s world. To get back to the land would not then require the tremendous pioneering efforts it does under land monopoly, nor would those who achieved it be condemned to an unnatural isolation, as so often today. What greater scope or hope could we wish, for the flourishing of a permaculture society, and of that “greater web of connectivity” mentioned in editorial 47, could we but find our way to a freeing of the land!

How far does the monopoly of land affect North America, the source of several articles on “right livelihood”? To quote from Peter Meyer’s *Land Rush—a Survey of America’s Land*: “at ‘a generous interpretation’ about 3% of the population owns 95% of the privately held land in the U.S.” So we see just how far the question of “right livelihood” is bedeviled by the corrupt underlying land structure! And what about that land not included in Peter Meyer’s statement,

which is owned by our now global corporations? What of the enormous apparatus of government requirements, which infallibly grows under a land hegemony, all tightening the land monopoly, while further raising land rent and price? Let us pause to give thought here, too, to those yet grimmer scenarios, where the West’s Gaia-grabbers have extended their tentacles into the Third World, to grab the resources of other indigenous peoples. The West’s corrupt system of land tenure, now globalised, has succeeded in standing the concept of “right livelihood” veritably on its head, with tragic consequences for millions. Britain of course, through her empire, played a major part in this take-over.

But these ugly workings of monopoly capitalism, and its inseparable political pursuits, are a tragedy of our own heedlessness, our failure to heed the voices of those raised long ago in protest against the commoditising of the Earth. Do we make a pretence of honouring the Christian faith? Already in the Old Testament (Levit. Ch. 25), we are warned that “the earth shall not be sold in perpetuity.” There is no doubt that Jesus, in declaring he came “to fulfill the law and the prophets,” well understood the import of those words and the real plight of the poor. But the wryness of his comment that “the poor ye have always with you” is generally missed. Organised religion has of course hopelessly betrayed that very sound injunction; the church in Britain is one of our biggest landowners. But fortunately, we have not lacked prophets nearer our own day.

#### **Henry George and land rent reform**

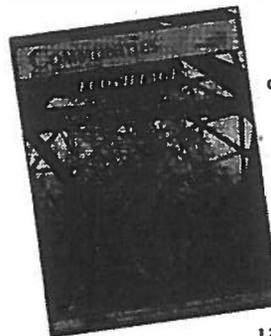
It is America which gave birth to the foremost of these for our time: Henry George, a great-souled thinker (who I am glad to recall had a Scottish grandfather!), whose seminal work *Progress and Poverty*, published in 1879, has sold more copies than any other book except the Bible. In France, the

Physiocrats of the 18th century discerned the same principle of just land tenure as did Henry George, while in Scotland William Ogilvie and Patrick Edward Dove (18th and 19th centuries) both made unique contributions to this work. That it was a penal offence in Britain until the 1832 Reform Act even to question the land laws, surely tells us something of the dynamite they contain, and explains the suppression of the work of these great thinkers, and hence our unfamiliarity with their names. For in its eagerness to control the minds of the people, as well as every other aspect of their lives, monopoly capitalism early bought its way into our political systems. This gave them access, of course, to the vital sphere of education. Hence our educational syllabuses steer well clear of the land question! We are not taught to think about the matter of the right to land at all, and most certainly not of its simple solution, the just and natural Law of Rent.

#### **Tom Paine and the Law of Rent**

This natural Law of Rent was fitly enunciated by England’s Tom Paine in the 18th century. Paine played a role in both the French and American revolutions and was famous for his *Rights of Man*. But have you ever seen this part quoted—“I never heard that the Creator opened an estate office to issue title-deeds to land...Every proprietor of land owes to the community a ground rent for the land which he holds.” We can surely see why our educational courses keep mum also on

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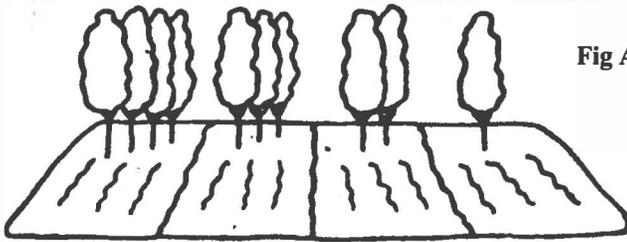


Fig A.

**Fig A. Different Grades of Land**  
 (above) Four sections of a site, with fruit trees. If you can get one bushel of fruit from each tree, and four bushels in a day from the part with four trees, where there are three trees you can only get three bushels with the same day's labor. Where there are two, only two, and on the worst (far right), only one.

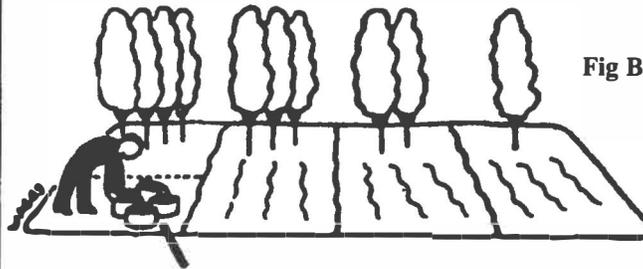


Fig B.

**Fig B. First Comer - All Wages**  
 (above) So far, all this land is free. The first picker to come along will naturally appropriate the best land. The best land is then the margin of production (indicated by the dotted line). With one day's labor, four bushels are gathered. They are all wages—the reward for the picker's labor.

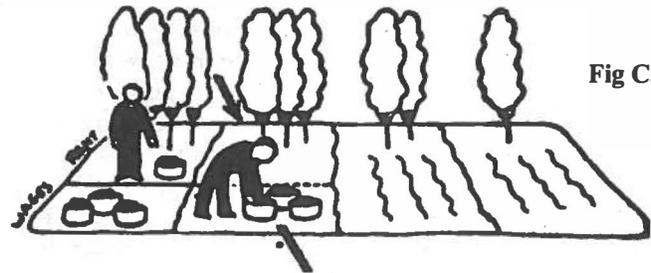


Fig C.

**Fig C. 2nd Comer - Rent Begins**  
 (above) The next comer must be content with a three-tree section (a new margin of production.) Three bushels in a day's labor are the wages. Both pickers might work all day; still one gets four bushels and the other three. The four-bushel land thus has a rent of one bushel (shown above the line).

with—but we will not go into that here. Finally, in every society there will always be land “at the margin,” which will command no rent, but offer a living to those who wish to pursue a

(evils) that follow in the train of land monopoly. For the excluded—the dispossessed—then form that incomparable pool of cheap labour, which is so coveted by the great machine-owners of monopoly capitalism, while the hapless dispossessed labourers in whatever field, left without land or capital, can be relied upon to beat down wages for jobs at virtually any price.

Hence, too, the shock-waves that run through a workforce when the lordly “bestower” of their jobs suddenly pulls out, leaving them wageless. Meanwhile the trades unions and socialist parties—meant to be protecting the workers’ interests—continue on as sleepwalkers in the scene, and

this aspect of Tom Paine!

Bearing in mind that the rental value of land is created by the community—arising entirely from the people’s need for land—we can see that the payment to the community, by the holder of land, of its full rental value every year, would correctly establish the **original** holder of the land to be the community as a whole, not the individual. Thus we find neatly reversed the present landlord-tenant relationship, which is as topsy-turvy as it is immoral! Furthermore, the strict return to the community, every year, by the occupier, of the full rental value of his holding, neatly prevents him from ever capitalising the (uncollected) rent into a phoney “land price.”

But security of possession is also beautifully taken care of by this arrangement. For the payment annually of the land rent (justly owed to the community), fully ensures to the landholder the continuity of his holding, with entire freedom to occupy, bestow, or bequeath it as he pleases; whilst any “improvements” made to the land, such as houses, industrial buildings, etc., (representing capital—the fruits of labour), may as freely be bought, sold, or exchanged, in the relevant marketplace, (with the ongoing rental “ticket” for the land always attached). Agricultural improvements are a special case, which can be fairly dealt

more marginal lifestyle.

### *The false market in land*

Focusing again for a moment on that falsity, “land price”: how indeed could we ever assess the Planet in terms of MONEY? —the Planet that was here long before we were! Land price equals simply the capitalisation of as many years’ rent ahead as the market can be made to bear, the over-reaching greed of this false market, not surprisingly, powering those “mysterious” business cycles of boom and slump.

But the great plum that this false capitalisation of the rent drops into the laps of those false title-holders is that, once Gaia can be bought and sold (like any slave), the possibility follows of hogging and hoarding land, with the immense power that can then be wielded over the excluded, and all the further privileges

haven’t a clue!

Let us pause for a moment on the point that the Law of Rent, obeyed, returns to the community, for its shared use every year, the full community-created rental of its land. For do we not find right here, in the natural Law of Rent, the simplest and most essential meaning of that “sharing of the surplus” which is one of Permaculture’s core ethics? Any surplus remaining after society’s needs are met (and how reduced these would be amongst a people standing on their own feet!) would justly be repayable to the members of the community, equally, on a citizens’ dividend basis. This would be social welfare—on a definitely higher key! Considering the shaky foundations of today’s stock markets—with what seems their inevitable collapse in due course—who, even among today’s richest, would not opt for a more secure, because justly-based society?

# The Law of Rent becomes The Law of the Depression of Wages...*(see diagonal arrows, Figures A-E)*

*(continued from previous page)*

## Land rent and community empowerment

There is a further point about the land rent reform, which is of some significance. For the fact that land is LOCAL suggests that the revenue from the land is best collected locally, and locally disbursed. Do we not have here additionally, then, a most practical key to local empowerment? For every community would thus have the resources to deal with its own affairs, leaving only those things it could not best undertake for itself to be delegated upwards to a more federated level. "Community empowerment" is one of today's buzz phrases, especially in Scotland, but it is mostly bandied about with little real meaning, as a kind of "sop to the plebs."

Land rent reform, by a natural process, brings about both economic and political decentralisation. The assessing of land rental values should present no problem,

in the town hall, would leave no scope for skullduggery, confronted with the first-hand knowledge of the local populace. In the uniquely practical path it offers to local empowerment, through self-funding from local resources (avoiding the sophisticated world of taxes), the land rent reform is a profoundly decentralist measure, and prime permaculture tool.

Since land rent is our one truly socially sourced revenue—arising from the presence and activities of the entire community—it sets before us very clearly how false is the substitute we have in taxation. Falling on the individual, taxes (visible and not-so-visible) are rightly most loathed by the poor, whose earning power is hardest hit by them. In fact, it was the barons of old, who held the power to legislate in parliament, who betook themselves to this substitute. It was attractive to them to

privatise the rents, from which originally they were obligated to provide the king's army; so it was that taxation came to be instituted as our "social" fund,

## OTHER NATURAL DIFFERENCES AFFECTING THE LAW OF RENT

The operation of rent applies with any factor that makes one piece of land superior to other lands. There are others besides agriculture differences. A good harbor makes land around it valuable. The land further away is less valuable.

Growth of population is another significant influence. When people settle in one particular section of a good piece of agricultural land, one that yields four, so to speak, a town is likely to grow up there. Though land within the town is no more fertile than the land outside, a productiveness of a new kind has arisen. Through cooperation and specialization of labor, that section of the land is of much greater productivity. It now yields forty instead of four. If the four land were free, rent within the town would be thirty-six.

Industries grow up, new machines are invited, and much more can be produced. The productivity of industrial land has become seventy, which is greater than the town's productivity of forty. Since more is produced, new materials are needed, and this extends the margin of production to land that yields only one. Wages then become one, and rent is the excess on all superior lands.

from ground level, would amply replace its false and feeble one-floor-up substitute.

Taxation, easily manipulated by those advantaged at the incomparable ground level, including by the workings of this level up through the stock market, has naturally never managed to close the gap between the rich and poor. It was never meant to, and

never will. Any society that tries to finance itself from taxes will eventually go bankrupt.

## Plain common sense

The Law of Rent is a natural law. That is to say: the rental value of land cannot be prevented from arising, for it reflects

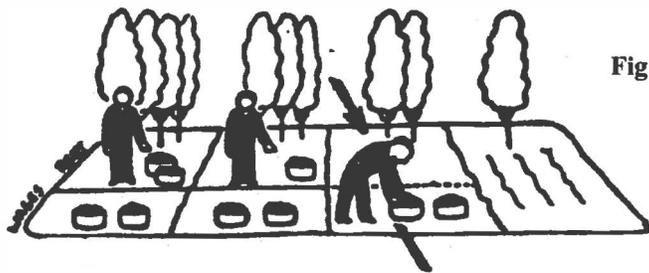


Fig D.

**Fig D. 3rd Comer – Rent Rises**  
*(above)* The third picker has to use the two-bushel land; it's wages are two. The three-bushel land now has a rent of one, and the four- of two. Wages of all are two.  
 If the third picker wants to work on the three-bushel land, its owner would pay two bushels in wages and take one as rent. The owner of the best land could demand a rent of two and still pay wages of two bushels, which is all the third picker could earn on the two-bushel piece.

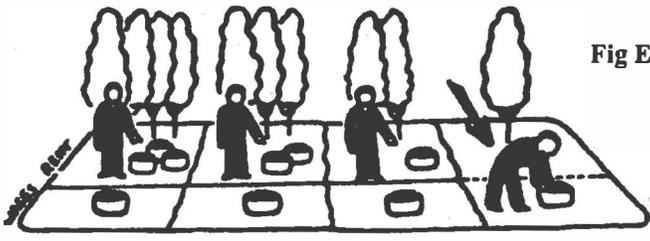


Fig E.

**Fig E. 4th Comer - All Land Used**  
*(above)* The fourth picker arrives and the only land left is the worst land, where the yield will only be one bushel. Now all the other lands have a rent in proportion to their superiority over this land (which is now the margin of production).

in place of rent. We can easily see, from studying the Law of Rent, that this true social fund, sourced

since it has been long established practice in Denmark, for example. Valuation rolls, publicly displayed

the comparative desirability of differing grades of land. Our task is therefore to see that the rent is channeled aright. In removing any windfall gain from the occupancy of a site, the Law of Rent is the true "leveler of the playing field." It further accords with natural law in being timeless and universal; it is plain common sense once pointed out. It is not surprising to discover, therefore, that in former times the peasants of Java conducted their lives on the basis of this just Law, for several centuries during a period when Java flourished. Nor is Java the only example of such a society. But we live, today, in a world run mad on land monopoly—on the commoditising of Gaia—and even the Green movement seems to have failed to take account of this rather strange treatment of our Earthly Mother.

I found some bits in issue 47 surprising in this respect. In the fine "Manifesto for Seeds—We Have Always Known This," I stumbled over "Each of us has a plot of earth to serve"—Perhaps it was placed there as a piece of wishful thinking? It certainly remains firmly in that realm for the Scots—in fact, for countless numbers in the Western world, let alone for the millions in the Third World. Then, in "Restore the Earth, Restore the People," we read of how "quality of life" is "fundamentally measured." But strangely, although access to water is included, there is no mention of the fundamental question of access to land, which would of course include water, and is vital to unlock the door to the other basic needs, shelter and food. What a contrast with the cry from the Third World: "Land is security—land is freedom—land is life!" (recorded by Jeremy Seabrook in *Freedom Unfinished*, a moving volume about Bangladesh).

Finally, in a review of *Local Trade, Local Wealth*, we find this book regards money as "the principal means by which economic power is exerted in the modern world." Really?! Here is a counter-offering from a small country with a good deal more insight: "The stark fact is that whoever owns the land controls Scotland." ("Land Ownership—the Big Issue," *Dundee Courier*, July 1, 2002) As the saying goes, "If you had all the money in the world, my lad, and I had all the land, I'd charge you all your money for one night's rent!"

## *Land and nature belong to the commons*

The article "Water as Commodity" documents well the scene as we view it today, pointing out at the end that we need "a new water ethic." But the commoditisers of Gaia have so run away with our thinking, that we still cannot see that water is but a part of Gaia's bounteous gifts to us, and that our dealing with water must be viewed within the larger embrace of our dealings with Gaia. For it is entirely through our folly in allowing the false privatisation of Gaia in the first place, that we now reach the point where one of her primary gifts to us is being catastrophically destroyed. We would not now be needing "a new water ethic," if we had but nurtured at the outset, at the heart of our society, a true LAND ethic embracing all natural resources. It is that land ethic for which Aldo Leopold, in his much-loved classic *Sand County Almanac*, so eloquently appealed. For should we not have cared, in the first place, that Gaia was not privatised?

How many other hideous problems of our day, such as Third World "debt," would have had no place in our thinking either, had a true land ethic but prevailed! But now it is the more advanced thinkers in economics and ecology in Africa, one of the poorest parts of the Third World, who have grasped this point; and it has set them far ahead of us in proclaiming that they need no munificent cancellation of their "debts" by the West. They have begun to discern how it was the false commoditising, or privatisation, of their land which was the begetter of those false debts in the beginning. By choosing to free their land to its own people, through collecting its rental values annually for the community (precisely the Law of Rent), they have no need of that phony foreign "aid", nor ever had, out of which those "debts" have arisen. (See website: [www.henrygeorge.org/alodia](http://www.henrygeorge.org/alodia)). So we see how the whole situation suddenly reverses itself! It now becomes a question of how we can ever compute what we, the West, owe back to the Third World, for that ROBBERY of their natural resources we have so unremittingly pursued. This robbery never should have been, and ran riot entirely on the basis of a false

economic system (the commoditisation of the Earth), imposed from without upon an unsuspecting Third World.

Let us recognise the origins, equally, of that massive debt which is now increasingly engulfing ordinary citizens everywhere. If we are born onto this Planet without a foothold, we are falsely set in debt before our life's journey has even begun; and precious few of us in this situation will ever manage to catch up.

Our great task is therefore to catch up with these forward African thinkers, and with those Javanese peasants of 250 years ago; to catch up, indeed, with our own great thinkers, whose wisdom has been denied us for far too long. We shall then find that we denounce the commoditising of water simply as part of the whole false commoditising of Gaia. For not only has our water suffered. The same distorted structure of the economy has hideously turned into "commodities" (so far as it has been able) the entire animal kingdom of the Earth, not to mention her human inhabitants, as Anti-Slavery International has documented. But do not Care of the Earth (which includes her creatures) and Care of People stand as the two first ethics of the Permaculture movement?

Let us see that we catch up, then, with those thinkers who are truly of the New Age. For so shall we form part of today's most vital "web of connectivity"—the movement that is dedicated to ending the buying and selling of our Earthly Mother, and which holds the essential key to achieving this. Let us do so not only for our own sakes—in our now visibly disintegrating Western society, reaping the terrible fruits of its immoral foundations. Let us do so also for the sake of all those other beings, and creatures, who exist on Earth today in a state of wretchedness, ensnared—within the ever-tightening noose of land monopoly—to those who are now their global masters. ... That noose, which in the name of globalisation, holds in its grip the very Earth, having rechristened as "commodities" both Gaia herself and all her bounteous gifts to us. Δ

*Shirley-Anne Hardy is the author of Birthright in Land and the State of Scotland Today, Peregrine Press. She is a tireless campaigner for land rent reform, and may be contacted at The Rocks, Pitlochry, Perthshire PH16 5QZ Scotland.*

# Thriving Pennsylvania Site Matures

Darrell Frey

**T**HREE SISTERS FARM has been 20 years in the making. We set out in 1982, with an over worked, five-acre cornfield and a lot of inspiration, to create a permaculture farm. Now, in the late summer of 2002 we have a thriving agricultural ecosystem: hundreds of species co-exist with us on the land. The story of permaculture at Three Sisters Farm is a complex web of associations, elements, and activities. I hardly know where to begin. To speak of our business successes first is tempting and self gratifying. To speak of setbacks and difficulties is instructive but diverting. Both of these have been addressed in previous issues of *Permaculture Activist*. So I will take a look at the farm ecology and our efforts of caring for the earth. Those seeking further details can arrange a visit or wait for the proverbial "book."

While recently picking the sweet fall red raspberries, I watched a small, acrobatic tree frog hop from stem to stem as I worked my way up the patch. His kin can be heard chirping in the forest garden along the old tree line. Leopard frogs and several other species of frogs bound among the garden beds as we work. Toads as well make their more leisurely ambling and short hops to get out of the gardener's way.

As we work the cold frames in early morning the resident ribbon snake peers furtively from its home under the sill. In the polytunnels and under rock and brush piles among the gardens, black snakes, grass snakes, red bellied racers, and variously colored garter snakes patrol for slugs, mice, and voles.

The pond is visited or lived in by a great diversity of creatures. Muskrats burrow into the shore and generally muck up the bottom. Great Blue and Green Herons visit daily, as does the neighborhood kingfisher. Red wing blackbirds are annual residents. Swallows sweep the air of mosquitoes by day and bats patrol at night. Bass, bluegill and catfish are abundant among the water milfoil, watercress and duckweed. Cattails, marshmallow, iris, and dozens of other (catalogued) species of plants line the pond. Young painted turtles take refuge in the irrigation bucket intake. Snapping turtles emerge to lay eggs in a sand pile on the shore.

I have lost track of the number of bird species that reside here. From the tree line to the meadow to the woods, various trees and sheds, many birds nest, feasting on insects, berries, and weed seeds. A short list of the most common include wrens, bluebirds, hummingbirds, various sparrows and warblers, cardinals, blue jays, cedar waxwings, various finches, robins, doves, thrushes, woodcocks, woodpeckers and phoebes. I got a great feeling of



*The bioshelter at Three Sisters Farm is host to a seasonal cycle of beneficial insects*

accomplishment late last year, and again this year, when the shy and secretive catbird began to expand its range from the edges of the farm to the interior spaces. We finally have enough trees and shrubs that it recognizes us as a complex edge. The brilliantly colored oriole that nests in the neighboring riparian forest spends its days triangulating our mixed species orchard and gardens. It seemed to be friends with the woodchuck I was flushing out of a burrow, chirping to warn of my presence. While the woodchuck's digging may re-mineralize the orchard, its habit of eating lettuce crops was not in keeping with the farm economy. Now she is fertilizing the apple tree that she mineralized.

I have been very worried about the plight of the monarch this year. So few returned from their Mexican holiday (due to a severe winter storm and habitat loss). We leave as much milkweed as we can for them. They were two weeks late in arriving and their numbers are few this summer.

In contrast, the sheer diversity of insects is astounding. A late afternoon finds us sitting in the hardy kiwi arbor watching the dozens of shrubs, herbs, and flowers in our spiral garden (labyrinth type, not mound type). The air is literally buzzing with metallic bees, mason bees, carpenter bees, bumblebees, honeybees, syrphid flies, and myriad wasps. From the tiniest you can see to those with three-inch long ovipositors, they are rushing to gather pollen and drink nectar as they nurse abundant broods for the winter to come.

Each February, or early March, a few carpenter bee queens emerge from hibernation in the bioshelter ceiling to pollinate our winter Sungold tomatoes, while gathering pollen for their late winter broods. The insect dynamic of the bioshelter goes through a fascinating cycle. Parasitic wasps and other predators control pests well into December when it finally becomes too cool for them. Then we generally clean out any infested crops and replant. As the aphids, whiteflies, and thrips return in January the insect-eating beauvaria fungus appears and almost eliminates the pests. By March the fungus is less effective in the warmer, dryer bioshelter, but as the pests return the predatory insects have again become active to control them.

Market gardening has been our bread and butter at Three Sister Farm. We continue to enjoy appreciative and loyal customers in spite of increasing competition as more commercial gardeners enter our markets. The bioshelter, greenhouses, and gardens flourish with lots of compost and we have actually intensified our rotations, growing the same amount of produce we did five years

ago in less space with better planning.

In recent years we have had a major increase in consultation and teaching work. We give lectures and tours to groups of all ages. Our annual Permaculture class has allowed us to develop outlines and some detailed plans for many farm projects. As of 2002, with the planning for the "Bio-home"

residence at the farm we have completed our master plan. We are currently developing plans for a co-operative to co-manage the many enterprises of the farm.

I use to say it would take seven generations to create a permaculture farm. Nature has been in more of a hurry to re-inhabit the space. We are well on our way,

though it may take another generation to implement the whole master plan. △

*Darrell Frey teaches Permaculture Design at the Three Sisters site and at nearby Slippery Rock University in northwestern Pennsylvania. Email him at [dfrey@bioshelter.com](mailto:dfrey@bioshelter.com).*

## Treading Not-So-Lightly— SONOMA COUNTY MEASURES ITS ECOLOGICAL FOOTPRINT

Ann Hancock

**I**F THE WHOLE WORLD lived like Sonoma County, California, we'd need four more planets, according to a new federally funded study comparing the county's consumption with its supply of natural resources. This finding clashes with popular images of the area as a bountiful paradise populated by nature lovers, and has triggered many reactions among residents, including a new competitive spirit.

Sonoma County's 460,000 residents each use, on average, the equivalent of 22 acres of land to produce the materials needed to sustain their modern lifestyles, according to the study funded by the U.S. Environmental Protection Agency. This is the first time the EPA has helped a community determine its "ecological footprint," or measure of the land and sea needed to provide people's food, travel, housing, and other consumables.

"The EPA supports this kind of innovative research because it really raises our overall awareness about our impact on a finite world," said Brent Maier, congressional liaison and program officer with the agency's San Francisco office.

Sonoma County's footprint was calculated by Redefining Progress, an Oakland-based think tank that focuses on a range of sustainability issues. To measure the county's footprint, they adjusted U.S. government figures using locally derived data. The average resident, for example, lives in a 1,600 square-foot

home, drives 7,646 miles annually and uses 2,743 kilowatts of electricity a year.

While these figures are actually below the U.S. average, the county's residents each have an ecological footprint of about 22 acres. The average U.S. resident, according to Redefining Progress, has a footprint of 24 acres, leading the world in impact on the environment. Wealthier Marin County, which sits between Sonoma and San Francisco, averages 27 acres per resident. In contrast, Europeans and Japanese typically have footprints half the size of Americans, while Canadian footprints are a close second to those of the U.S.

Sonoma County's numbers are surprising, because this is a rich agricultural region and many residents would like to believe they could live off the fruits of the local biosphere. But the EPA-funded study revealed that the community's consumption exceeds its ecological capacity by about four times. These results shocked many residents.

"My immediate reaction was that there must be something wrong with the instrument," said George Freund, a philosophy instructor at the local junior college. Freund's reaction, gathered during a focus group session as part of Sonoma's Footprint project, is common.

"Four planets—that's a pretty compelling message," said Patricia Robles-Mitten, a retired phone company manager. Alexandra von Meier, a professor who

teaches energy and resources at Sonoma State University said, "As an academic, I want to get an A+ on everything. So how do I get an A+ on my footprint? I would score best if I were dead. The fact of the matter is you can't be human and be alive and not take up any acres."

Some people have reacted by calculating the size of their individual footprint via a quick online quiz. After their results came in and the initial shock and disbelief subsided, a certain competitiveness set in: call it the "mine's smaller" race.

Windsor City Council member Debbie Fudge experienced this competitiveness when she compared her footprint to that of a local newspaper editor, Barry Dugan.

"I was really depressed to find out my Footprint was 19 acres," she said. "I really expected it to be smaller. Barry told me his was 15. Because of this, I made sure to ride my bike to work three days last week, and looked more closely at where my food comes from. Because I live alone and fly for vacations, my number goes up. Barry says he doesn't fly much so maybe that explains the difference."

Fudge thought her local government work supporting compact development and the bicycle coalition should offset her 19-acre footprint, and maybe it should. Individual action, although essential, will never be sufficient to significantly shrink a community's footprint.

As Sonoma resident and transportation expert Joel Woodhull noted, "Even when one's life habits are severely adjusted, there is little change in footprint. This is because one's individual power is severely constrained by the built environment."

So what can be done? American communities can reduce their big "eco-feet" to become more like Europeans and the Japanese by enacting some basic change in local planning and zoning laws. Cities and towns can encourage walkable, mixed-use development that minimizes sprawl and the need to drive. They can support public transit and bike lanes, and mandate renewable energy sources for a set proportion of the community's power.

This is not as far-fetched as it seems. Communities and local officials across the country are always grappling with growth-management issues and policies. And some businesses, governments, and community groups have already begun using the footprint as a tool. For example, two Swiss banks, Union Bancaire Privée and Sarasin Bank, use it to help assess countries' credit-worthiness. The National Assembly for Wales, a newly-

formed government, chose the footprint as its key indicator for measuring progress.

Back in Sonoma County, there's talk of novel ways to use the footprint. Some footprint fans would like to see local governments embark on "Incredible Shrinking Footprint" contests. Sonoma's Board of Supervisors could challenge their counterparts in Marin to such a contest. Other institutions, churches, businesses, families, and individuals could do the same. The goal is hard to argue with: live well while living lightly. Δ

*Ann Hancock (ahancock@pair.com, 707-829-1224) worked with Sustainable Sonoma County to produce the 24-page report on which this commentary is based. The full text of the report, including quotes, photos, graphs, and cartoons, is available online at [www.sustainablesonoma.org](http://www.sustainablesonoma.org)—click projects then Ecological Footprint. This commentary appears at [www.tompaine.com/feature.cfm/ID/5693](http://www.tompaine.com/feature.cfm/ID/5693). Used with permission. And our thanks to Eric Storm.*

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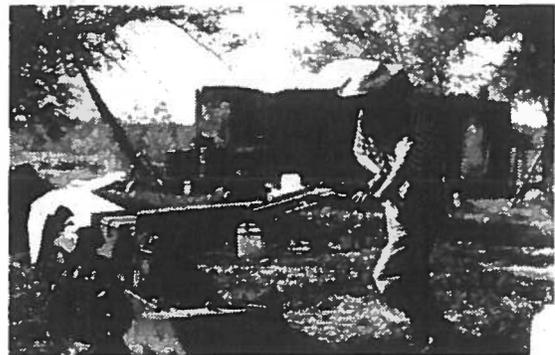
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Toward Pattern Languages—

# The Designer Becomes the Recliner

Christopher Adams

**A**S MY UNDERSTANDING of patterns and how to evaluate them grows, I am aware of the value found in traditional knowledge. People who have been around, as a culture, and been successful, have developed intuitive and deep understandings of the patterns that work for them in their place. These patterns guide where they build, how and what they build, who lives where, when to do certain activities, like weaving in the winter when indoors for long periods, what materials work for different needs, etc. Patterns of traditional knowledge also guide how to prepare for winter, what to do in summer, how always to have food, what to eat when, and shape different

social interactions for different purposes.

Successful cultures have healthy patterns—unconsciously understood by everyone in the culture—each complete set of which can be termed a *pattern language*. These shared patterns constituting a language are passed down, used unconsciously, and permit a vast range of combinations of their individual elements. Living pattern languages are always evolving—to fit ever changing conditions. The keys are this:

- The pattern language is shared by all in the culture,
- It is not static, and
- It is unconscious.

Recall the cell with DNA. Every single cell must have the same DNA as all the

other cells, otherwise they would never be able to work together (if not you could end up with a leg in your stomach or a finger in your head!). Although all the body's cells have nearly identical DNA, there are times when evolution is desired or necessary. In this case, gradual change is made, one or a few cells at a time, staying basically the same but changing to meet changing conditions.

Is each cell of a body aware of the DNA, and all of the different patterns in its nucleus? I think not; rather the cell has full access to the knowledge within, but only on an unconscious level—by instinct if you will. If humans had to stop and think through all the possible patterns and

interactions required before each action of the body, or even in culture—we would never get anything done! Plus, we would make mistakes. Instead, the shared pattern language is known and understood but seldom actually thought about.

In this, the infant stages of Permaculture, we are taught to design permaculture systems. I see now that in a mature permaculture setting, no design will be necessary, only an embrace of the relevant pattern language, from which the system would evolve—taking a shape more complex and whole than we could ever create consciously.

In this new light, I see Permaculture as an attempt to grasp the old patterns of disappearing cultures and landscapes, and to reformulate them into new patterns that reflect our changed world. Permaculture is Patterns. Life is Patterns.

I was laying on the couch this morning when I became inspired to write this; it wasn't until that moment that I realized Design was too controlled and clumsy, and reconciled Permaculture with Patterns. I hope this will inspire others to explore holistic pattern learning, sometimes called "a systems approach."

Comment, discussion, and critique would be welcome. △

*Christopher Adams studied permaculture at the Northwest Louisiana Commerce Center near Minden, LA and is currently enrolled at Louisiana State Univ. at Lafayette, working to introduce creative teaching methods, permaculture, and other concepts of sustainability into the University's curriculum and public outreach. Contact him at [earthcult@yaho.com](mailto:earthcult@yaho.com).*

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**CORRECTION:** Photo images with the article appearing in issue #48, pages 18 and following, were provided courtesy of Royce Boardman. We regret credit was not given in that issue.

## Recycling the Urban Forest

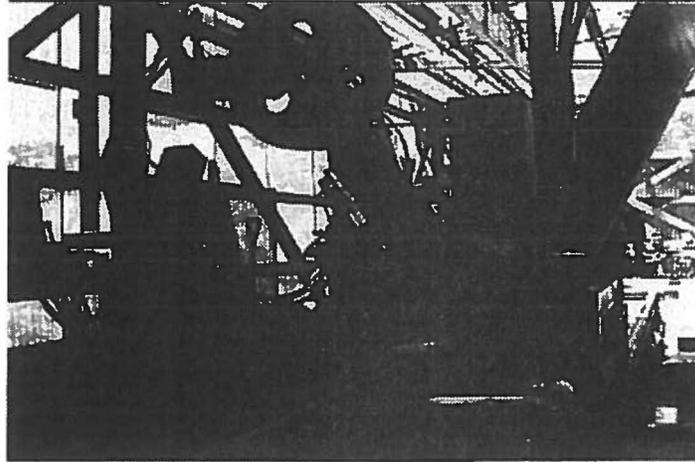
# PERMACULTURE WITH A *MECHANICAL* TWIST

Weston Miller

**SUMMIT SPRINGS**  
Design reclaims “waste” biomass of the Bay Area metropolis to create high-value wood products, furniture, and flooring. We are generating livelihood, shelter, food, and energy for a dozen people from our enterprise. The project, occupying 25 acres, is located on the crest of the Santa Cruz Mountains overlooking the San Francisco Bay. Most of the property is very steep and forested. It harbors the various plant guilds associated with the major microclimates of these coastal mountains. After 25 years of human-landscape interactions the system is beginning to exhibit exciting, synergistic properties.

The materials cycle that drives our small economy begins off-site with specialized landscaping services: a low-impact, small-scale forestry operation removes dangerous and fallen trees from private property and from county parks and local open space areas. We also implement restoration and trail building projects for park authorities in our immediate area. From these activities we harvest redwood, Douglas fir, pine, madrone, tan oak, and eucalyptus logs, materials that are commonly sent to the landfill by conventional tree removal companies. The Summit Springs crew brings these valuable resources back to the property where, using an array of custom and re-built equipment, we process the wood into value-added products.

An electric band saw is used to make dimensional lumber for our own structures on-site. Some lumber is also sold to local building contractors. The finest cuts of wood are used to make a line of high-quality outdoor furniture in a very complete wood shop. Additionally, hardwood flooring and other products are made from the madrone, tanoak, and



*The sawmill and other equipment are housed in a large, open shed made from recycled/salvaged Douglas fir milled on-site. The shed is covered with clear plastic for natural lighting.*

eucalyptus by re-sawing 1” x 4” lumber after a complex drying process. The scraps off the mill are processed into garden stakes and flats. Then “waste” from this thrifty operation is cut into firewood for heating or chipped to mulch the wood yard and the production garden. Sawdust is combined with nutrient-rich materials in large worm boxes to convert the carbonaceous material into compost.

Cellulose processing links the equipment yard with the garden, which feeds the people of Summit Springs on many levels so we can continue the process.

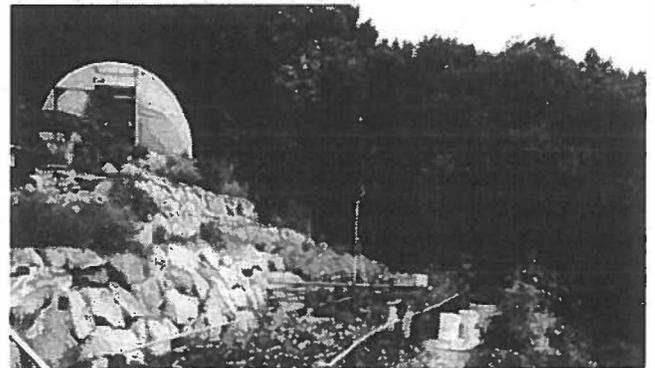
The Summit Springs garden is a place where flowing terraces on contour yield abundant sun, veggies, fruits, and flowers. It is the gathering site for a developing community—a place for human relations and nature connections that helps ease the stress of work with chainsaws, heavy equipment, and modern society.

The garden incorporates the “Garden Express,” a cart that rolls on metal tracks

over many of the raised beds in the garden. Useful for moving material, it serves as a platform for digging, seeding, and transplanting. Surplus from the garden is distributed to a handful of local restaurants and several local families.

Recently, we have begun to run the equipment that makes this entire process possible on biodiesel made from the used vegetable oil of the upscale restaurants that buy our vegetables and furniture.

Summit Springs Design has done a great deal to meet its initial aim of closing the material handling loops left open by the urban “monster” at the bottom of the hill. Now, as this system of intricate interrelations of plants, people, and equipment reaches out for greater levels of intelligence,



*The “Garden Express” cart shown on its tracks made from recycled 4”x4” redwood posts and galvanized pipe rails.*

we can see an extraordinary educational opportunity emerging from our proximity to the city which will shape the future of Summit Springs as much as the urban waste stream has shaped its past and present.  $\Delta$

*Weston Miller is a co-founder of Summit Springs garden, living in Santa Cruz where he teaches high school science from a permaculture perspective. He can be reached at [wmiller@sasquatch.com](mailto:wmiller@sasquatch.com).*

# A Gardener Grows in Brooklyn

Philip D. Forsyth

**T**HOUGHTS FLASH THROUGH MY MIND on arriving in New York City: "What am I doing here? What the hell could anyone accomplish with a place such as this? And is permaculture even possible?"

Dismay abounds. There doesn't seem to be any place to plant anything; the sidewalks are paved from foundation to curb without even any cracks for the weeds to grow in. The city is polluted such that after walking around for a day, one's skin is covered with a film of grease and grime. The air is heavy and humid; it feels that one's lungs are filling with a hundred other people's breath. Even the rain is foul: it smells of chemicals and sweat condensed from the air itself.

Worse yet, the vast bulk of this endless sea of people seem to be entirely ignorant of their impact on the environment. How many of these people think about what happens when they flush the toilet? It astounds me to think of the vast quantity of human shit being produced in this city every day. Where does it all go? I've read that most of it is simply dumped into the Atlantic. Some of it is trucked nearly 2000 miles to be used by industrial agriculture in SE Colorado. Regardless, it's an ongoing environmental disaster that rarely crosses anyone's mind.

I've read about the 900 or more community gardens in New York, but they sure haven't been evident in my first week here. I've visited friends in different parts of Brooklyn and Queens and haven't seen any gardens there either. I did pass by one small community garden during a stroll around lower Manhattan, but unfortunately it was at a time when I was in a hurry to meet someone and couldn't stop to explore it. It is certain that in a city the size and density of New York, many more community gardens are needed.

I spent last summer doing an internship with Jerome Osentowski at the Central Rocky Mountain Permaculture Institute in Basalt, Colorado. In retrospect, I find it fairly easy to say that it was the best summer of my life. Besides maintaining Jerome's ever growing and evolving forest gardens, we designed and built a solar-pumped/gravity irrigation system, converted an old greenhouse from annual production to perennial Mediterranean polyculture, and began to design and plant nut guilds on Jerome's new sun-trapping terraces. Inspiring, fulfilling, and even

relaxing—it was an edifying, educational summer spent in a beautiful mountain setting. I was surrounded by resources: an established permaculture system, a knowledgeable teacher, and the ever present inspiration of nature itself. I have never felt more centered, rooted, or useful. Here in New York, I have none of these resources. How am I to integrate these two disparate worlds?

Today, however, I was presented with a unique opportunity, and at my first job interview in the city! The Wyckoff House Museum is a circa-1652 farm house located in the middle of Brooklyn. It is actually the oldest building in the state of New York, preserved in a one-acre public park, bordered by an industrial area to the east and a West Indian neighborhood to the west. They are in need of a caretaker and gardener to live on site and to maintain the house and park. The exciting part, however, is that the Museum is in a state of transition. They have substantial funding to redesign the current park of thinning turf,

## New York City Resources

**GreenThumb**, 49 Chambers Street, Room 1020, New York, NY 10007. Tel. 212-788-8070, fx/-8052.

**Brooklyn GreenBridge**, the community horticulture program of the Brooklyn Botanic Garden, is designed to share the knowledge and resources of BBG with the neighborhoods of the borough. Working with block associations, community gardens, community centers, and other groups, Brooklyn GreenBridge promotes conservation and community through gardening activities. If you are interested in becoming part of the GreenBridge network. Contact [ellenkirby@bbg.org](mailto:ellenkirby@bbg.org) or Brooklyn GreenBridge, Brooklyn Botanic Garden, 1000 Washington Avenue, Brooklyn, NY 11225. Tel: 718-623-7250.

**Wyckoff House**: This Dutch colonial farmhouse is the oldest house in New York City. It was built around 1652 by Pieter Claesen Wyckoff, who had arrived in America in 1637 as an illiterate indentured servant. He later became magistrate, a successful farmer, and the wealthiest citizen of New Amersfoort, which was later the town of Flatlands. The modest house, with shingled walls, wide pine floorboards, and wide overhanging eaves, was typical of its time. It remained in the Wyckoff family for 250 years, with additions made around 1740 and 1819. Saved from demolition in 1952 the house was donated to the City of New York and extensively restored in 1982. The house museum features a collection of furnishings and artifacts reflecting the history of the house and its environs. Wyckoff House and Assn., Inc., Fidler Wyckoff Park, Clarendon Road at Ralph Ave., Brooklyn, NY 11023. Mail: PO Box 100-376, Brooklyn, NY 11210. 718-629-5400.

[www.greenguerillas.org/](http://www.greenguerillas.org/) - Since 1973 greenguerillas™ has helped thousands of people realize their dreams of turning vacant rubble-strewn lots into vibrant community gardens. Each year we work with hundreds of grassroots groups throughout New York City to strengthen underserved neighborhoods through community gardening. With our help, people grow food, plant flowers, educate youth, paint colorful murals, and preserve their gardens as vital community centers for future generations.

[www.oag.state.ny.us/environment/community\\_gardens\\_bklyn.html](http://www.oag.state.ny.us/environment/community_gardens_bklyn.html) has a complete list of NYC community gardens and their addresses, etc.

[www.cmap.nypirg.org/CENYC/cenycmapsearch.asp](http://www.cmap.nypirg.org/CENYC/cenycmapsearch.asp) to find maps of NYC community gardens.

[www.greenthumbnyc.org/](http://www.greenthumbnyc.org/). The largest community gardening program in the country with over 650 member gardens serving 20,000 residents. △

trees, and rosebushes, and to create a landscape of greater historical significance. Considering that the land went out of cultivation prior to the advent of industrial agriculture, this could have been nothing other than a largely self-sustaining farm. Moreover, the Wyckoff Association has a further goal to integrate the site with the local community.

This sounds like the perfect opportunity for a young permaculturist to step in and create a sustainable community garden,

something functional that also responds to the historical identity of the land. Honestly, I'm not sure that I'm adequately prepared for a project of such magnitude, yet perhaps it's time to step out and make some valiant mistakes on the path to a grand dream. △

*Phil Forsyth has, since writing this, been hired by the Wyckoff Assn. as gardener/caretaker in the East Flatbush district of Brooklyn. He can be contacted at [pdforsyth@yahoo.com](mailto:pdforsyth@yahoo.com)*

## A Graduate Program in Future Farming

# Pilgrim's Progress

Chris Jagger

**M**Y WIFE, MELANIE, and I have been running a CSA garden near Loveland on Colorado's Front Range the last two years, experiencing the natural ebb and flow of a diverse multifaceted community farm. The place is called Guidestone Farm and Center for Sustainable Living, and it's a project of The Stewardship Community at Sunrise Ranch.

Now that our stay here is nearly finished, we've found some time to reflect on what exactly is going on here—not just in the garden but throughout the entire farm.

Guidestone, a for-profit business, is a fully diversified working farm with vegetable garden and livestock, demonstrating sustainability both economically and environmentally. It exists, however, under the umbrella

of a non-profit, The Stewardship Community, with much broader aims: to offer the world an example of appropriate land stewardship, to inspire a sacred connection between people and the land, and to invite people from both urban and rural environments to participate in creating a food economy that promotes health and social responsibility.

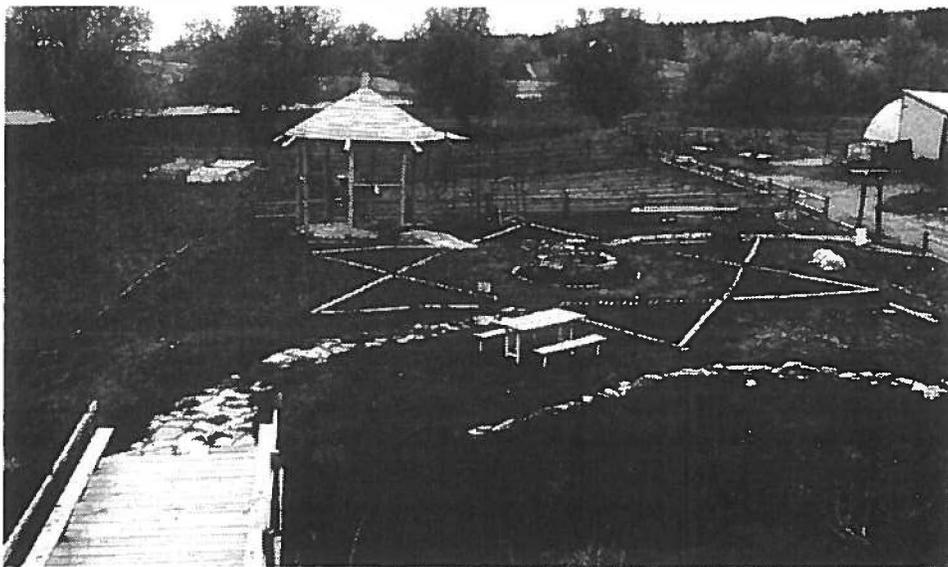
That's a tall order for a working farmer. So how do we strive to achieve this model of sustainability? We work towards a solution by diversifying the many parts of the farm: the garden, the dairy, the meat herd, buildings, energy, and education.

### Garden

Our garden of between four and five acres is operated as a hybrid CSA and market farm. First, and foremost, we help support 50 families by providing a box of vegetables each week from May to November. The CSA offers a sound way for folks to get quality food and to know where their veggies come from. The

members in turn support the farmers by making payments at the beginning of the season for produce shares. We also frequent two area farmers markets, both for income and as a public outreach of Guidestone's mission.

The garden itself is a constant experiment in the making. With dozens of vegetable crops growing simultaneously, it's



*The gazebo and garden bench offer a tranquil moment in the busy life of Guidestone Farm.*

similar to working with an artist's pallet—colors constantly mixing and changing. Our current system of operation involves rototilling the 4' x 100' beds and complementing this intensive tillage by cover cropping, crop rotation, and early-season subsoiling with a Yeomans plow. I must say that our root crops (especially carrots) have never been lovelier than since we began working with the Yeomans.

We incorporate even greater diversity by planting flowers throughout the entire the garden both for their value in attracting and feeding beneficial insects, and to provide cut flowers for

market. The beneficials and their plant friends seem to play a bigger role in the health of the garden each season.

Our Zone 4 frost dates (May 15, September 15) make us push the limits of the crops we grow, and as a result we use many season extension techniques—wire hoops with row cover, an unheated hoophouse, and a greenhouse with a subterranean heating and cooling system. We start seed work in the greenhouse in February and try to have all our transplants out into the garden by the Summer Solstice. All in all market gardening in Colorado at 5600 feet is not only challenging, frustrating, and rewarding, but it also provides an accelerated course in keen organizational skills. With a short season like ours, disarray can spell disaster.

### **Dairy and Meat**

Guidestone offers raw milk raised to organic standards, despite the fact that we're not certified. Selling raw milk in Colorado is not legal, but we don't sell our milk. Our members buy into the dairy herd and takes part ownership in the herd by paying a monthly boarding fee, and in turn

reaps the benefits of ownership—fresh raw milk. All of our members sign a set of documents, and have a firm understanding through them of exactly how the herd is raised and what standards we uphold. We treat the dairy as another example of how CSA can work in a community.

Our dairy herd is made up mainly of Jersey and South Devon cows. Among milking breeds, the Jersey is known for milk of the highest butterfat content, while the South Devon are a rare breed known for their quality meat. We've found a nice mix of Jersey and South Devon to work well in our breeding program. All of our cattle have open access to high quality mixed pasture grasses, and consistently find their way home to the barn as milking time approaches.

Besides beef, we raise lamb and pork. Our sheep are moved up to pasture each morning and are brought back to safe housing each evening. The pigs are our main composters. Any extra veggies or milk we have goes to them. There's nothing like the flavor of milk-fed pork!

Members buy all the meat we offer while it is still on the animals, and we do all the slaughter and butchering on-site.

This gives the member an assurance of high quality, and allows the animal to live its life cycle fully on the farm. It also lets "waste" from butchering return to the soil here, keeping nutrient on the farm.

### **Building and Energy**

Guidestone is not only a demonstration of sustainable gardening and farming but also a showplace for different methods of natural building. Our main architectural feature at the farm is a strawbale distribution center ("The Distro" for short). The Distro is the main contact point between farm staff and members. All of our dairy products, garden shares, eggs, fresh-baked breads, and various other products are distributed here, and it's a center of social interaction

between members as well. Indoor climate control for the Distro is achieved through an intricate dance of equilibrium between the building and its attached greenhouse. Similar to the garden greenhouse, this one is outfitted with a subterranean heating and cooling system. When the greenhouse heats up warm air can be channeled

**When you both work and socialize with the same folks, issues can't be left for a rainy day; they'll fester. Honing these group skills sets a tone that carries over when we interact with the larger community.**

through vents to heat the Distro and vice versa. This is mostly advantageous in the winter months. In the summer, outside venting, a few fans in the distro, and the subterranean system keep things cool and comfortable.

Another feature at Guidestone is our solar-moldering toilet aptly named the "Sunnyjohn" because it was designed and created by a fella named John (Cruickshank, that is). It's a timber-framed structure infilled with straw-clay and is capped off with a sod roof. It uses ventilation created by passive heating and natural convection flows to evaporate fluids and remove odors.

Our newest addition to the farm structure is the "Yurt Village," made up of three semi-permanent, yet removable, circular structures. Two of the yurts provide housing for interns while the third accommodates community activities and educational programs. The yurt village is completely off-grid and is powered by 450 watts of photovoltaics and a 400-watt wind turbine. It feels somewhat sci-fi to walk up at night to these three circular structures with their glowing domes



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knowing that their luminescence is being provided by the previous day's sun and wind. It's nice for folks to wake up in the morning, walk out on the deck of the yurt, and have full view of our gardens. Idyllic? Maybe. Necessary? Indeed.

## Education

When aren't we educating here? Rhetorical but true, we create an atmosphere of learning very different from that of classical institutions. This is a full-immersion course for those who live and work here, but we also have a primary focus on teaching the greater community beyond the farm.

Staff learning at Guidestone has followed the apprenticeship model. As the head gardener completes a course of "studies," what that person has learned is passed on to the next folks coming in. The job is complex, interactive, and involves a great deal of physical knowledge and technique which would be hard to convey in writing. Generally the incoming head gardener has interned for a season, working alongside more experienced hands in order to learn the garden's rhythms. This traditional model of learning may be uncommon today, but it seems to be effective.

We also learn by being a community—with all its ups and downs. We learn how to interact with one another on a personal level, and you learn to deal with problems as they come up. When you work and socialize with the same folks, issues can't be left for a rainy day; they'll fester. I believe honing these group skills among the farm staff and residents sets a tone that carries over when we interact with the larger community.

Our outreach programs come in many forms. CSA members learn when vegetables should be in season by the contents of their weekly boxes. They also get to experience what real milk tastes like, and how their health is boosted by consuming untainted foods. We put a special focus on teaching youngsters. Of course teaching the advantages of local food systems to a five-year old is a bit daunting, but again, learning by example is key. We show how our animals live full, happy lives, and how effectively our vegetables grow without chemicals. Then we let the children taste the difference.



*The author and his wife, Melanie Krueger (fourth and fifth humans from left), enjoy the benefits of healthy intra- and interspecies relationships.*

When a five-year old tastes spinach straight out of the garden and says, "Yum!" we know we're making progress.

## A Few Things Left to Do

As Melanie and I look back on our time at Guidestone, we realize how much the farm is accomplishing, and also how much work we still have to do. But that's how it's supposed to be: progress comes through working.

Now that we're moving on from the farm a lot of people ask us, "The farm is great! So, why are you leaving?" At first we didn't know how to answer, we just knew it was time to move on. But after thinking about it, we came to the conclusion that Guidestone Farm is much like college. One could stay here for ever but at some point you realize you've finished your studies and it's time to graduate. So that's what we're doing. We're graduating from farmer graduate school and moving on to post-graduate work by starting our own farm.

Guidestone Farm is a glimpse of what the farm of tomorrow will look like. And that farm has all the ups and downs of any farm, but it also has the capacity to maintain itself as a living organism. And

as all living organisms innately know, there's always a few things left to do to gain perfection.

## Contacts

The Stewardship Community, [www.stewardshipcommunity.org](http://www.stewardshipcommunity.org)  
Guidestone Farm and Center for Sustainable Living, [www.guidestonefarm.com](http://www.guidestonefarm.com)  
David Lynch, Director of Operations at Guidestone, [farmerlynch@msn.com](mailto:farmerlynch@msn.com).  
John Cruickshank, [jc@sunnyjohn.com](mailto:jc@sunnyjohn.com), [www.sunnyjohn.com](http://www.sunnyjohn.com), inventory of the Sunnyjohn solar moldering toilet, subterranean heating/cooling system, and other living technologies, △

*Chris Jagger and Melanie Kuegler have been farming for five years. They completed their Permaculture Design training at Central Rocky Mountain Permaculture Institute this summer, and have just relocated to southern Oregon where they hope to start a permaculture-based CSA and market garden. They plan to avoid all Type 1 errors, but life is tricky sometimes. They can be contacted by email at [funkfarmer@eforu.com](mailto:funkfarmer@eforu.com).*

# Water Gardens Bloom in South Texas

Kirby Fry

## CROSS TIMBERS

Permaculture Guild had the good fortune last February (2002) to be able to install extensive permaculture gardens on its demonstration site near Elgin, Texas. Please come by for a tour and visit if you're in the region.

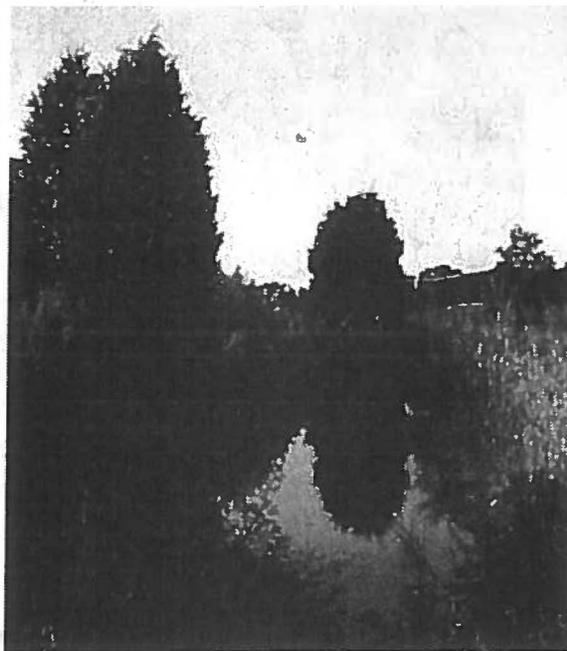
As you enter the 32-acre property the gardens lie on either side of the road, around key central buildings. We have created approximately 60,000 square feet of raised beds, all of which were amended, tilled, and put under irrigation. The beds are basically swales and berms on contour, and the garden includes a section of *chinampas* (water gardens) and a 150-foot canal. Putting in the gardens was like sculpting a small golf course. Fortunately, we located them on the barest part of the land, and only had to remove six small trees, the largest some 4" in diameter.

Six of the ten gardens contain small ponds. All together, there are 16 ponds on the land holding over four acres of surface water between them. The smaller ponds (the larger ones are still filling) have been planted or inoculated with water lilies (*Nymphaea sp.*), lotus (*Nelumbium luteum*), submerged grasses, parrot's feather, farrie fern, pickerel (*Pontederia cordata*), horsetail (*Equisetum sp.*), ginger, hibiscus, rushes, sedges, taro (*Alocasia*), Louisiana iris, crinum, other plants, and minnows. We're just getting to know most of the water plants.

As the ponds filled they came to life rapidly. First the mosquitoes swarmed, then the frog and minnow populations exploded, then the snakes moved in, and now we often spot herons, sandpipers, and egrets hunting.

Behind the dams of the larger ponds and along the land's creeks and woody margins we also planted 1,000 bald cypress (*Taxodium distichum*), 500 river birch (*Betula nigra*), 500 red maple (*Acer rubrum*), 100 sycamore (*Platanus occidentalis*), and 100 Shumard oak (*Quercus shumardii*) trees.

The soils were pretty deficient and required as much organic amendment as we dared put on them. Beds were amended with 2,000 lb/ac of agricultural lime, 1,000 lb/ac of soft rock phosphate,



1,000 lb/ac of fish-, alfalfa-, bone- and bloodmeal, 800 lb/ac of greensand for magnesium and potassium, and 60 lb/ac of dispersol sulfur in pellet form. We tilled in 200 cubic yards of bark mulch, put out 3,200 pounds of cover crop seed (wheat, oats, rye, crimson clover, and vetch), and then mulched with 20 round bales of milo straw (about 30,000 lbs.).

During the summer, we grew sorghum and beans as cover crops in the garden beds. As well, we are putting out a steady stream of local wildflower and forb seeds such as coreopsis, black-eyed Susan (*Rudbeckia hirta*), salvias, maximilian sunflower (*Helianthus maximiliani*), curly dock (*Rumex crispus*), echinacea, partridge pea (*Cassia fasciculata*), Illinois bundle flower (*Desmanthus brachylobus*), purple prairie clover, rosin weed (*Grindelia squarrosa*), Indian blanket, and more.

Throughout the beds we planted 1,000 asparagus crowns, 500 blackberry brambles, 200 blueberry shrubs

(*Vaccinium sp.*), a couple of buckets of potato and garlic, 100 grape vines, 20 hardy kiwis (*Actinidia spp*), 10 passion fruit vine (*Passiflora spp*), and 40 wisteria.

Our fruit and nut trees include 100 persimmon (*Diospyros virginiana*), 100 pawpaw (*Asimina triloba*), 100 jujube (*Zizyphus jujube*), 100 citrus, 50 fig, 50 fruiting mulberry, 60 pear, 50 pomegranate (*Punica granatum*), 30 Chinese chestnut (*Castanea mollissima*), 30 apple, 30 plum, 30 peach, 20 pecan (*Carya illinoensis*), and 10 English walnut (*Juglans regia*). Many, many plants have not made it due to molds, freezing, poor soil conditions, and poor drainage.

We would like to add pineapple guava (*Feijoa sellowiana*), apricot, loquat (*Eriobotrya japonica*), kumquat (*Fortunella*), Mexican plum (*Prunus mexicana*), black cherry (*Prunus serotina*), Texas persimmon (*D. texana*), and more.

Our farmer's trees include 20 honey mesquite (*Prosopis glandulosa*), 10 Schaffner acacia (*A. schaffneri*), 10 kidney wood, 10 Wright acacia (*A. wrightii*), 20 Guajillo acacia, 10 cat's claw acacia, 10 desert blanket acacia, 1 huisache (*Acacia farnesiana*). We still need locust (*Robinia sp.*) and red bud (*Cercis sp.*). Presently the beds

below the fruit trees are full of squash, melons, and beans.

The small hills raised from the pond excavations are planted with yarrow, valerian, oregano, thyme, lavender, rosemary, basil, copper canyon daisy, lantana, and Mexican butterfly weed (*Asclepius sp.*). We would like eventually to bring these herbs out into all of the beds. Two stretches of arbors (about 70 feet combined length) support gourds and cucumber as well as all of the perennial vines.

It's really a site to behold. And visitors are welcome. △

Cross Timbers Permaculture Guild is located about 25 miles east of Austin in south central Texas. Web address is <http://csf.colorado.edu/perma/ctpi/>. Contact Inger Evans and Kirby Fry (pictured) at [peace@totalaccess.net](mailto:peace@totalaccess.net), ph. 512-273-9538.



# Evolution of an Herb Farm

## *From Agriculture to Agroforestry to Permaculture*

Michael Pilarski

**T**HIS IS A BRIEF REPORT on the evolution of a small herb farm. This is my fourth year on the site. It is situated in north central Washington State in the Twisp River Valley on the eastern slope of the North Cascades.

Sunny Pine Farm is a small intentional community with 25 acres under cultivation in vegetable crops, alfalfa, medicinal herbs, and green manure crops, and two acres of lavender which we distill for essential oil. My herb patch is also supplying some aromatic herbs for distillation.

The annual precipitation here is 20 to 25 inches, mostly in the form of winter snow. Summers are hot and dry, winters are cold and snowy. Irrigation water comes from a canal fed by the Twisp River. I irrigate with micro-sprinklers (whizzers, we call them) every 10 to 14 days.

In the first year I planted three rows of herbs, 250 feet long. The second year I had 40 rows of herbs, 250 to 275 feet long. By the third year I had 60 rows, and by the fourth, 80 rows. This adds up to the current 1.3 acres planted on my part of the farm.

This year I have been working an average of 20 hours a week on this 1.3 acres. This is not enough to do a good job, but there

have only been a few crop failures and production has been generally good. I do get help from other people on the farm and from short-term interns, but I do about 80% of the work myself for the 1.3 acre herb patch.

My current products are fresh and dried herbs and herb seeds. The herb patch produced around \$8,000 worth of herbs and seeds each year in the third and fourth years. Many of the crops take four to ten years before they can be harvested, so annual gross income should continue to grow for some years to come. In the next several years I will be able to harvest perennial roots such as goldenseal (*Hydrastis canadensis*), black cohosh (*Cimicifuga racemosa*), *Codonopsis pilosula*, wild yam (*Dioscorea batatas*), *Astragalus membranaceus*, and licorice (*Glycyrrhiza glabra* and *G. uralensis*). The trees and shrubs planted over the last two years will also start yielding over the next four to ten years. These will yield medicinal roots such as Oregon-grape (*Mahonia aquifolium*) and bayberry (*Myrica gale*), and barks such as Cascara sagrada (*Rhamnus purshiana*) and crampbark (*Viburnum trilobum*).

Bruce Hill, a permaculture friend from Maui and Argentina,

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has visited me twice this year and has given me lots of ideas on how to make my herb farm more permacultural. Thanks to Bruce for his many ideas, for his help, and for stimulating this article.

The herb patch started out as a rather conventional organic operation with straight rows of herbs 250 to 275 feet long. I used clean cultivation techniques, overhead irrigation, and brought in fertilizer sources from offsite. The row structure was predicated to fit into the existing organic vegetable cropping system of Sunny Pine Farm.

I have learned a lot in the first four years of my little herb farm. I now have over 150 species of medicinal plants growing. I have made lots of mistakes which are propelling me to change some of my production methods. I am committed to make the system into more of an agroforestry system and eventually into a permaculture system. I figure it will take an additional five years or so to make this transition.

My main problem has been soil compaction from walking, cultivation, and irrigation; the soil also lacks enough organic matter. The remedy will take a few years, and will require a combination of techniques, such as mulching and ground covers. Bruce has pointed out that if I process more of the herbs on-site, more organic matter will stay on the field.

#### **Trees and shrubs for overstory and windbreak**

The site is very windy, and in the spring the wind is especially harsh on many of the plants. To mitigate the force of the wind we have planted three major windbreaks over the last two years to protect the whole of Sunny Pine Farm's 24 cultivated acres.

Last year I planted about 300 trees and shrubs in my herb patch and this year another 1200, including 900 Oregon-grape (*Mahonia aquifolium*) two-year old seedlings. Another hundred tree seedlings have volunteered, mainly cottonwoods blown in by the wind. Today I saw the first wild rose seedling. In 2003 I intend to plant another 500 to 1,000 trees and shrubs.

The trees and shrubs are to provide windbreaks, hedgerows, and habitat for the growing web of life. As these grow they will introduce more shade into the system to benefit the woodland medicinals which are currently unhappy in the hot, drying sun. These shade-loving herbs include goldenseal, black cohosh, mayapple (*Podophyllum peltatum*), devil's club (*Oplopanax horridum*), *Angelica* species, and *Aralia nudicaulis*.

Almost all of these multi-purpose trees and shrubs yield medicinal leaves, roots, rootbark, or fruit. *The Permaculture Activist* published my resource list of these species as "Medicinal Trees,

Shrubs, and Vines for Temperate Zones" in issue #45.

With 2,000 to 3,000 trees and shrubs on this 1.3 acre parcel, it ought to be stocked with enough woody plants for a while. Many of them will be coppiced for bark. It will take five to seven years for most trees to be big enough for the first coppicing (cutting). Thereafter the large root system will push up vigorous poles, and the rotation time between cuttings should go down to four to six years.

#### *Snags and Trellises*



This year I started putting in a few small snags (dead trees). I intend to keep bringing in dead trees. I use the simple method of getting small diameter dead trees from the local forest, and planting them in a post hole. The dead trees (preferably with a fair number of branches and

branch stubs) provide places for birds to perch, serve as trellises for vines, and add a vertical element to the landscape. Eventually my young trees will get big enough so that I can ringbark some of them to create snags in place.

Trellised vines provide vertical elements in the landscape, acting as windbreaks and giving shade while the young trees are just getting started. Among the medicinal vines I am growing are hops, *fo-ti-tieng* (*Polygonum multiflorum*), *Codonopsis pilosula*, and wild yam (*Dioscorea batata*).

#### **Every soil has a seed bank**

**Weed seeds.** In agricultural fields the seed bank is mainly weeds. My field is no exception. The first two years I didn't allow any weeds to set seed, but in years 3 and 4, I did not kept up with weeding and a lot of weeds went to seed. As a result, I have now greatly increased the weed component of the soil's seed bank. I attach a list of the weeds currently growing on my site. (*see sidebar*) Many are medicinal, and I harvest and sell some of them. Others are edible, and I harvest some for home use.

**Volunteer herbs.** I have also let many of my herbs go to seed, and am now building up an impressive soil seed bank of these species. In the fourth year (2002), there was a great increase in volunteer seedlings of the cultivated medicinals. I am now letting some self-seeded herbs grow where they germinate as part of the cropping system. Also I transplant some of them into rows and sell some at my spring plant sale.

In the years ahead, I expect that more and more herbs will volunteer, and that I will have to do less and less planting.

**Wildflower seeds.** A few native wildflowers have started to grow on my site from seed which has blown in or been introduced with some forest litter mulch. I let them grow and reseed themselves. I also collect native plant seed commercially for some of my income. I will be sowing some of these species in the field to get more native plants into the seed bank. Over the next several years I expect to add more and more wildflower seeds to my site. My long-term goal is that a large part of the soil seed bank be from native wildflowers. I can then selectively allow them to grow for harvest as medicine or wildflower seed for sale.

During the last two years my farmer ego has suffered because of the increasingly weedy situation. But my permaculture ego has been busy coming up with a list of good things the weeds are doing for me.

1. The weeds have been busy making root channels in the soil which improves soil structure, organic matter, and porosity, and feeds more soil life.
2. The weeds provide shade to shade-dependent herbs such as goldenseal. The shade also keeps the upper soil surfaces moist longer, and improves conditions for soil organisms.
3. The presence of weeds underfoot reduces soil compaction from walking.
4. The weeds provide increased habitat for the web of life of insects, spiders, birds, etc.
5. Some weeds are saleable medicinals and home food.
6. The weeds provide me with fertilizer and organic matter. I use them for mulch, preferably as the bottom layer under

cardboard so more of their decomposition feeds the soil food web, and less volatilizes in the open air. The optimum time to harvest weeds for fertilizer is when they are large and succulent, generally around flowering time, preferably before seeds have started to mature. Mature or maturing seeds are not as much of a hazard if the weeds are applied as the bottom layer of a mulch.

### **Mulch**

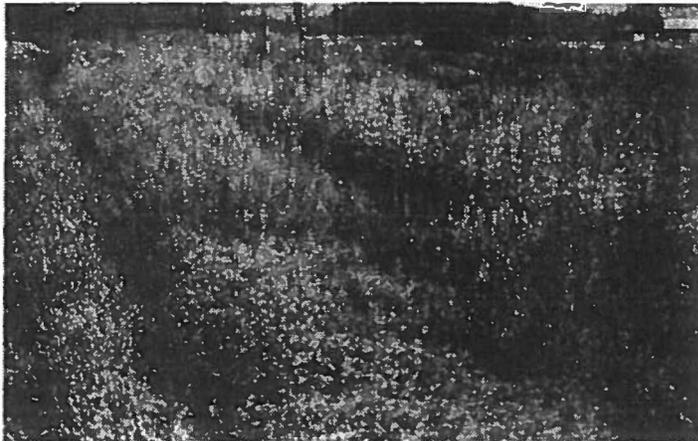


*Poke berries glistening at harvest time.*

Bruce now has me harvesting the weeds and using them for the bottom layer of a sheet mulch in between the rows. The bottom layer is made up of green weeds, followed by a layer of cardboard, then a layer of coarse mulch material. So far I have used tree-trimming chips, straw, and the plant residue from steam distillation of lavender and other herbs on our farm. Sunny Pine Farm has 2.5 acres of

lavender which is distilled for essential oil.

Most of my mulch material is now coming from off site. On-site weeds and crop residues are becoming increasingly



*Overhead view of herb patch.*

*Spring photo before new crops have filled in spaces.*

important. Eventually there will be woody biomass in the form of shrub and tree prunings for mulching. It will take some years before the site becomes self-supporting in mulch material.

### **Tillage and Irrigation**

The site was initially prepared by a tractor with disc and rotovator. In the ensuing years I have made use of a rototiller for weeding and tillage. More and more of the area is now getting so thick with perennials that I cannot fit a rototiller between the rows. Over the next couple years I expect my use of the rototiller will gradually diminish, until finally everything will be done with hand tools. As trees grow up and perennials bush out and more volunteer seeding occurs, the present row structure of the area will gradually disappear. Small trails for wheelbarrow access will need to be maintained to harvest crop and move biomass around. Bruce says "As much as possible use the biomass right where it is generated to reduce work."

Bruce recommends that I put in T-tape drip irrigation (either under soil or under mulch) in every other row, and install timers. This will mean less time spent on irrigation. Drip irrigation also conserves water since little is lost to surface evaporation. Focusing irrigation on the crop rows and limiting tillage would also reduce germination from the seed bank. In conjunction with the drip system he recommends an occasional surface irrigation from the existing micro-sprinklers.

### **Drying**

Currently I dry herbs first in open air under shade, then finish them in dryers with electric heat. A shortage of drying capacity is one of the limiting factors to increased production. Next year one of my goals is to increase dryer capacity with more air-drying screens under shade and a large solar dryer (with a backup electric dryer for nights and humid periods). Adding solar dryers will increase self-reliance and reduce my consumption of fossil fuel energy from the electric grid.

I can recommend the "Living Foods Dehydrator" brand of dryer based on seven years of using them. The dryer has no fan

(hence is noiseless) and the heating element draws the equivalent of two 100-watt bulbs. I have run my unit virtually non-stop, 24-hours a day for several years straight. They have several sizes, but I use the largest, the Jumbo dryer. It has a 24" by 24" inch cabinet with nine screens and 28 sq. ft. of drying space. The Jumbo sells for \$395 already assembled, or as a kit for \$295. The plans are available for \$3. The company address is: Living Foods Dehydrator, 3023 - 362nd Ave. SE, Fall City, WA 98024. (425) 222-5587. [www.dryit.com](http://www.dryit.com).

**Future Goals.** The site will take years and a lot more labor before it starts looking like a true permaculture system, but it is definitely going in that direction. Here are some of my goals:

- Wide diversity of multi-purpose plants. Aiming for 500 species, mostly perennials.
- Medicinal forest with varying levels of shade.
- More attention to placement for beneficial plant interactions.
- More wild looking.
- No rows.
- Demonstrating its own evolution by reliance on self-seeding volunteers.
- A sizable area devoted to native plants.
- On-site resources for fertility.
- More wildlife, especially birds, reptiles, and amphibians.

- Deeper nutrient cycling with tree roots.
- Little or no use of machinery.
- High yields.
- Ground surface almost all mulched, mainly from leaf-litter fall.
- More value-added processing. Already the field produces enough herbs for thousands of gallons of tinctures a year.
- Workshops and work-parties. During the growing season I offer several workshops on growing medicinals at the farm. Bruce wants me to have a mulch party after the spring planting frenzy. Last weekend in April, 2003. You're all invited.

Looking for a partner. I am seeking a partner to collaborate on developing this herbal permaculture site and herb business. Give me a call if you are interested in details. Δ

*Michael Pilarski founded Friends of the Trees Society in 1978. He has been involved in the permaculture movement since 1981 as a writer, teacher, and networker. He has attended or taught 22 full Permaculture Design Courses and will be offering a PC course in Minnesota in March, 2003. He currently sells fresh and dried herbs and roots from over 150 wildcrafted or organically-grown medicinal plants. Contact him at: Friends of the Trees Society, PO Box 253, Twisp, WA 98856. Tel: 509-997-9200. Winter address: PO Box 4469, Bellingham, WA 98227.*

## Weeds growing at Sunny Pine Farm

### Amaranthaceae

Redroot pigweed, *Amaranthus retroflexus*, E  
Prostrate pigweed, *Amaranthus blitoides*

### Asteraceae

Diffuse knapweed, *Centaurea diffusa*  
Dandelion, *Taraxacum officinale*, M, E, \$  
Salsify, *Tragopogon dubius*, E  
Wild lettuce, *Lactuca serriola*, M, E, \$  
Spiny sow thistle, *Sonchus asper*  
Horseweed, *Conyza canadensis*, M, \$  
Hairy fleabane, *Conyza bonariensis*  
Common groundsel, *Senecio vulgaris*, T

### Brassicaceae

Tumble mustard, *Sisymbrium altissimum*, E  
Wild mustard, *Brassica kaber*  
Shepherd's purse, *Capsella bursa-pastoris*, M, E, \$  
White mustard, (species?)

### Caryophyllaceae

White campion, *Silene alba*

### Chenopodiaceae

Lambsquarters, *Chenopodium album*, E

### Geraniaceae

Dovesfoot geranium, *Geranium molle*, M Filaree, *Erodium cicutarium*, M

### Graminae

Witchgrass, *Panicum capillare*  
Quackgrass, *Elytrigia repens*, M, \$  
Kentucky bluegrass, *Poa pratensis*

### Leguminosea

Alfalfa, *Medicago sativa*, M, \$  
Black medic, *Medicago lupulina*  
Sweet clover, *Melilotus alba*  
Hairy vetch, *Vicia villosa*  
White clover, *Trifolium repens*  
Red clover, *Trifolium pratense*, M, E, \$

### Malvaceae

Mallow, Buttonweed, *Malva neglecta*, M, E, \$

### Polygonaceae

Prostrate knotweed, *Polygonum aviculare*, M  
Twining buckwheat, *Polygonum convolvulus*  
Ladysthumb smartweed, *Polygonum persicaria*  
Yellow dock, *Rumex crispus*, M, \$

### Portulacaceae

Purslane, *Portulaca oleracea*, M, E

### Scrophulariaceae

Mullein, *Verbascum thapsus*, M, \$

### Solanaceae

Hairy nightshade, *Solanum sarrachoides*, T  
Bittersweet nightshade, *Solanum dulcamara*, M, T, \$

### **Key**

M = Medicinal  
E = Edible  
\$ = I offer for sale  
T = Toxic Δ

# Medicinal plants grown at Sunny Pine Farm

9/26/2002 List • 1.3 acres (150 species)

## HERBACEOUS PLANTS

Anemone (*Pulsatilla occidentalis*)  
Angelica (*Angelica archangelica*)  
Angelica, sharptooth (*Angelica arguta*)  
Aristolochia clematitis  
Arnica chamissonis  
Arnica montana  
Ashwaganda (*Withania somnifera*)  
Astragalus membranaceous  
Bai Zhi (*Angelica dahurica*)  
Bastard Ginseng (*Codonopsis pilosula*)  
Bear's Breeches (*Acanthus mollis*)  
Beebalm (*Monarda didyma*)  
Belladonna (*Atropa belladonna*)  
Black Cohosh (*Cimicifuga racemosa*)  
Black Horehound (*Ballota nigra*)  
Black Lovage (*Smyrniolum olusatrum*)  
Blazing star (*Liatris spicata*)  
Blessed Thistle (*Cnicus benedictus*)  
Bloodflower (*Asclepias currasavica*)  
Boneset (*Eupatorium perfoliatum*)  
Borage (*Borago officinalis*)  
Bugleweed (*Lycopus americanus*)  
Burdock (*Arctium minor*)  
Butterburr (*Petasites palmatus frigidus*)  
Calamus root (*Acorus calamus*)  
Calendula (*Calendula officinalis*)  
California Poppy (*Eschsholtzia californica*)  
Catnip (*Nepeta cataria*)  
Cedronella canariensis  
Celandine (*Chelidonium majus*)  
Chinese Woad (*Isatis indigotica*)  
Clary Sage (*Salvia sclarea*)  
Coltsfoot (*Tussilago farfara*)  
Cowslip (*Primula veris*)  
Culver's Root (*Veronicastrum virginicum*)  
Dong Quai (*Angelica sinensis*)  
Echinacea angustifolia  
Echinacea pallida  
Echinacea purpurea  
Elecampane (*Inula helenium*)  
Epazote (*Chenopodium ambrosioides*)  
False Indigo Bush (*Baptisia tinctoria*)  
False Solomon's Seal (*Maianthemum racemosum*)  
Feverfew (*Tanacetum parthenium*)  
Figwort (*Scrophularia nodosa*)  
Fo-ti-tieng (*Polygonum multiflorum*)  
Garlic Chives (*Allium tuberosum*)  
Germander (*Teucrium chamaedrys*)  
Goat's Rue (*Galega officinale*)  
Gold Currant (*Ribes aureum*)  
Goldenrod (*Solidago canadensis*)

Goldenseal (*Hydrastis canadensis*)  
Gotu Kola (*Centella asiatica*)  
Gumweed (*Grindelia squarrosa*)  
Hemp Agrimony (*Eupatorium cannabinum*)  
Henbane (*Hyoscyamus niger*)  
Hops (*Humulus lupulus*)  
Horehound (*Marrubium vulgare*)  
Horseradish (*Armoracia rusticana*)  
Hyssop (*Hyssopus officinalis*)  
Japanese Catnip (*Schizonepeta tenuifolia*)  
Japanese Hops (*Humulus japonica*)  
Joe Pye Weed (*Eupatorium purpureum*)  
Khella (*Ammi visnaga*)  
Ladies Mantle (*Alchemilla mollis*)  
Ladies Mantle (*Alchemilla vulgaris*)  
Lavender (*Lavandula angustifolia*)  
Lemon Balm (*Melissa officinalis*)  
Lemon Thyme (*Thymus citriodorus*)  
Lemon Verbena (*Lippia citriodora*)  
Licorice, Chinese (*Glycyrrhiza uralensis*)  
Licorice, European (*Glycyrrhiza glabra*)  
Lily of the valley (*Convallaria majalis*)  
Lithospermum erythrorhizon  
Lithospermum officinalis  
Lobelia (*Lobelia inflata*)



## Earthaven Ecovillage



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Lomatium (*Lomatium dissectum*)  
 Lovage (*Levisticum officinale*)  
 Marshmallow (*Althaea officinalis*)  
 Mayapple (*Podophyllum peltatum*)  
 Meadowsweet (*Filipendula ulmaria*)  
 Motherwort (*Leonurus cardiaca*)  
 Mountain Mint (*Pycnanthemum virginianum*)  
 Mugwort (*Artemisia vulgaris*)  
 Nettle (*Urtica dioica*)  
 Northwest Osha (*Ligusticum canbyii*)  
 Oats (*Avena sativa*)  
 Orris Root (*Iris florentina*)  
 Oxknee (*Achyranthes bidentata*)  
 Parsley (*Petroselinum crispum*)  
 Pennyroyal (*Mentha pulegium*)  
 Peppermint (*Mentha piperita*)  
 Periwinkle (*Catharanthus rosea*)  
 Pleurisy Root (*Asclepias tuberosa*)  
 Pokeroot (*Phytolacca americana*)  
 Rootbeer plant (*Agastache rupestris*)  
 Rue (*Ruta graveolens*)  
 Rupturewort (*Herniaria glabra*)  
 Russian Mint (*Mentha ?*)  
 Russian Mugwort (*Artemisia lagocephallum*)  
 Sarsaparilla (*Aralia nudicaulis*)  
 Self-heal (*Prunella vulgaris*)  
 Sheep Sorrel (*Rumex acetosella*)  
 Siberian Motherwort (*Leonurus siberica*)  
 Sitka Valerian (*Valeriana sitchensis*)

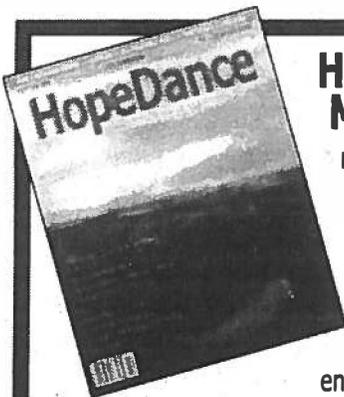
Skullcap (*Scutellaria lateriflora*)  
 Southernwood (*Artemisia abrotanum*)  
 Spearmint (*Mentha spicata*)  
 St. John's Wort (*Hypericum perforatum*)  
 Stoneroot (*Collinsonia canadensis*)  
 Sweet Annie (*Artemisia annua*)  
 Sweetgrass (*Hierochloa odorata*)  
 Sweetroot (*Osmorhiza occidentalis*)  
 Tibetan Gentian (*Gentiana tibetica*)  
 Toothache Plant (*Spilanthes oleracea*)  
 Turkey Rhubarb (*Rheum tanguticum*)  
 Valerian (*Valeriana officinalis*)  
 Veronica dahurica  
 Vervain, blue (*Verbena hastata*)  
 Vervain (*Verbena officinalis*)  
 Western Mugwort (*Artemisia ludoviciana*)  
 White Sage (*Salvia apiana*)  
 Wild Yam (*Dioscorea batata*)  
 Winter Savory (*Satureja montana*)  
 Wormwood (*Artemisia absinthium*)  
 Yarrow (*Achillea millefolium*)  
 Yellow Dock (*Rumex crispus*)  
 Yerba Buena (*Satureja douglasii*)

#### TREES

Amur Corktree (*Phellodendron amurense*)  
 Aspen (*Populus tremuloides*)  
 Balsam Fir (*Abies balsamea*)  
 Black Walnut (*Juglans nigra*)  
 Cascara Sagrada (*Rhamnus purshiana*)  
 Cottonwood (*Populus trichocarpa*)  
 Cut-leaf Chaste Tree (*Vitex negundo*)  
 Eastern Black Cherry (*Prunus serotina*)  
 Eastern Red Cedar (*Juniperus virginiana*)  
 English Oak (*Quercus robur*)  
 Ginkgo (*Ginkgo biloba*)  
 Incense Cedar (*Calocedrus decurrens*)  
 Littleleaf Linden (*Tilia cordata*)  
 Rocky Mtn. Juniper (*Juniperus scopulorum*)  
 White Ash (*Fraxinus americana*)  
 Yellowhorn (*Xanthoceras sorbifolia*)

#### SHRUBS

Bayberry (*Myrica gale*)  
 Black chokeberry (*Aronia melanocarpa*)  
 Blue Elderberry (*Sambucus cerulea*)  
 Chokecherry (*Prunus virginiana*)  
 Crampbark; Highbush cranberry (*Viburnum trilobum*)  
 Devil's club (*Oplopanax horridum*)  
 Golden Currant (*Ribes aureum*)  
 Nanking Cherry (*Prunus tomentosa*)  
 Oregon-grape (*Mahonia aquifolium*)  
 Raspberry (*Rubus idaeus*)  
 Red-osier Dogwood (*Cornus sericea*)  
 Redroot (*Ceanothus velutinus*)  
 Sea Buckthorn (*Hippophae rhamnoides*)  
 Siberian Pea Shrub (*Caragana arborescens*) Δ



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## Permaculture on the BROADSCALE:

# Making the Farm Pay its Way

Mark Shepard

**A** LONG TIME AGO, in what seemed like a galaxy far, far away, (1993 Permaculture Design Course at Jerome Osentowski's CRMPI, Basalt, CO. USA) a group of idealistic Permaculture students hurt their brains as they wrestled with a long-held Permaculture myth. As they ate their bowls of Certified Organic rice and beans, they attempted to figure out how their teachers could teach (and apparently believe) that with Permaculture, we would no longer need farms as they exist today. "How could this be?" they thought. Huge numbers of Americans (indeed of HUMANS) reside in cities with populations in excess of 250,000 souls. Even with every square inch of urban and suburban space dedicated to intensive Permaculture systems, (and this is a LONG way off) there is not enough sunlight falling to the earth in these places to provide the total calories needed to sustain the masses of humanity that live there. Sure, there could be adequate quantities of fruits, berries and greens, roots and shoots and fungi, but what about staple foods? What about Calories? Protein?, in short, the equivalent of millions of acres of rice, beans, corn, wheat, oats, millet, barley, and the others. The calories that sustain the human race come predominantly from annual crops. Primarily the grasses.

Add to that the fact that an annual grain field is bare, black earth for eight months of the year, and the fact that billions of tons of the world's best topsoil erodes each year from these fields, that the majority of the world's toxic pesticides and herbicides, which pollute surface and groundwater, are applied to annual croplands, and that in the USA, annual agriculture is responsible for nearly 17% of the country's CO2 emissions, and you get some idealists with cranial vapor-lock. What is a permaculture activist to do?

### Testing the Theory

They took it to the farm. An unlikely trio of residents from three different nations (Canada, Italy, and USA) formed a partnership and decided to create a Permaculture Farm. Not a "Perennial Grain Pipedream," or a fabulous non-profit fundraising mechanism, but a REAL farm. Where the land is managed in order to produce food, fiber, medicine, and livelihood for its managers. One aspect of "livelihood" is sufficient cash-flow to meet cash needs and enough to invest in the basic productivity of the enterprise. For the squeamish I apologize if I use a dirty word, but the farm must produce a profit! If a Permaculture farm isn't profitable and depends on organized begging to sustain it, no other farmers will adopt its techniques. Roundup-ready soybeans have been so rapidly accepted into the American mainstream because it takes fewer passes across a field to grow them, which translates into lower fuel, labor, and equipment repair bills, which translates into keeping the family farm operating for a few more years.



photo credits Peter Bane

Permaculture NEEDS farms and farms NEED Permaculture. In order for this marriage to take place, the techniques must translate into increased profit on the farm.

So...

### A Permaculture Farm is Born

In 1994 Xylem, Phloem, and Pith (as they then called themselves) bought a 106-acre farm in southwest Wisconsin, USA. Run-down pasture land was the least expensive land at the time, land that was too hilly and rocky to plow; land that had no trees so wealthy hunters or timberland investors weren't interested in it; land with soil so poor and eroded that it wouldn't even support decent grazing. It was land that NEEDED the restorative medicine of Permaculture.

The first order of business was trees. Plants with the longest maturity horizon needed to be planted FIRST if they were ever to be any use to the current manager. Around 20 acres of "forest" trees were planted: Black Walnut, Red and White Oak (for nuts and high value timber), Black Locust for nitrogen and poles. Shade tolerant Sugar Maple (syrup and lumber) were interplanted with fast-growing hybrid Poplar. White Pine, Black Cherry, White Ash, and many, many other species were planted for lumber, firewood and, of course, diversified wildlife habitat. Reforestation trees are rather inexpensive. Seedlings yanked from the ditches on the sides of roads are free, and seeds collected in parks and from sidewalks are plentiful enough to reforest nations.

A multi-species windbreak was planted behind the house. The "front line" (windward side) of the windbreak consisted of hybrid Poplar followed by a double row of White Spruce interplanted with hundreds of highbush blueberries. In the lee of the spruce/blueberries came a double row of Nut Pines. Of these, Korean



The author inspecting hybrid chestnuts.

Stone Pine and Limber Pine proved to be the survivors. To the leeward of the Pines we planted a Juglans-species polyculture. Butternut (*J. cinerea*), Japanese Walnut (*J. ailantifolia*), and Buartnut (*J. cinerea X ailantifolia*) were interplanted with wild plum, black raspberry, and silky dogwood while grapes were trellised on the walnuts. Whoever claimed that Walnut cannot be used in polycultures never bothered to observe the variety of useful plants that grow in

association quite happily with them. So far blueberries, grapes and raspberries are being harvested in household quantities from this system. The trees are big enough to be capturing snow drifts which helps to store water in the soil for the trees to use during the periodically droughty summers. The trees are not quite big enough to prevent the wind from spinning the AIR-303 wind

## CALL FOR AGROFORESTRY CONSULTANCY INCREASING

Requests coming in to Forest Agriculture Enterprises for comprehensive, broad-scale land management have increased significantly. Landowners with an understanding of Permaculture are interested in the logistics of how to convert from current use toward a Permaculture system, what that system would actually look like, and what it will cost to get there. Forest Ag provides Permaculture and Agroforestry conversion plans, logistical planning, long-term budgeting, and installation services. Forest Ag pioneered the mechanical transplanting of Badgersett Hybrid Chestnuts and Hazels and have planted more than anyone else in the USA.

For the past few years, Mark L. Shepard has given at least two educational and inspirational workshops each month. He has co-authored with Philip Rutter the recently published *Hybrid Bush Hazelnut Grower's Handbook*, and is the co-inventor of the patented Hypobaric Crop and Food Dehydrator, a simple and effective food dehydrator that can be made from salvaged materials and will work in the sun, rain, and even underwater (though not as well!) without the use of fossil fuels.

Mark L. Shepard, Consulting Agroforester, Forest Agriculture Enterprises, PO Box 24, Viola, WI 54664. 608-627-TREE. [forestag@mwt.net](mailto:forestag@mwt.net) △

generator, part of the household power supply.

The next major series of plantings took place little by little over seven years. A thousand apple rootstocks were planted in polyculture systems over a period of three years. The guilds consisted of apple, comfrey, daffodil, iris, rugosa rose, hazelnut, currant, grape, and a variety of medicinal herbs. The rootstock apples are still in the process of being grafted to heirloom varieties and cultivars with known pest and disease resistance.

### Protein, Oil, and Starch from Trees

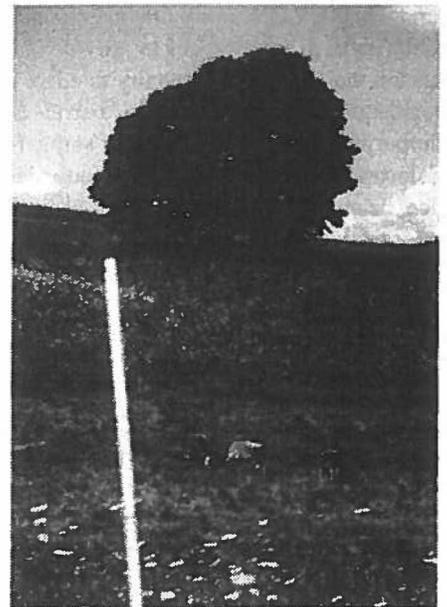
FINALLY, the staple food crop trees could be planted. Badgersett Research Co. (see *PC Activist #40* and [www.badgersett.com](http://www.badgersett.com)) Hybrid Chestnuts and Hazelnuts are being grown as replacements for corn and soybeans respectively. Many of these trees were planted in silvopasture systems, where cattle, swine, and poultry range periodically. Others were planted into alleycropping systems where organic produce was grown between rows of trees in order to provide cashflow to the farm. Each year we have grown from 3-12 acres of produce, primarily cucumbers, zucchini, peppers, and winter squash. Being Permaculturists, we, of course, despised the "black-desert" of bare soil annual agriculture, and began to plant more and more asparagus. As of this writing asparagus has been planted between the rows of over 2-1/2 acres of chestnuts.

Twelve acres of hazelnuts were planted into an "oak savanna analog" with white oaks planted on 60-foot centers, hazels close planted in rows alternating 10 and 15 ft. wide, and a host of prairie flowers growing among the hazels.

After a mere eight seasons, the project is bearing remarkable fruit (besides annual produce). For the past two years there have been "chestnuts roasting on an open fire" at local holiday fairs. Hazels have been in production for several years, but have not yet overwhelmed our ability to eat them all! Within three or four years annual yields should approach 20,000 lbs. of hazels. Asparagus has been very, very good to New Forest Farm! As members of the Organic Valley Cooperative ([www.organicvalley.com](http://www.organicvalley.com)) we have access to wholesale organic produce markets nationwide. (Look for my acorn squash on your co-op shelves this winter!)

### Proof of the pudding

Since the project began, the farm has been profitable every year except for one. Last year several produce plots were taken



Cattle battering on oak savannah.

out of annual production and planted to chestnuts, and drought required that we buy a huge watering tank to keep the newly planted trees alive. Hauling five tons of water up and down hill repeatedly caused our 60-year-old, bubble-gum-and-duct-tape tractor to need major repairs. All of this added up to a HUGE financial loss of a couple hundred bucks.

The house, always a work in progress, has progressed slowly but surely, one dollar at a time. We have built it primarily from locally milled lumber. From day one it has been off the utility grid. The electrical system began with a small 20-watt PV panel, a car battery, and a fluorescent light. Over the years the system

has been expanded. It now has three different kinds of PV panels, 12 deep-cycle batteries, and it powers lights, a water pump, a 12-volt refrigerator, a 12-volt chest freezer, and, of course, tunes! Roofwater is collected and stored and used for watering livestock, washing, and irrigating.

New Forest Farm does not have a website. We have an Earth-site! Since this is supposed to be a brief update and I'm finding it impossible to keep it that way, I'll write a sudden ending. Δ

*New Forest Farm near Viola, Wisconsin was featured in Permaculture Activist #40 (Dec. 1998). To contact or visit Mark and Jen Shepard (Erik and Daniel too!) you can call them at 608-627-TREE or e-mail forestag@mwt.net.*

## Hybrid Hazelnuts—New Crop Taking Giant Steps

### Hybrid Hazelnuts—New Crop Taking Giant Steps

Badgersett Research Corporation (BRC) of Canton, Minnesota, pioneers in hybrid hazelnut and chestnut research for farm applications, announced in September that trials of a mechanical harvester for hazelnut bushes would be held near Nebraska City, Nebraska.

BRC and the newly formed American Heartland Hazelnut Association (AHHA!) want hybrid hazel bushes to replace soybeans as a mainstream agricultural crop. "It's all happening far faster than I ever imagined it could," says Philip A. Rutter, President/CEO of Badgersett, the company responsible for breeding the new hybrids. "In the last year we've seen the success of new cloning technology, formation of a growers association; now we've got machine harvest; an absolutely critical next step. And the bandwagon is starting to pick up a lot of serious passengers."

The machine harvest demonstration/trial was sponsored by BEI, Inc., South Haven, Michigan—the maker of harvesting machines widely used to pick berries, The National Arbor Day Foundation—which owns the nine acres of hazel bushes picked in the harvesting trial, and Badgersett Research Corporation. Interested growers and members of AHHA from five states attended. "The ability to pick the nuts right off the bush, with a machine that basically drives just like a combine, both means cleaner, more efficient harvest, and makes this crop accessible to regular farmers—which has been the goal right along," says Rutter.

"The trial can only be termed a complete success, in my opinion," continued Rutter, "There were far fewer nuts available to pick than anticipated, but the machine efficiently harvested what was there. The lack of crop was probably due to animal theft proceeding faster than the growers had anticipated. I believe hybrid bush hazel growers could use this type of sway harvester exactly as it is—without any modifications, if necessary."

The machine successfully picked many different bushes, most of them seedlings and quite variable in regard to fruit and picking characteristics. Clone culture would permit selection of characteristics tailored to machine harvest among other qualities. Rutter also noted that the harvester does not break branches, doesn't take off leaves, nor does it remove catkins for the next year's crop. Even beneficial insects passed through the machine almost unharmed: praying mantis and walking sticks just walked away afterwards.

On the basis of these trials, Rutter is now recommending growers plant their hybrid hazel rows on 8' or 10' centers. The higher densities would be more profitable and would be dependent on machine harvesting.



photo credit Phil Rutter

*BEI Blueberry picker successfully harvests Nebraska bush hazels.*

Tissue culture cloning, which allows uniform fields and simplifies harvesting, has been successfully developed at the University of Nebraska, in the laboratories of Dr. Paul Read, with funding from BRC. Research continues there, and at the University of Minnesota, where Dr. Jeff Gillman's lab is investigating hybrid hazel's nutrient requirements, with funding from the University's Experiment in Rural Cooperation. "The list goes on. RC&D's in four states are helping," reports Rutter. "This new crop is well on its way to becoming a 'movement.' Farmers are sick to death of losing their shirts on corn and beans. And environmentally, the time is way past ripe. Imagine a crop, MORE productive than soybeans, where the fields are never plowed after establishment—and the land is covered 365 days a year. No soil erosion. None. A place for birds and animals to live. And you can actually expect to make an honest living! What a concept!"

Contact Philip Rutter, President/CEO, Badgersett Research Corporation, RR 1, Box 141, Canton MN 55922-9740. phone 507-743-8570. email: [woodyag@aol.com](mailto:woodyag@aol.com), web: [badgersett.com](http://badgersett.com). Δ

# Rocky Mountain Magic

## High, Dry, and Flourishing

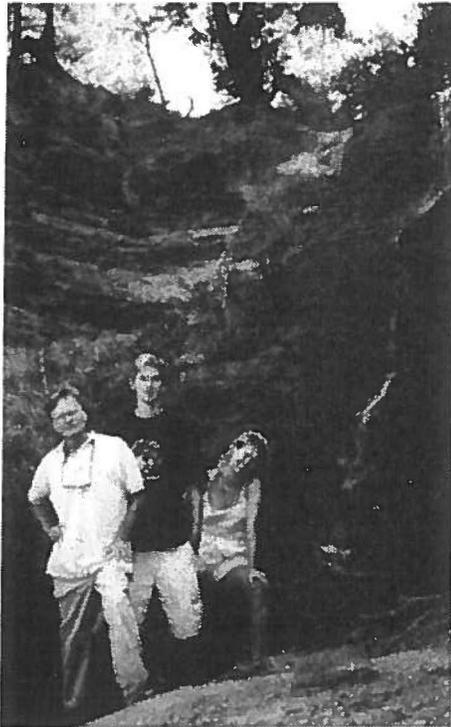
Peter Bane

**D**APPLIED light filters through the branches of scrub oak and juniper to fall on the old schoolbus bench where I sit just out of sight of the road. Stellar's jays make raucous calls as they swoop from upper branches of the Doug firs in the overstory. Then a SLAP! and splash punctuate the still afternoon air as a carp lunges for a bit of the fresh corn Jerome Osentowski has dropped in the shallows of the pond.

The jays are dancing around the edges of this island of abundance, glad for a bite to eat in a landscape burnt to dust by Colorado's worst drought in a century. And we are enjoying the afterglow of a successful permaculture course. Eighteen students have gone back to their homes in Boulder and Steamboat, Ft. Collins and Crestone, Hesperus, Loveland, and the Springs after two weeks of high energy learning here at the Central Rocky Mountain Permaculture Institute.

High above Basalt on Colorado's Western Slope, this little patch of ground has influence far beyond its size, for Jerome's modest garden has grown into an epicenter of Permaculture on the continent. Home of the oldest continuous teaching tradition in North America's far-flung Pc movement, CRMPI has spawned numerous permaculture enterprises and left a trail of graduates from Hawaii to Alberta to Patagonia to the rocky hills of New England and the avenues of Brooklyn.

Many of the hundreds of students and interns who've passed through this 1/3 acre fenced compound in a steep arroyo above the Frying Pan River have absorbed some of the essential thrift and practicality that marks Jerome's unfolding 25-year design.



*Jerome Osentowski (left) with 2002 Design Course students Stephen Butterfield and Stephanie Hunnicutt.*

### *Learning Home Economics*

Growing up on a Nebraska farm in the 40s and 50s, Jerome learned the economy of the land that had sustained American settlers for three hundred years, even as that economy began to vanish under the onslaught of chemical agriculture and transcontinental highways. With his family he hunted and trapped, raised poultry and rabbits, and put up all manner of garden produce for the long winters. Permaculture became a natural extension of this indigenous tradition.

Students at the Institute learn the 72-hour design curriculum, applying their new-found skills to elaborating parts of the forest garden, reclaiming collapsed hill slopes, or rebuilding one of the greenhouses that form a centerpiece to this mountain oasis. But they are also immersed in a simple daily routine that has sustained this place for a generation: animals are fed and watered, kitchen scraps move down the hill from rabbits to chickens to worms to fish, greenhouse doors are opened and closed, irrigation water from the ponds is pumped onto the trees. In the hours between classes there is time to forage for grapes or currants by the pond, or to catch a nap in the shade of young apricot trees.

### *Self-reliance by any other name*

The economy of this place has undergone continuous transformation as Jerome's design evolved, yet at every stage self-reliance was being demonstrated. The trays of sprouts for juice gave way to market vegetables that paid the bills: selected gourmet greens delivered fresh and vibrant to individual clients and local upscale restaurants—all long before agribiz discovered yuppie chow. Greenhouses and cloches were built to extend a tight growing season, and then became a model for greenhouse designs across the Colorado plateau. As the annuals succeeded to perennials a forest garden emerged, and nursery stock became first a surplus item, then a business that accompanied consulting.



*Students learn to handle and care for the animals.*

photo credits: Stephanie Hunnicutt

Through the non-profit CRMPI, Jerome took Permaculture and Forest Gardening into the local school system, and applied restoration techniques to a disused railway corridor trail in the greater Roaring Fork Valley that links Aspen with Glenwood Springs. The expertise gained there morphed into BioIslands as Basalt got its first golf course and Jerome stepped into a local political hiatus. Integrated Pest Management became the key to keeping fairways green with fewer chemicals as lessons learned in the garden spread through 280 acres of golf links and trout ponds at the Roaring Fork Club.

The changes haven't stopped either.

Four years of struggle with turf jockeys honed Jerome's skills in organic weed management, and more than 15 years as a teacher and designer helped him to lift his game. The result: He cut his teeth as a video producer on "Natural Controls for Noxious Weeds," now sending shock

waves through Colorado's chemical establishment. A series of public showings around the state has raised questions about the poisoning-as-usual land abuse practices of government agencies and their corporate bedfellows.

Next in the pipeline is a video on Forest Gardening, approaching completion, soon to be followed by a book, an industrial ecosystem for a Front Range brewery, and a new generation of Colorado Permaculture teachers.

Ironically, in light of our issue's question, "Where is Permaculture?" a look a CRMPI reveals a rich but tiny landscape on site and much greater impacts further afield. Yes, North American Permaculture has roots in this mountainside, but its flowering has happened in many places: a sister-city project in Nicaragua, the first Permaculture Design Course in Chile, a cross-Andean collaboration with Gaia Ecovillage in Argentina, and a series of garden workshops in the Bahamas. Nearer to home there are high altitude market garden operations in Telluride and Crestone. A long roster of promising students become illustrious teachers have gone on to seed the permaculture, ecovillage, green business, and organic agriculture movements across the continent.

### *Fruits of maturity*

Through his consulting business, Ecosystems Design, Jerome continues to help create edible landscape, golf course, and greenhouse designs throughout the Mountain West. The nursery offerings get more diverse every season as he finds more species adapted to the unique conditions on this roof of the continent. The perennial and self-reseeding flora of the

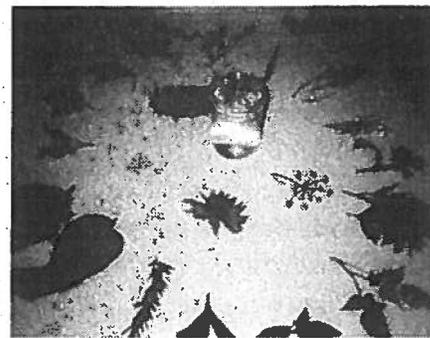
**Public showings of Jerome's video have raised questions about the poisoning-as-usual land abuse practices of government agencies and their corporate bedfellows.**

garden and greenhouses yield an increasingly essential pharmacopoeia of herbal foods and medicines which both sustain Jerome and which he tinctures for sale. The venerable teaching facility is getting a makeover in preparation for the 2003 Annual Design Course. And the greenhouses, once bursting with salad greens, have been

replanted to pawpaw and pomegranate, figs and bamboo, all apparently

flourishing under double layers of plastic despite outdoor winter temperatures well below 0°F. (-18°C.).

With the planting of nut trees on sunny terraces above the pond this past year, the 20-year successional wave of weeds, pioneers, and crown bearers has begun to crest on Basalt Mountain. The design will continue to ripen for decades, but the scope is clear. Endless transformation; always coming home. △



*Preparing to tincture a variety of herbs from the garden.*

*Peter Bane will lead the 17th Annual Permaculture Design Course at CRMPI Aug. 25-Sept. 6, 2003. For information about CRMPI programs and activities, as well as linked design services visit [www.crmpi.org](http://www.crmpi.org) or contact [jerome@crmip.org](mailto:jerome@crmip.org).*

## Rural Zimbabwe Gets a Boost from Permaculture

**Ancient Ways**, a non-profit organization [501(c)3], is dedicated to learning from and preserving traditional ways of indigenous peoples. In response to the generous cultural offering made by Zimbabwean teachers in bringing Shona music of the *imbira* and *marimba* to the United States, Jaia Beck of Oregon started the community Permaculture project, **Nhimbe for Progress**, to work with rural Zimbabweans in the Mhondoro region. The project has four main goals:

- 1) Improve Living Conditions by rebuilding collapsed huts destroyed by floods, building wells, toilets, and fuel efficient stoves, and providing medical assistance;
- 2) Promote Economic Security by offering business opportunity to poor rural Zimbabweans;
- 3) Improve Education by sponsoring children to attend school (fees are \$35/yr.), providing teaching materials to schools, and starting a pre-school program;
- 4) Assist the Needy by creating a community fund for elderly, infants, and orphans.

They are looking for individuals interested in working with them. See [www.ancient-ways.org](http://www.ancient-ways.org). △

# REVIEWS

## Write About It!

review by Arjuna da Silva

### THOMAS PAWLICK

#### *The Invisible Farm: The worldwide decline of farm news and agricultural journalism training*

Burnham Inc., Publishers.

Chicago, IL. 2001.

202 pp, paper. PRICE?

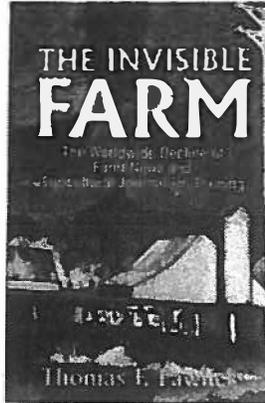
When, in 1973, a trailer load of highly toxic fire retardant was erroneously dumped, and (instead of the intended cow digestion enhancer) mixed into cattle feed at the largest agricultural feed plant in Michigan, then sold to farmers all over the state, thousands of farm animals died or were slaughtered and pollution affecting hundreds of farms spread to virtually every Michigan user of milk or other farm products. Despite the fact that residents were estimated to have absorbed measurable levels of "severe toxicity," the media response was practically non-existent! Months passed before

a major state newspaper carried the story, and it took almost four years before in-depth coverage of the catastrophe appeared (in the *Detroit Free Press*).

So begins Thomas Pawlick's dissertation on the history and consequences of the dying away of journalistic coverage of farm and agricultural issues and its tragic results:

vulnerable consumers in the dark about the viability of their food sources; and an increasingly isolated breed of small farmers out of touch with vital information, potential solutions, and, perhaps most importantly, one another. Focusing on North America, the former Soviet bloc and Africa, the author offers a comprehensive analysis of how urban-focused mass culture and media have lost connection to this essential area of life.

Quoting Mollison, Pawlick traces this irresponsible trend, addressing the clash between sustainable and industrial agriculture.



He also cites examples of major policy shifts, from recent plans to reclaim wetlands in the Netherlands to the sharp curtailing of sheep grazing in New Zealand, neither of which has received much coverage. Did you know that Iowa has initiated a comprehensive program of agricultural education for school children? Its focus includes getting the word out through print media and radio.

Schools of journalism and local and particularly regional news media have increasingly ignored farm and agricultural reporting, so that if one would like to become an agricultural journalist, both training and employment are practically beyond reach. Without individual and institutional efforts to reverse this decline, the possibility of an informed and less endangered humanity seems unlikely. Is there hope? Perhaps a correspondence course for agricultural reporters could be developed. Coalitions like the one in Iowa could be spread to other underserved areas and focus on inroads to media coverage. Pawlick doesn't take on the realm of solutions; his object is to clarify the problem and put out a plea for more research.

But for concerned, literate folks like you, perhaps the most direct solution is to start researching and writing (and speaking) about local farming and agriculture in your area, and submit your work to every possible venue you can find. (Don't forget the Internet!)  $\Delta$

17th Annual

## CRMPI Design Course

August 25 - September 5, 2003

in the Roaring Fork Valley

Basalt, Colorado

with

Jerome Osentowski

Peter Bane

John Cruickshank

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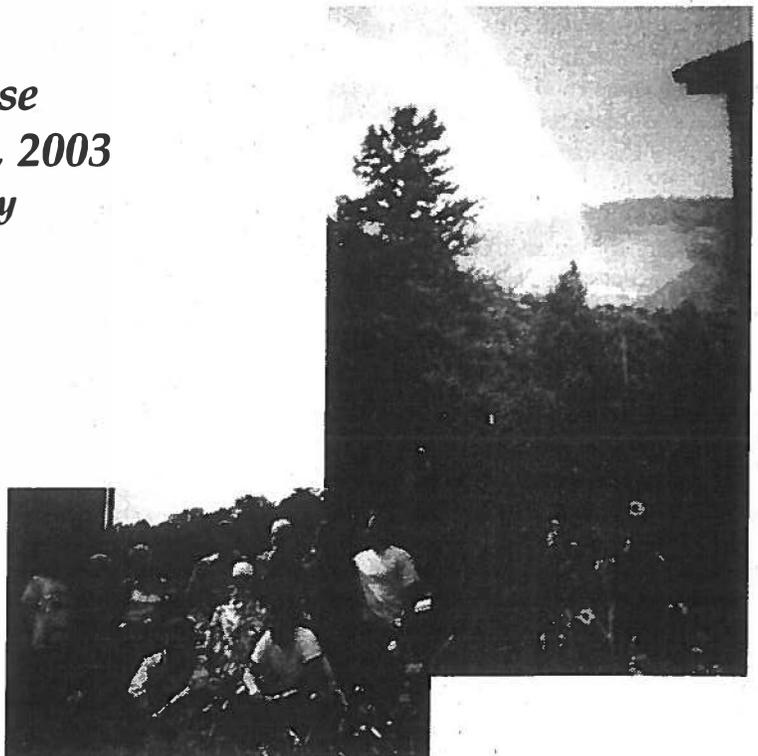
\$50/person discount for couples

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jerome@crmpi.org

P.O. Box 631

Basalt, CO 81621



## Place as Destiny review by Peter Bane

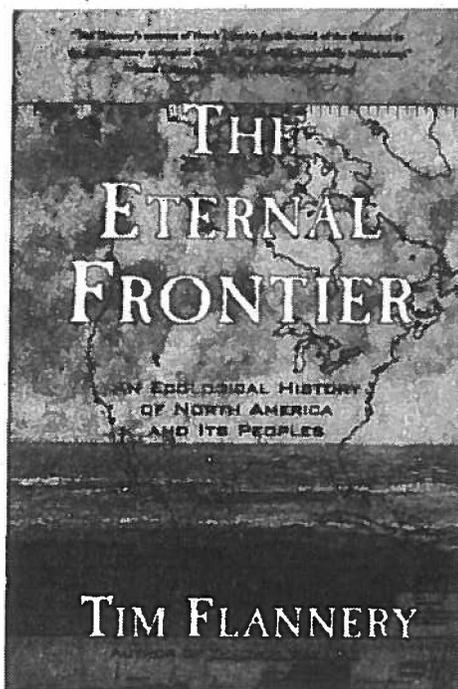
TIM FLANNERY

*The Eternal Frontier*

*An ecological history of North America and its peoples*

Grove Press, New York, 2001.

\$16.00 paper. 404pp with 4 maps + 6 color plates.



This odd and fascinating book essays the bold notion that our continent has an identity: one which shapes the evolution of the species and societies that arise here or arrive from elsewhere. I found it full of big ideas of great relevance to the study of permaculture.

Flannery is an Australian paleontologist and the author of a dozen other books including an ecological history of his home continent. He writes in an engaging style, and ranges over an immense terrain in time, space, and concept, in the end raising more questions than he answers.

The book's title carries one its keenest themes: that North America has been a frontier world for much of its 65-million year history as a coherent land mass. The subtle question implied in the title becomes apparent only near the end of the author's exposition when he hazards a forward guess at the continent's future.

That subtle question of course is the pre-eminent issue facing humanity today: will we adapt our social and economic systems to life on a limited planet—one with a rapidly

degrading resource base, or will we despoil it all before we (humans) go extinct? The answer hinges on whether the North American "frontier" is perceived to be closed or remains in some manner "open" or advancing. But whatever the answer, the question is of supreme importance to all of us and of particular interest to proponents of ecological design.

Flannery surveys the fossil record of North America (uniquely rich, for Americans have led the world in this science) from the time of impact of the great asteroid that struck the earth just north of the Yucatan peninsula and brought the age of dinosaurs to an end 65 million years ago. In the shock wave and fires that ensued virtually all forms of terrestrial life in North America below the Arctic Circle were destroyed. We can't even imagine a cataclysm of this scale—one which carbonized virtually all the plant biomass in the Northern Hemisphere—but the 1883 explosion of Krakatoa looks to have been a mere firecracker by comparison.

That foray into deep time reminds us that the world we look out upon today reveals but a shadow of the immense fecundity and creativity that have played across the face of this dramatic land mass.

Though often and for lengthy periods isolated from its neighbors, North America has been in repeated land contact with Eurasia, Europe, and South America (the isthmus of Darien has only connected the two Americas for a little under 3 million years). Each time a land bridge opened, innumerable creatures took advantage of access to a rich and often "empty" landscape, occupying niches not filled by the natives. Many of those "natives" had themselves evolved from earlier immigrants.

In general, and especially for the second half of its life (the past 32 million years) migration through the continent has been predominately from north to south—that is, from Eurasia to North America, and from North America to South America. This reflects the ecological "law" that a larger landmass will support greater diversity, and therefore its creatures hold evolutionary advantage over those of smaller land masses. Witness the severe rates of extinction on islands of recent settlement (Hawaii, New Zealand); or the post-Columbian spread of Eurasian weeds across North America.

The migrations were not always one-sided though, for North America contributed several important animal lineages to the world: among them the dog, the horse, and the camel. These wily and adaptable creatures succeeded in bucking the tide of immigration and were able to secure niches in harsh or marginal environments of the Old World, just as the armadillo made its way north against the tide of horses, cats, elephants, and other big animals expanding from North to South America.

I found great intellectual pleasure in learning that North America's climatic regime is unique among the regions of the world, as well as how tectonic movements have altered global climate over the ages, greatly affecting the fate of life's many forms. Of significant and ominous import for this continent is its propensity to exaggerate small fluctuations in global temperature. Flannery calls this effect the "climatic trumpet," for the absence of east-west mountain ranges anywhere between the Arctic and the Gulf of Mexico allows huge air masses to swing the climate to dramatic extremes, not only from summer to winter, but with accelerating effects in times of global climate shift. The North American ice sheets, for instance, during the recent glacial periods, exceeded in volume the total ice masses of Antarctica!

Linked to this unique climatic regime are such distinctive North American phenomena as the brightly colored autumn displays of the deciduous forest, nowhere on earth more vivid than in eastern N. America, and the vast flyways of migratory birds which come to breed and fatten on the sudden surge of summer growth in northern regions before returning to their South and Central American jungle homes.

Flannery's survey of fossils proceeds to an overview of archaeology and history of the New World. The cross-disciplinary sweep gives this book its stimulating syncretic character, and at the same time challenges the capacity of this reviewer to sort out its intellectual complexity. We go from considering whether elephants ought to be reintroduced to the American West (and you thought wolves were a big step!) to ruminations on Europe as a land of retreating losers, to the role of religious belief in mirroring and perhaps fulfilling the ecological destiny of the continent. Does the Puritan vision of an elect of God, arriving in a depraved new land in which all manner of bestiality is possible—a land which requires purification by scourging, not reflect the ecological processes followed by earlier invasions? A few "accidentally chosen" but distinctive founders (Clovis hunters—they had superb spearpoints but no other art) arrive in a vast new wilderness of immense fertility, find huge herds of beasts (mastodons and mammoths), and in a very short time kill them all? And what does all this portend for the world as a North American superpower stands poised to wreak vengeance on the all-time ecological superpower, Eurasia? Do we see an extension of the North American frontier through the expansion of global capitalism, and as that has begun to falter, through military occupation of the world's greatest continent?

As an ecologist, Flannery addresses a wide range of questions and audiences with this

book, so much so that at times his narrative seems a bit glib. I found myself slightly skeptical at his gloss of post-glacial history and pre-history, wondering if important facts weren't being neglected for the sake of a preferred conclusion. Yet on the whole this vast synthesis: of paleontology, zoogeography, ecology, and social history, which might have been overreaching from a poorer or more arrogant writer, works. The test of any theory, of course, is its predictive ability, and, without knowing exactly when the last lines of this 2001 text were penned and sent to press, I suggest that the book's opening chapter and sentence paint the stage on which it sets itself. "Ground Zero" reads the first chapter head, followed by "The death-dealing visitor appeared in the skies 65 million years ago above a planet that had long rested in contented stability." Perhaps this is good marketing by

the author and his savvy publisher to a post-9/11 audience, or just perhaps this book got the boost of a lifetime in a set of world-changing current events that echo its principal ideas and themes to a "T."

Readers are left at the end with a tremendous heritage of learning and the unanswered question, "Is the frontier really closed?" Clearly the exhaustion of North America's natural capital has been accelerating: from the single-minded destruction of the megafauna (elephants and camels, etc.) by elegant spearpoint in a short three centuries following the retreat of the last ice sheets; through the wiping out of the vast herds, flocks, and schools of their keystone successors—the bison, passenger pigeon, and salmon by the European settlers in a similar interval; to the present day poisoning and devastation of North America's deepest

reservoirs of diversity—its fresh waters. We cannot help but agree with Flannery that this is "a history of ruthless environmental exploitation, the audacity and imbecility of which leaves one gasping for breath." Must it go on? Can it be stopped?

The third phase of immigration, one to which all pre-human invaders were subject, is adaptation. By comparison with the devastation wrought by humans in North America, other faunal newcomers seem not to have eliminated the natives, but rather filled often enormous ecological vacuums. Flannery offers his own short, surprising, and hopeful prognosis for a future North America. Whether you agree or disagree, I think you'll find this remarkable story a powerful introduction to the process of "coming home to place," something we present and future North Americans have got to do. Δ

## Santa Fe Style—

# PERMACULTURE GOES SUBURBAN

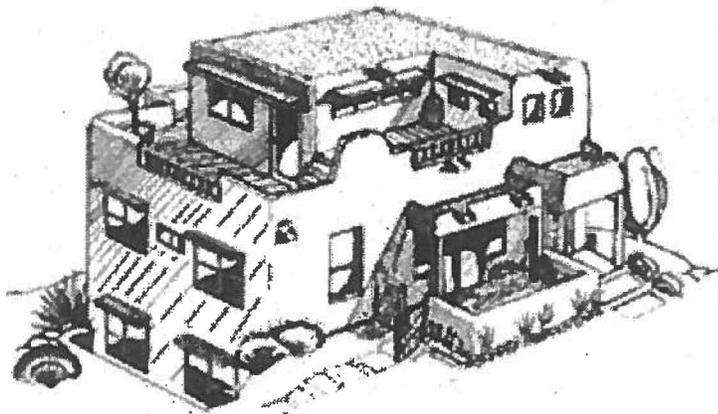
Brian Skeele

I'VE BEEN dreaming of being a developer for years, voraciously reading anything that could be an answer to the prayer, "What else can we do besides sprawl?"

I've found a vision that inspires me, a vision of a more abundant lifestyle, pieced together from ideas and peoples' experiences from all over the planet.

I imagined living in this kind of neighborhood, that we'd have more beauty, a more pedestrian, mass transit oriented, less automotive, less consumptive lifestyle, and more open space. I call it "mixed use, mixed income neighborhoods with plazas, lifetime learning centers, and open space, everywhere." In my vision, woodlands and agriculture are more integrated into our everyday lives.

I've kept the vision alive attending meetings, taking classes, writing letters to the editor, etc., and finally I got sick and tired of talking about it. So when 2.53 acres became available in the growing southwest corridor of Santa Fe, I decided it was time for me to bring those good ideas for a higher quality of life into fruition. Small tracts, such as the one I secured, were designed to create a variety of "products" and to help small time builders



One of four Valle Cielo models. Energy conserving, high efficiency design supports a lower consumptive lifestyle.

(like myself) become developers. Because of the arroyos on two sides of the property and the wonderful sky vistas, I chose the name Valle Cielo.

### *Residential compounds, a timeless way of living*

I also designed the site using a timeless Santa Fe pattern, the Residential Compound. Two, three, or four homes are loosely clustered around a pedestrian-oriented, common courtyard, creating a private area for the use and enjoyment of the surrounding neighbors. My focus group

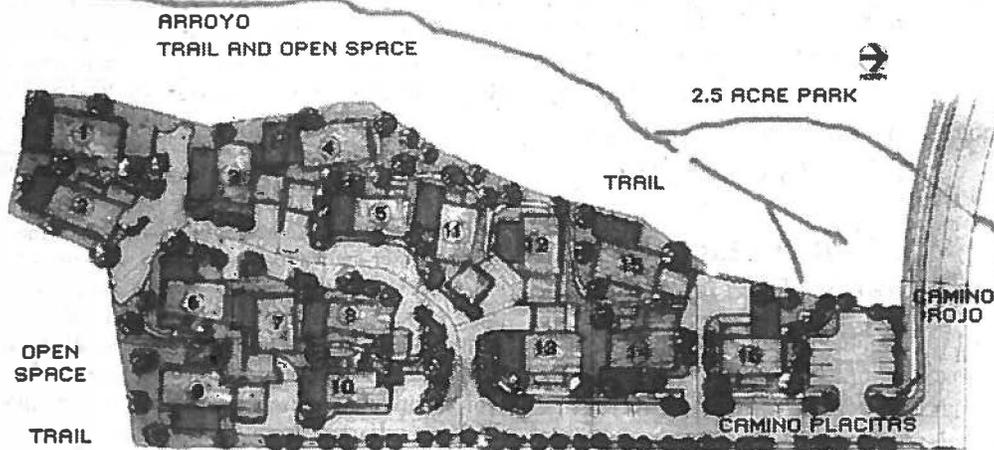
preferred this layout of lots, for the non-linear beauty and complexity of the resulting site plan. Each courtyard's landscaping is to be installed and maintained by the surrounding homeowners, thus the neighborhood should attract folks with an attitude of cooperation.

### *Get good help*

In order to guide the vision to a faithful realization I brought good help onto my advisory team.

Joel Glanzberg is a Permaculture designer and teacher. His company, Environmental Contexts, is located in Santa Fe.

Michael Melendrez is a plant scientist and founder of the Arboretum Tome, the largest private collection of native trees in



*The site plan for Valle Cielo with its well-connected flow of homes.*

homeowners. The entire landscape package can be installed as a turnkey option, or because we priced each layer separately, an owner can do the installation as their schedule, pocketbook, and drought conditions permit.

Using the idea of a labor pool in Valle Cielo, neighbors could work on their own yards, or work on a neighbors' yard, installing fencing, landscaping with rock, or plantings, etc, sharing experience and labor. Guided by the Manual, neighbors don't have to know how to do permaculture. They can learn as they grow!

the state of New Mexico and one of the largest collections of oak species in the U.S. The Arboretum Tome and a production nursery (Trees That Please) are located in Los Lunas.

Melissa McDonald and Nate Downey operate Santa Fe Permaculture, Inc., a full service Permaculture design company.

Greg Nausbaum owns Camino de Paz Farm in Santa Cruz, NM and runs Acqua Via Irrigation and Landscaping, a Permaculture-based, full service landscaping company.

Fred Werth at Tall Grass Restoration pioneers innovative restoration of southwestern native grasslands.

I had the curbs cut to allow rain runoff from the street to flow into the yards to water the landscaping. Joel Glanzberg, my Permaculture consultant, has designed the plantings so they are watered by roof runoff directed into pumice-filled french drains. Now we're working with my plumber and the landscaper(s), on how to incorporate greywater, if and when it becomes a legal option. (Apparently the state recommending committee on greywater is six months to one year away from releasing their guidelines.) Because the plumbing fixtures in the homes are close to each other, the plumber can separate the black- and greywater drain lines for only \$500. The greywater line would then flow through the yard and loop back into the blackwater line, creating overflow protection, so greywater will never get to the soil surface. It may sound like we know what we're doing, but the devil is in the details, and until the state releases their guidelines... Check Valle Cielo's web site to follow our progress.

### ***Landscaping, a little or a lot***

Other challenges have been to figure out what to plant, based on the needs of the homeowners, and how to make the installation fit their budgets. We designed for water harvesting, low maintenance, fruits, vegetables, and flowers (and support companion plants), all pretty universal needs. Each home comes with a swaled yard—to increase groundwater recharge—and an Owner's Landscape Manual. The Manual includes a plant list of suggested species and a somewhat generalized stacked landscape design, based on *canale* (downspout) locations, the layers of plantings, and solar orientation (identifying microclimates). Also included are installation and maintenance instructions to guide

### ***A good idea that didn't work***

Lower level walkouts would work well on the site, as the edges drop off on two sides. The daylight basement bids came in more expensive than anticipated. Basements are standard and less expensive in the Midwest (tornadoes) and in northern climates, as 4'- to 6'-deep footings are required to get below frost line, whereas our footings, in Santa Fe, only have to be 2' deep. A home with a lower level was appraised at the top of the neighborhood real estate market, and my investors balked at building an expensive and untested model home. Still, the walkout is an option that could be included in any of the houses.

### ***Floor plans for flexibility***

We're offering four floor plans at Valle Cielo, and they all have standard features that support a sustainable future. I put money into energy conservation, so the homes have "good bones." Wet sprayed cellulose insulation, a high efficiency boiler for radiant heat and domestic hot water, low "E" windows, a hot water recirculating loop for "instant on" hot water, and low-flow plumbing fixtures all support a lower consumptive lifestyle and use less fossil fuel. The immediate payoff comes with lower monthly utility bills. Tight construction and a low-flow exhaust fan provide healthier indoor air quality. One of the models, the Casa Placitas, is a 4-bed, 2-bath home that has a flexible floor plan and an optional second kitchen. By closing off a couple of passageways, and installing the second kitchen, the home becomes a 2-bed, 1-bath home plus an efficiency rental. With a rental income, or with tenants-in-common ownership, this model becomes quite affordable. Its adaptable floor plan can meet the owners' changing needs over the years, expanding as the family gets larger or creating supplemental income when the owner is changing careers.

Each two-story home has a second floor terrace for enjoying the amazing New Mexico sky vistas. Each terrace is plumbed for drip irrigated container planters and can become a wonderful outdoor living space with views, a place to get away from it all. Outdoor living is also enhanced with doorways that open into private yards with open trellis portals (porches that double as grape

arbors). Window seats in the living areas, with storage below, convert to guest beds.

### *Cohousing, sharing costs*

Valle Cielo could become cohousing. A cohousing neighborhood has a common house with a large kitchen and dining facility that will accommodate the whole community. Every home has its own kitchen, but residents can also choose to participate in a shared evening meal. Each member is required to cook in rotation, and each evening's costs are split between those dining. Using this popular strategy, neighbors create time for themselves, typically twice a week, as the shopping, prep, cooking, and cleanup is handled by someone else seven out of eight days a month. A common house has been designed as an option, should the neighborhood decide to take advantage. By building a two-story house with a full residential suite upstairs, the cost for ground level common house space could be split between the upstairs resident and the neighborhood association. I'm keeping a particular lot open for this option. In this way, the neighborhood doesn't have to make the determination until later.

### *A new neighborhood takes shape*

My hope is that this neighborhood can become not only home, but market and pharmacy for its future owners. As new strategies in water recycling and energy production come to the market, Valle Cielo could become a living laboratory and demonstration site for a more sustainable and empowering "suburban" lifestyle. I think we've made a good use of a small piece of land, enriching the community by designing a multi-functional, energy-conserving settlement which is ready for the future.

Valle Cielo's utilities are all in, the curb and gutter and pavement are completed, and homes are scheduled to break ground in October, 2002. △

*Brian Skeele grew up on the coast of California, watching development spread far and wide. He's been a general contractor in New Mexico for 14 years. For more information go to [www.vallecielo.com](http://www.vallecielo.com) or call 505-450-2407. Michael Melendrez's website is [www.treesthatplease.web.com](http://www.treesthatplease.web.com).*

# REVIEWS

## **A Permaculture Handbook for the Four Corners**

Review by Cathy Holt

LISA RAYNER

### *Growing Food in the Southwest Mountains*

*A Permaculture approach to home gardening above 6500 feet in Arizona, New Mexico, southern Colorado and southern Utah*

Flagstaff Tea Party, 2002.

128pp +viii. paper. illus. \$12.95.

Have you ever tried to grow fruits and vegetables in a high-altitude, semi-arid climate? It can be done with much greater success, says Rayner, by incorporating permaculture principles such as conservation of water and heat, sheltering crops from sun and wind, and soil-building. She gives a list of cool season and warm season plants adapted to the climate, with ratings for drought tolerance, cold tolerance, altitude range, and sun-shade needs. Also useful are a planting calendar and tips on seed starting and saving, composting, and pest control strategies. Clear illustrations by professional nature artist Zachary Zdinak make concepts such as plant guilds and thermal belts easy to understand.

Rayner emphasizes learning from nature, and from the Hopi and Quechua peoples who farmed successfully under challenging conditions in this region. She advocates biodiversity, which she defines as a high number of meaningful reciprocal relationships between species, leading to greater stability and resilience. Here are a few of her permaculture suggestions:

- Add thermal mass such as rocks, masonry, or small ponds near fruit trees to buffer the extremes of cold nights and warm days, protecting them from excessive cold and also preventing early blossoming. Piles of rocks collect moisture and drip it into the soil.
- To conserve water, try "vertical mulching": narrow trenches filled with rocks or dried stalks promote water flow down to the root zone.
- Tomatoes and peppers, which are usually annuals, can be grown as perennials in a solar-heated greenhouse.

This small book is full of well selected material. It should be considered a permaculture primer for dwellers of this bioregion. Besides the valuable material noted above, it introduces the basics of sector analysis, sun angles (which so greatly affect heat gain and microclimate in the Southwest), and shows how to retain water with swales, gabions, and other structures. There is a brief but helpful noting of insects and birds of the area. An extensive glossary describes lesser-known food plants, and a generous reference section lists seed and nursery sources, books and magazines, garden suppliers, botanical gardens, public agencies, and horticultural and permaculture institutes. It also provides an essential annotated bibliography.

If every region in North America had a handbook like this, we would be seven leagues ahead of where we now are in Permaculture



education. The author and publishers are to be commended for creating a first-class resource. △

## **New Zealand Permaculture Vocational Training Expands**

Male co-worker wanted to join PLANET Organic team for 2003, and possibly beyond. PLANET Organic is a year-long advanced vocational training in permaculture with a community development emphasis, using the bioregion as a learning campus (see website <http://earthcare.nelson.org.nz>). It began February, 2002, with 21 students from all over the world.

The person needs to be competent and experienced in permaculture design and community development, preferably having worked with indigenous people in "developing countries"; be able to tutor interactively and hands-on, and do some project co-ordination. Also must be willing to live near ocean, mountain, and forest, in rural Golden Bay, Aotearoa/New Zealand! If you are interested, contact: Robina McCurdy, Trustee, Earthcare Education Aotearoa. [robina@win.co.nz](mailto:robina@win.co.nz). (We will obtain work permit). △

## Making a Splash review by Peter Bane

HEIDI SNEL & MALCOLM  
ST. JULIAN BOWN

### *Aquaculture:*

#### *The synergy of land and water*

Crystal Lake Video. Hagelberg, Germany. 2002.  
30 min. VHS. NTSC. \$25.00.

This second permaculture video from German producers Crystal Lake Video focuses on the water gardens created by farmer-entrepreneur Sepp Holzer in Austria's Lungau valley. The videography is even more impressive than that in their fine first film on the subject, *Farming with Nature*. This video shows more of the creation process of a landscape rich with terraces and ponds throughout. Its title, however, may be slightly

showing to audiences for whom Permaculture is a novelty. The narrative provides a good basic understanding of water's functions as well as insights into the design and development of a complex, integrated system. The narration is clear and production values are high.

In this video we hear more of Holzer's own words (in translation), but the major part of the script is provided by British-born narrator St. Julian Bown.

What Holzer has accomplished in this unpromising environment (cold, steep, high-altitude, remote), and what this film documents is truly impressive; a great deal of his success can be attributed to the determined and extensive use of water: a reminder to Permaculture designers of the power of this life-giving element, even in a naturally humid environment. If you doubted Mollison's injunction to put 15-20% of every system into water, you need to see this film. It will make you a believer. △

## As If People Mattered review by Lee Warren

ANDREA

OPPENHEIMER DEAN &  
TIMOTHY HURSLEY

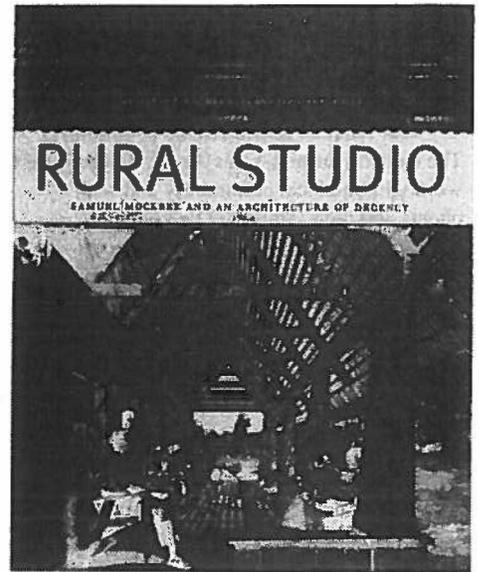
### *Rural Studio: Samuel Mockbee and an architecture of decency*

Princeton Architectural Press, NY. 2002.  
186pp+vi. paper. color photographs. \$30.00.

Rural Studio is about architecture, renegade education, and morality: architecture for common folk, education not just about getting the higher paying job, but to make life better, and morality for a life where people actually care about each other and the good of the whole really matters.

Rural Studio the book, is about the passions and the work of a pioneer architect and his students who form an educational extension of Auburn University called Rural Studio. The students, who spend semesters and full years in rural, poor Hale County, Alabama, design and build low-cost buildings for local clients as part of their work toward an architectural degree. The project, which started as a one-year experiment and has been going on for a decade, is the brainchild of Samuel Mockbee.

Mockbee, a fifth generation southerner and a professional who for many years owned his own architectural firm, created what seems to be an anomaly in academia: education that gets students deeply involved in the real world at the same time that it serves communities, and which on top of it all, takes a revolutionary step towards restructuring society.



The book gives a short history of the Rural Studio project as well as background about the rural southern region in which it operates. It then goes into each building project completed by the Rural Studio students over the last ten years (about one a year) in a short essayed format which gives glimpses into the project, the lives of the clients, and into the groups' consistent ability to weave usefulness, resourcefulness, and beauty together into remarkable structures. The beautifully photographed essays feature both inside and outside details of the Rural Studio buildings, the clients, and the landscape. The photographs are arresting even if their superior quality and profound lighting tend to soften the sense of poverty that is so present in this part of the world.

The buildings themselves are interesting studies in what Mockbee calls "contemporary modernism grounded in southern culture." Mockbee and his group have managed to pull off a marriage of often discordant values: housing with "spirit," reusing scavenged building materials, low-budget construction, and an honoring of the clients' individual styles. As well, the students at Rural Studio have integrated themselves over these years so graciously into the lives of the locals that one doesn't get the feeling of peering in from above. A sense of collaboration and of deep respect comes through the pages of the book.

For the natural building enthusiast there is much to be found here: a community center with rammed earth walls and 80 car windshields in place of window glass; a chapel made of rammed earth tires and heavy pine timbers with a striking roof line, and a students pod of baled corrugated cardboard. Of special interest is the evidence of an architecture that deeply integrates the needs of Hale County's rural southern inhabitants: sweeping porches, airy



misleading, as the narrative provides little technical information about fish or aquatic plant culture or management. It might be better understood as an introduction to the uses and potential of water in the landscape.

Holzer's work is extraordinarily beautiful, and this film takes good advantage of the artistry displayed on the farm. Aerial shots complement many good closeups and even underwater segments. Water's use to create microclimate, generate energy, nurture plants, and sustain aquatic life is well displayed here. The story is inspiring and will make a good

ventilated rooms, rainwater catchment designs.

An equally important piece of this book and of Mockbee's philosophy is the message that education should expand itself to include "a moral sense of service to the community." The students manifest this service through their work with the local community and with clients and their families. The young architecture students are also dealing directly with real world design issues, scavenging building materials, experimenting, and actually working on the building construction themselves, as well as getting direct experience working in

teams, and living cooperatively. The best part of all is that they are coming out of their cloistered university lives of middle class privilege to experience not the statistics of poverty but the actual human side of poverty.

Rural Studio is a political statement as much as it is a book about architecture and natural building.

More than 400 students have lived through Rural Studio. The book is worth experiencing as well. If for nothing else but inspiration. The authors mention often that Mockbee is a MacArthur "genius grant" recipient and winner

of many architectural awards. It seems though that Mockbee is nothing short of a cultural hero. In counterpoint to the current climate of corporate greed and architecture beholden to wealth and status, Mockbee gave up the quest for stardom in exchange for deep service. May his work continue to inspire students and may his morality be contagious enough to spread to other professions in need of the sword of service. May it radicalize all sorts and parts of us out of our complacency and our "slave to the dollar" mentality towards a service of beauty, of humanity, and most of all, of decency. Δ

## Teaching Stories—

# You Can Lead a Rabbit to Water...

Richard Herman

**T**HE MOST IMPORTANT discoveries of my life have occurred when things just found me. It's been just those times when everything grasps the concept—mind, heart, and spirit. Permaculture found me this way—while I was watering rabbits in Kenya.

Permaculture's about following nature's lead and using intelligence instead of hard work to get the job done. And one of the most important jobs in any community is getting clean water to drink. This is especially important in poor countries and even more so in dry parts of the world. And since clean drinking water affects infant mortality and health, a lot of aid agencies focus a lot of attention on it.

But that was all far from my mind when a few years ago I was working in a Kenyan village on a program to boost nutrition through raising small animals.

The village man I was working with, Julian, opened the hutch and there sat a robust rabbit. Now, I had been around rabbits all my life and thought I knew what they needed. Yet here was a caged rabbit with no sign of water in its cage. I asked Julian, somewhat in alarm, "where is the water for this rabbit?" He replied, "this rabbit has never had a drink of water in its life." I didn't notice a smile or any sign of teasing, but still I couldn't believe it to be true. "This can't be," I thought, and set about to remedy the situation.

I went to find something to hold water and put it in the rabbit's hutch. The first day went by, and there was no water



missing. Day two and still none gone. I thought the others were having fun with me by adding water when I wasn't looking. I thought I'd figure them out so I put an indicator in the door to let me know if someone opened it. By the third day, still no water was missing, and it was clear that no one was opening the hutch besides me. By day four I took the water out and decided that Julian hadn't been kidding.

Later I learned the secret. Julian and I would take a wheelbarrow and machete to gather weeds. We would pack the hutches as full as possible with the gathered weeds. If the rabbit wanted any space at all she would have to start eating. And eat she did.

It was then that I discovered the concept of biological water. It's a wonderful method of taking undrinkable

water, like much found in Kenya, and letting the plants filter it. I later went back to Africa through the Peace Corps and applied this same concept with people. With what I had learned watering rabbits, it was easy encouraging people to get more of their bodies' need for water through melons and fruit.

What a treasure to find Permaculture not just in books and courses but in actual practical use. Animals can teach us. Who would have thought that through taking care of rabbits I would learn a valuable, transferable skill as well as a design concept I will never forget? Δ

*Richard Herman lives in Elkland, MO, and has worked extensively overseas with the Peace Corps and other agencies.*

*Sounding the note for a new permaculture mantra*

# Beauty: A Key to Sustainability

Will Hooker

**J**OE POLAISCHER and Trish Allen, who run Rainbow Valley Farm north of Auckland, New Zealand, may be the best Permaculture practitioners in the world. Yet how can there be such, when the essence of Permaculture (Pc) design is to create systems unique to each site?

I suggest the best because they demonstrate Pc ethics with good design in a way that can't be dismissed: the beauty of this place wins over everyone who sees it.

Whether we like or recoil from the prospect, the vast majority of the world's people live in large urban centers where long-distance trade and the consumption of huge quantities of food, fiber, minerals, and energy are standard practices. If these urban consumers could be converted to the tenets of cyclical thinking, zero waste, and taking personal responsibility for their environmental footprints, the prospects for human survival to the end of this century would greatly improve. So how can we, who understand its importance, "sell" this idea? I believe one of the most effective ways we can win allegiance to Permaculture ethics is to employ the same strategy used to market so much else in the modern world: we must wrap the product in an allure of beauty. The beauty of Joe and Trish's farm is perhaps its most memorable feature, and one that sets it apart from so many other Permaculture sites I visited in a year spent traveling round the world.

Rainbow Valley Farm is a 50-acre holding, with 20 acres under active management. Since 1988, Joe and Trish have worked at evolving this homestead, designed using Permaculture principles, and managed using the methodologies of bio-dynamic agriculture. They raise 95% of their own food, generate all of their own electricity using solar panels, and heat and cook with wood harvested on their own land. Because of Joe's passion for appropriate technology, they use a wide variety of carefully acquired hand tools for much of their work (including a foot-pedaled lathe). One of the most powerful models this couple offers to the world is the example of their clean and healthy home: harming neither the earth nor themselves, it is the most non-toxic house the author has ever encountered. Made primarily of natural materials, it features a living roof, and uses "demand" switches for the power (which turn the current off back at the junction box rather than at the outlets, thus eliminating electromagnetic radiation).

Buying a piece of land that, like much of NZ, had been clear-cut and burned about 90 years ago, then grazed by sheep and cattle, Joe and Trish started with a landscape dominated by gorse, grass, and some stands of exotic conifers. Since then, they have cleared much of the gorse, planting in its place more than 800 fruit trees. In addition they have built their house and an adjacent chicken- (chook) heated greenhouse, as well as a potting gazebo and a shade nursery, and have recently added, just outside the



*Beautiful Zone 1 gardems can start close in, both above, on the living roof, and below, virtually at the doorstep.*

back door, an earth-covered food storage "cellar" next to the cob bread and pizza oven.

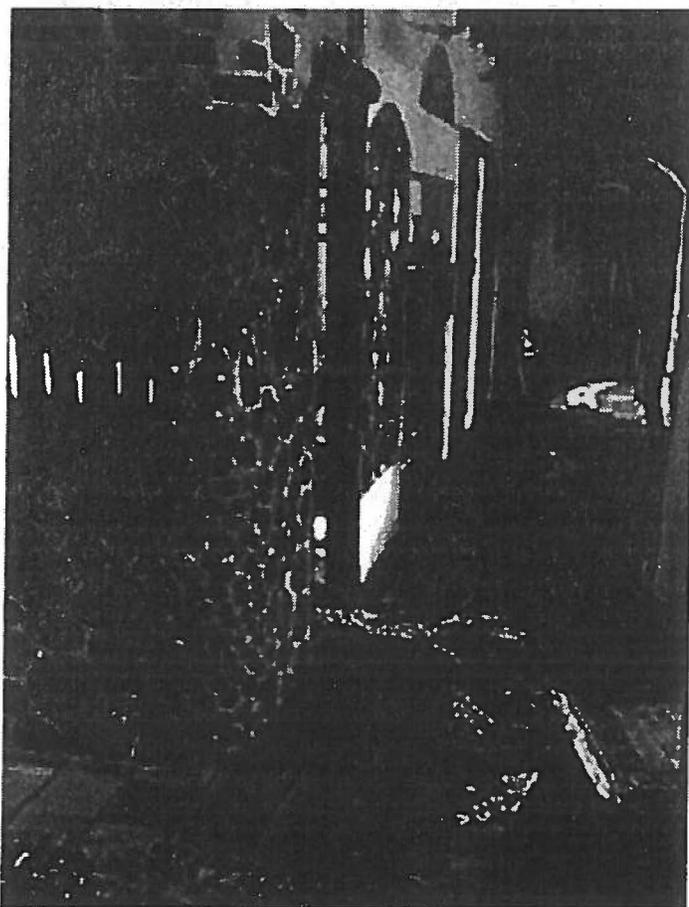
The farm is notable not only for the industry which its proprietors have shown, but for the practical ingenuity of their design. Integrated food systems begin directly in front of the house (Zone 1), with a wonderful vegetable garden patrolled by their dogs against the free-ranging geese. Here, nitrogen and phosphate is brought in by pigeons instead, which alight on a movable perch, and make their deposits on returning to the dovecote.

There's a virtual parade of visitors through Rainbow Valley, and their needs have been considered in the design as well. A production garden located near the camping area both supplies and is worked by students who take the Permaculture courses offered here, while subtropical fruits (bananas, papayas, etc.) are stacked (bearing in vertical layers) near the housing for WWOOFers (Willing Workers On Organic Farms, a regular stream of working travelers). Composting toilets ensure that humanure from both residents and visitors returns to the soil from which their food came. Joe and Trish employ greywater ponds to recycle household nutrient, practice aquaculture, and keep domesticated cows, sheep, pigs, chickens, ducks, Guinea hens, quail, peacocks, and cats (in addition to the geese, dogs, and pigeons). Frogs, toads, rabbits, hedgehogs, a wide variety of

birds, and the noxious and ever-present opossums are among the wild energies sharing this land.

### *Showing the spirit of permanent culture*

With every function and in every detail, Joe, who is an architect and cabinet maker, and Trish, who is a tile artist, pay great attention to all the classic attributes of design and beauty—line, form, color, texture, etc. This is everywhere evident, from the sunburst pattern that decorates the barn door near the intern housing, to the colored tile on the walk to the main house. Pots and sculpture are carefully placed throughout the landscape, each serving a purpose, the whole ensemble an inspiration. This devotion is most obvious in their house, with its river of colored tiles flowing down the halls, the adobe and cordwood walls



*A river of color flows through the adobe and cordwood house at Rainbow Valley Farm.*

bejewelled with inset wine bottles, and even the radiating pattern of the metal backing their wood stove beautifully blending form with function.

A commitment to beauty seems especially important for Permaculture at this time in its development. While the Pc teaches the combining and stacking of functions, too many of its students are both inexperienced and divorced from traditions: this often results in a fuzzy-edged aesthetic that is not yet appealing to those cultures steeped in known geometries and crisp edges—many urban dwellers among them. Joe Polaischer stated that from

having lived in developing countries, where day-to-day activity is much closer to Nature, he knew he could be comfortable with a less tidy home place. But, since he and Trish run an educational facility modelling Permaculture for others, he feels that it is

critical to maintain an extremely neat holding, accentuating beauty and not putting off those from more “conventional” settings. They encourage their visitors and students to realize that they too can live sustainable lives, filled with abundance yet respectful of the environment. The artful couple show that this is possible not through privation, but in comfort, even surrounded with the luxury of astounding beauty.

This could be a mantra for us all: Beauty can unlock the door to sustainability. △

*Will Hooker, with his wife Jeana Myers and their infant son, Eli, circled the globe in 1999-2000, visiting over 250 sites in eleven nations seeking the answer to this issue's question: "Where is Permaculture?" Will teaches landscape design at North Carolina State University. Contact [will\\_hooker@ncsu.edu](mailto:will_hooker@ncsu.edu) or write him at NCSU, Dept. of Horticulture, PO Box 7609, Raleigh, NC 27695.*



*Joe Polaischer makes sure that beauty, even in a greywater pond, encourages visitors to take a closer look.*

## **International Projects Funded**

Permaculture International Ltd, recently funded by Permaworld, plans to support permaculture projects in developing countries. Other projects will likely include producing a CD-ROM of the best articles from back issues of *Permaculture International Journal* (PIJ), publishing a Permaculture International Yearbook, and developing accredited permaculture training. Permaworld is a Canadian on-line environmental fundraising initiative based on the principle of network marketing to support permaculture and other earthcare projects around the world.

### ***PIJ back issues to community groups***

Some of the Permaworld funds are being used to send a limited number of packets (approx. 20-30) of PIJ back issues to not-for-profit community organizations. These packets are now available to organizations including NGOs in developing countries, Permaculture and Landcare associations, environment centers, community garden and city farm associations, and schools and public libraries. Interested organizations should send an application with details about their organizational (legal) status, objectives, and activities.

Applications can be forwarded by email to [pcjournal@nor.com.au](mailto:pcjournal@nor.com.au) or by mail to PIL, PO Box 6039, South Lismore, NSW 2480, Australia. △

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# Urban Agriculture in Cuba

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**S**USTAINABLE DEVELOPMENT is the demonstrated capacity of a society or system to function indefinitely and independently, without failing due to the exhaustion of fundamental resources. This sustainability requires us to meet society's current needs without compromising the possibilities of future generations, including those needs of which we are yet unaware.

Nowadays, cities and other types of human settlement are consumers of natural resources. These are turned into waste which pollutes air, water, and soil. In order to make a transition to sustainability it is essential to recycle what we use, and to produce only what is necessary.

## *Permaculture and its introduction to Cuba*

In the 90s, the peak of the renewed Cuban economic crisis, a group of Australians and New Zealanders visited Cuba through a program called the Southern Cross Brigades, organized by the Cuban Institute of Friendship with the People and the Australia-Cuba Friendship Society. Members of this group came with the knowledge of a new system of design for sustainability called "Permaculture" and decided to unite in support of food security in our country, forming the "Green Team."

Permaculture is a practical concept developed for the first time by Bill Mollison and David Holmgren in Tasmania, Australia in 1974, which encourages us to think carefully about our environment, the use of resources, and how to satisfy the needs of present and future generations through a philosophy of co-operation.

Within this broad and useful concept there is concrete action on: increasing local food production, low cost methods of food preservation, building with local materials, saving water and energy, and the strengthening of a true environmental culture. Permaculture provides us with tools to take better advantage of our surroundings, it makes us think positively about things that we might have considered as problems, or of no importance, such as garbage, and it prepares humanity to see the world through different eyes.

More than a practical and ecological system of agriculture, it is a way of thinking about and planning human settlements in general, and how people can satisfy their needs in life without damaging the earth.

The application of such a system provides broad benefits to diverse spaces in urban and peri-urban areas, allowing traditional functions of the urban environment to be integrated with enhanced food security for the population. Gardens, small farms, and integrated agricultural production are designed and managed as green and multi-functional space. This also contributes to the health of the city and its surroundings, the better use of leisure

time, the preservation of the agro-culture, the decrease of consumerism, the generation of new jobs, and to the creation of an urban landscape more connected to our needs and traditions.

## *Context*

Historically Cuba has depended on imports to meet its food needs. This is partly because some 30% of the arable land has been planted to sugar cane, sugar having been for many years the nation's main export.

In the late 80s the fall of the Soviet Union precipitated a severe economic crisis. Since they had previously provided 80% of Cuban imports, the loss of economic support was immediately reflected in a scarcity of food products within the country.

The search for alternative solutions introduced food production without the use of chemicals to several cities. From 1990 the government of the City of Havana, where 20% of the population is concentrated, authorized the provisional use of vacant state property by people who wanted to produce food for themselves, creating "people's plots" which occupy more than 2000 hectares (5000 acres).

Training and technical advice became a priority from the beginning, because it was necessary to teach the skills of successful food production to people who had no such background. The State, through the Ministry of Agriculture and local government, has been the principal provider of this training. Over the years, this area of work has progressively incorporated the work of other institutions such as the Fundación Antonio Núñez Jiménez de la Naturaleza y el Hombre (FANJ).

This massive development of Urban Agriculture, as it was named at that time, included the growth of *organoponicos* (a high yield system that produces vegetables and fruits in rows of concrete boxes full of soil to sell to the population), seedling houses, and other areas of support. The field of urban agriculture has been developing and improving during the past decade with numerous positive results. To date there are more than 1800 urban producers located in the City of Havana, of which a great number have some produce to sell that is surplus to the needs of their families and their commitment to support local services. Furthermore, research continues into the development of agriculture in this city and the ways of incorporating it into physical planning.

Cuba entered the year 2000 with solid signals of a revitalizing economy, driven considerably by development and tourism. The real estate sector, along with the tourist industry, which is now the main economic sector of the country, are using spaces which were always destined for the city's "own" functions, for example, housing, recreation, and others. Many of the spaces now targeted for development had been occupied by farming plots and

*organoponicos*. Today with the changing conditions it is important to rethink how to incorporate the traditional urban functions with the environmental and social benefits of urban agriculture.

While the production of sugar cane has taken a back seat to tourism in the Cuban economy, it continues to be one of the most important agricultural exports. Therefore, food security will have to be achieved using other areas for production. Urban agriculture will continue to serve this objective, possibly with a smaller presence in Cuban cities, but in a more permanent and stable way than the ones generated by the period of economic crisis.

On the other hand, the number of cities involved in urban agriculture worldwide is increasing, especially in Latin America and the Caribbean, where poverty is worsening both in rural and urban areas, and where wealth is becoming more polarized every day. Urban agriculture in this region is appearing both spontaneously and through promotion by local governments and institutions as an alternative food source for the poor. Also, agriculture in small family spaces of the urban and peri-urban sectors is being practiced for personal and community reasons: to increase the nutritional value of the diet, and to improve the quality of leisure time.

But there is still a lot of ground to cover. There is a need for:

- social and economic indicators to measure the effects of urban agriculture
- a conceptual framework that can define it in all its dimensions
- a higher commitment from all levels of government and of community institutions
- a greater promotion of the benefits of urban agriculture.

In Latin America, the Caribbean, and worldwide the use of agro-chemicals—despite their environmental costs—is not by definition excluded from urban agriculture. In contrast, Cuba, with the economic crisis of the 90s, has had the historic opportunity for a massive development of urban agriculture without the use of agro-chemicals, yet it has faced challenges brought about by its own development. For the whole Latin American and Caribbean region there is ample space for outreach work. The promotion, research, and definition of the best and more permanent ways of inserting agriculture into the urban environment has been part of the work of the FANJ in the last few years, and there is a commitment to continue with this work in the future.

### **First Permaculture Projects**

The first Australian volunteers came to Cuba in 1994 as part of an agreement between the Green Team and Cuban governmental institutions to introduce Permaculture to the country. After several administrative changes, in November 1995 FANJ took on the project, financed by the Australian international aid organization AUSAID, through the Australian Conservation Foundation (ACF) and the Green Team.

This effort, entitled “Urban Agriculture Education in La Habana,” began in March 1995 and has continued through four different projects. It represents the most fundamental work in Permaculture in Cuba up to date. The main objective has been to increase the number and effectiveness of the popular plots, in order to increase food security and diversity for the population of Havana.



photo © ACTAF/First Books. Used with permission

*Organic produce is sold at a downtown produce stand in Havana, where 20% of Cuba's population dwells.*

The principal achievements of these four projects have been:

- The publication of 14 issues of the national magazine *Se Puede* with a tri-monthly printing of 10,000 copies. Also the publication of the bi-monthly pamphlet *El Permacultor* and other related materials.
- The establishment of 25 demonstration garden plots mainly in central Havana. The people and community groups who tend these plots have received technical assistance and help with tools, seeds, and other resources.
- The graduation of 210 people from the Introduction to Permaculture Courses (IPC) and 60 from the Permaculture Design Course (PDC). These courses were directed to members of the community who had the capability to teach others (train the trainer) as well as to promoters and outreach workers in other institutions.
- The implementation of “Creative Methods of Teaching Permaculture” Advanced Course for the graduates of the PDCs, to increase the knowledge and skills of the graduates to the level of instructors.
- The creation of a small information center which has been enriched by the support of international institutions and by important contributions of the ACF and the Green Team. The center is currently the only one of its kind in Cuba with abundant Permaculture reference materials.

The priority of these first projects was education and training in Urban and Organic Agriculture in the City of Havana, without special emphasis on Permaculture. Notwithstanding, after all these years of experience we can say that it is this system (Permaculture) that defines and sets apart our projects, and makes them complementary with others developed by the Head Office of Urban Agriculture in Havana, and other partner organizations. We are already recognized both in the country and internationally as the promoting center of Permaculture in Cuba.

Following on the success of these programs, the **Permaculture Training Project** for nutrition, health, and the making of organic compost in small spaces of the urban area was launched in Havana and Cienfuegos, with the Australian Conservation Fund (ACF). This project concentrates its actions in

the central municipalities of the capital and for the first time in a city of the interior.

Furthermore, it has supported, mainly through training and design, the development of a human settlement in harmony with the environment ("El Jovero"). This is our first attempt at Permaculture on a larger scale (16 ha/40 ac).

The promoting group in Cienfuegos, called the "Theatre of the Elements," joins different art forms, farming, environmental education, and the promotion of tradition. This group is striving for a project with a strong cultural base that expands the use of the arts, while building its roots on the Earth and community.

#### **Research Project of the IDRC of Canada**

The research project "Evaluation of urban agriculture as a component of the local economy in two areas of Havana" has been financed for three years by the Intl. Development Research Centre of Canada. Unlike other urban agriculture projects which are more specific and sectoral (i.e. aimed at increasing yields, etc.) this project's main objective is to investigate urban agriculture in an inter-institutional and inter-disciplinary manner, corresponding to the complexity of the urban environment in which this form of agriculture operates.

In the first year (July 98/July 99) a Research Team was created, composed of 13 professionals from different backgrounds. This team, coordinated by the FANJ, represents: the Provincial Directorate of Physical Planning and Architecture, the Metropolitan Parks of Havana, and the Urban Agriculture Group of the Havana branch of the Ministry of Agriculture. The team defined, through workshops and meetings, the tools, indicators, and methods to use and the actions to undertake during this period. They then collected and evaluated information, and interviewed agricultural producers and marketers.

The results were shared at national and international levels and were gathered into a book, the main contents of which are an evolutionary assessment of urban agriculture in Havana City and particularly two of its zones, and a proposal for integrating this productive activity in urban planning.

#### **Permaculture Action with OXFAM-UK**

The main objectives of this one-year project was to consolidate a training system based on community workshops and three levels of specialized Permaculture courses. This project evolved from the Cuban Permaculture experience and is led by Cuban staff. A monitoring system for existing demonstration sites was developed. New Permaculture sites were also created, the information system was improved, and new promotional materials were distributed to interested people all over the country.

#### **Promotion and Public Relations**

The promotion of Permaculture and urban agriculture has been a priority during these years. In many national and international events and through the media, our specialists have spoken of the benefits of these two systems in the search for sustainable cities.

The magazine *Se Puede Vivir en Ecópolis* is a main vehicle for publicizing Permaculture and urban agriculture throughout the country. It draws increasing contributions and numerous letters from a wide readership, among whom are scientists, teachers, farmers, urban farmers, youth, children, the elderly,

women home-workers, and handicapped persons.

Two radio stations in the Granma Province read the magazine to their audiences as part of an ecology and environmental education show. Some teachers also develop their "Círculos de Interés" based on the magazines' themes.

Four field journals have been published, two about general themes and one specific to the conservation and use of seeds. These works have helped disseminate advice to producers and outreach workers. With these journals we have prepared Permaculture workshops for children, organized by the Community Patios Project in Cerro and by the Association of the Friends of Botany.

The informative bulletin *El Permacultor*, of which 12 issues have been published, has publicized the existence of the "Seed Savers Network" organized by the FANJ and the Urban Agriculture Department of the City of Havana, as well as other

## **Nature and Humanity: The Work of Antonio Nuñez Jiménez**

The Antonio Nuñez Jiménez Foundation for Nature and Humanity (FANJ) is a cultural and scientific non-governmental institution, dedicated to research and promotion of programs and projects for the protection of the environment as it relates to culture and society.

Our main office is located in the City of Havana and we also have a presence in the provinces of Pinar Del Río, Matanzas, Sancti Spiritus, Camagüey, Santiago de Cuba, and Guantánamo, as well as in Mexico City.

As part of the process of strategic planning initiated by the Foundation, we have defined a vision and a mission under which it plans to work in the coming years.

**Our Vision** is of a Cuban society with a developed environmental conscience that will recognize nature as part of its identity, and of ourselves as an active institution in the development of environmental and cultural values in Cuba and the world.

**We accept a Mission** to work towards a culture of nature, with the objective of creating harmony between society and its environment.

In order to achieve this, FANJ supports four Programs:

1. **Geo-historic Research:** Expressed in the collection of 50 volumes, titled *Cuba: Nature and Humanity*, written by our founder, Dr. Antonio Nuñez Jiménez. This work puts together all of the author's rich research of over 50 years of expeditions and investigative work, covering aspects such as climate, geology, anthropology, history, culture, and other areas related to the evolution of the Cuban nation.

2. **Environmental Education:** The mandate of this program is to work with all sectors of the population by promoting dialogue on environmental issues; providing information, training, and consulting in methodology; producing educational resources; integrating nature into the curricula of schools and to their grounds; and developing local solutions to environmental problems.

3. **Cultural Services:** The main goal of this program is to offer the historical and cultural patrimony of the Foundation to the community through public access to the Library, Museum, and Archives. It promotes diverse artistic expressions which will contribute to the formation of aesthetic values linked to the harmony between humans and Nature. Also it spreads the knowledge and work of renowned Cuban intellectuals.

4. **Urban Sustainability Program** (see adjacent article) Δ

projects in development. Several television and radio shows have presented the Foundation's work on training, promotion, and implementation of demonstration sites.

The Foundation's urban agriculture program has already gained recognition from regional organizations such as the Latin American Urban Agriculture Research Network (AGUILA). This organization, together with FANJ and the Urban Agriculture Department in the City of Havana, organized its Second Assembly in November 1999 in Cuba, attended by delegates from eleven countries of the region.

The Foundation is co-operating in the development of urban agriculture and Permaculture in other Latin American countries as well. One example is the implementation of an urban agriculture program in Cuenca, Ecuador, active now for two years. This program was selected among more than 50 cities by the UN Urban Management Program as a model to promote in other municipalities and civil society institutions in Latin America. The Foundation has also started a collaborative effort with the Municipality of Santiago de Los Caballeros in the Dominican Republic, to design and implement urban agriculture in that city.

Our urban agriculture program can be distinguished within Cuba for its participatory work style and effectiveness in co-ordinating joint action between community groups, government, and non-governmental organizations.

### ***Aims, Principles, and Strategies***

It is our general objective to contribute to the sustainable development of urban settlements and their regions, consolidating the Antonio Nuñez Jiménez Foundation for Nature and Humanity as an urban center for the promotion and extension of Permaculture, as a means towards improving the quality of life of people and the environment as a whole.

To this end we will assist the existing Cuban social project, contributing to the sustainable transformation of the natural and built environment the project involves.

We will also contribute to food security for the population, especially for the more vulnerable sectors, using Permaculture as a viable and sustainable system of urban

agriculture, and will apply all the principles and ethics of Permaculture, adapted to our local conditions.

And it is our intention to promote a high level of co-operation between all of the institutions that work on urban agriculture in Cuba, Latin America, the Caribbean, and the world, with the interest of uniting efforts and resources for the implementation of concrete projects.

Throughout, we seek to achieve a maximum level of community and institutional participation in all our efforts.

Evaluation of the work executed during these years has convinced us that Permaculture, within the urban agriculture setting, is one of the most environmentally sustainable and more economically viable systems known.

On this basis we have decided to focus on disseminating the work of the Permaculture projects in Havana as well as in other cities throughout the country where delegations of the FANJ exist. Our principal tasks are training, extension, research, and promotion as detailed below.

### ***Training***

1. To identify the urban and peri-urban areas and communities practicing urban agriculture or other activities related to Permaculture, to seek out support teams and potential promoters in each territory, and to determine their interests and training needs, with the objective of progressively establishing projects for the development of Permaculture.

2. To continue and to expand training options for outreach workers, producers, and promoters of urban agriculture, and for those who are interested in improving their design skills and Permaculture techniques.

3. To integrate theoretical and practical training in Permaculture and components of urban agriculture into the regular teaching courses of the country, giving priority to those centers that have requested support and that train teachers.

4. To expand and deepen, within the training activities, the themes of production and use of medicinal plants and of nutrition, food quality, and eating habits. To establish, in that respect, joint projects with other people and institutions.

5. To establish for interested individuals a regular annual training program

(Permaculture courses, workshops, conferences) to ensure broader participation.

6. To implement advanced courses, designers forums, invitations to professors from other countries, and interdisciplinary designs of large and medium-sized spaces, for improvement of the skills of graduate designers.

7. To establish a registry of the training projects in Permaculture being implemented in the country, to promote the integration and interaction of related institutions.

### ***Extension***

1. To consolidate the Permaculture Demonstration Sites Network of Havana City through providing technical information to the producers.

2. To establish Demonstration Sites in the peripheral municipalities of the City of Havana and other urban settlements in the country, giving priority to those provinces where there are representatives of the FANJ.

3. To lobby at a local level for more Permaculture garden plots, which would improve the quality of life for the most vulnerable sectors of the population such as the elderly and citizens in precarious housing.

4. To establish training areas where Permaculture will be applied to integrate crops, animals, natural spaces, ecological housing, sustainable forms of energy, and to select one to function as a research and training headquarters.

5. To select, design, and build, together with local institutions, specialists, and informed citizens, a productive green space located in an urban area. The purpose will be to demonstrate Permaculture design applied to the urban environment at this scale. To use this working process model for collecting data and applying the experience to the larger social system.

### ***Research***

1. To identify and work on action/research projects that show the permanence of Permaculture as a viable urban agriculture system, giving priority to projects in Cuba and the Caribbean.

2. To establish a process of participatory systematization of the Cuban experience with Permaculture that guarantees the ongoing collection and analysis of information.

3. To produce documents that would

scientifically support the training and promotion of Permaculture, and in general of urban agriculture.

4. To initiate and implement inter-institutional and inter-disciplinary research projects to evaluate the diversity and complexity of the urban environment in which agricultural activity can be implemented.

5. To implement through various means, both within and outside of the country, these research experiences with the purpose of enriching the development of urban agriculture in general.

1. To organize, preserve, enrich, and promote the Permaculture section of the Foundation's Information Center.

2. To maintain the publication of *Se puede vivir en Ecópolis*, considered one of the very few grassroots environmental magazines that circulates in the country, and to improve its design, content, and distribution.

3. To continue publishing the annual Field Calendar, the newsletter *El Permacultor*, and other promotional materials for producers.

4. To promote correspondence from our readers as a way to monitor the effectiveness of the publications, and to set up throughout the provinces Friends of Permaculture, urban agriculture, and other environmental interest groups.

5. To implement and promote, through various means, a database of all the courses given throughout the country, and of professors and assistants.

6. Also, to provide activity reports on the designs created by the graduates of these courses as a resource for citizens and institutions.

7. To promote the Annual Training Program to interested

sectors of the community and relevant institutions (Permaculture courses, workshops, conferences) to ensure broad participation.

8. To use diverse technical methods to produce promotional materials on urban agriculture for all sectors of the population.

9. To broaden the outreach of Permaculture through contests, festivals, and other participatory activities, directed mainly to children and youth.

10. To continue the promotion of Permaculture, urban agriculture, and their relation with environmental problems, giving priority to events in Cuba, Latin America, and the Caribbean.

### ***Institutional Relations***

The FANJ will continue to broaden relationship at the regional and international level with institutions and people involved in Permaculture and urban agriculture in general. In particular we propose to further Cuba's relationship with the Support Network for Latin American Permaculture (RAPEL in Spanish) and with the Global Ecovillage Network, as well as contribute to strengthening of the RED AGUILA, Support Group for Urban Agriculture and the Group of Cities of PGU/ALC. Δ

*Excerpted from "Strategic Document for the Urban Agriculture Program," City of Havana, December 1, 2000, produced by the Antonio Núñez Jiménez Foundation for Nature and Humanity, 5ta B #6611 E/66 y 70, Miramar, Playa, Ciudad Habana, Cuba. Tel: +537-29-2885, -2833, fx/+537-24-0438. Project Area tel/fx: +537-24-5947. e-mail: [funat@artsoft.cult.cu](mailto:funat@artsoft.cult.cu) or [funat@cubarte.cult.cu](mailto:funat@cubarte.cult.cu). Project Area e-mail: [funapro@cubarte.cult.cu](mailto:funapro@cubarte.cult.cu).*

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## Village Co-Evolution

# Earthaven and the Promise of Permaculture

Chuck Marsh

**D**ECEMBER, 2002. It's a cool, blustery day at Earthaven, a young ecovillage settlement nestled into the eastern slopes of the southern Appalachians. Breaking through the rustle of wind in the trees are the sounds of human activity, of people building their common future together, of children at play. In the distance you can hear the Earthaven Forestry Cooperative's portable sawmill cutting lumber from trees felled on the land. This is the sound of liberation. The Coop's sawmill is allowing villagers and neighbors to create shelter: freeing themselves from the clutches of banks and clear-cutting timber barons while keeping materials and money within the village economy. These are radical acts. Should these and other permaculture-based strategies take hold in the larger society, corporate control might someday yield to an empowered, responsible, ecologically literate citizenry. We can hope it will be in time to pull humanity back from the brink of disaster brought on by our own folly.

A major first-generation challenge for the Permaculture movement, and one of the main reasons for the creation of Earthaven, is to get enough working systems on the ground that we can make informed choices based on actual experience, and begin to model bioregionally appropriate culture for our time and place.

Creating and integrating ecologically responsible forestry and agriculture, while developing natural building systems that conserve forest health, create jobs, and generate renewable energy through good design has proved to be quite an ambitious undertaking. That we are doing all these things while feeling our way toward just and sustaining social and economic relations, and maintaining democratic self-governance within a new village context still seems nearly miraculous, the more so the longer we persist.

### *Growth of a dream*

Earthaven was born as an association between a small chunk of third-generation southern Appalachian forest and a band of



*The White Owl social club is a member-owned, Forestry Cooperative-built feature at Earthaven.*

spiritual dreamers: 320 acres, a seven-year mortgage, limited financial resources, 22 middle-aged members (no farmers), no cleared land, and no infrastructure but an old gravel road, a falling-down hunting cabin, and one phone line. Eight years later we number about 60 members (and 20 phones) with up to a dozen more temporary residents, interns, and helpers on site at any given time. There are now 29 buildings, the largest a 13-sided meeting hall in the form of a big wooden yurt, its top ring tensioned with a huge steel cable. A Nebraska-style strawbale north wall and cob and light-clay infill elements make it a strongly vernacular building which will become even more organic with the planting of its living roof. The hall was designed to hold 150 persons, with the large center section free of posts for face-to-face meetings.

Other buildings include a community social club, an earthship (using old tires for walls) root cellar, a three-story family home and hostelry made largely from recycled wooden pallets and waste plywood, a dozen small cottages made of natural materials, an office and art studio complex with apartments above, a three-family "high-rise," a community barn, a small kitchen/bath complex, and numerous utility buildings from workshops to composting toilets. Visitors on our weekly tours regularly tell us how astonished they are at the scope of our accomplishments, and sadly, how few examples of ecologically responsible living are to be found in the U.S.

### *Growing diversity*

Along with the bootstrapping growth of infrastructure—

which includes micro-hydro power generation, water reservoirs, and constructed wetlands for the biological treatment of greywater—we have experienced a dramatic diversification of our member population. The age range, once 42-56, now extends from two to eighty-five, including one three-generation family. While boomers and Gen-Xers still predominate, other age cohorts are gradually filling in, and we have managed to maintain rough parity between women and men.

The population growth has not been smooth but has come in spurts punctuated by periods of social and cultural consolidation.

The physical growth, measured so painstakingly by amount of heated space under roof and watts of renewable electricity generated, has permitted more and more complex activities to happen on the land. Community meetings (and there have been hundreds) used to retreat to quarters in town during the early winters. For several years they have been held exclusively in the village. We even have the luxury of fairly comfortable meeting spaces in several buildings. The winter population, restricted to three hardy souls in 1995, has grown to more than forty, reasonably well-housed this year. A good meeting hall has greatly facilitated the growth of workshops and other social programs. Yoga classes, permaculture and consensus workshops, activist meetings, tribal gatherings, drum circles, dance parties, songfests, weddings, and visiting groups and troupes of all kinds have sprouted or swung through.

### ***Right livelihood and home-grown finance***

Most Earthaven residents work within the village for the greatest part of their livelihood. Loggers, millers, building designers and carpenters take center stage, but working less noisily in the background are publishers, painters, landscapers, stonemasons, cooks, shopkeepers, electricians, farmers, teachers, massage therapists, herbalists, and more. One member-doctor (M.D. and N.D.) maintains a practice in nearby Asheville, another member is training as a nurse-practitioner. The larger community pool of talent includes ceramic artistry, sign-language interpretation, environmental monitoring, real estate management, ministry, accountancy, professional writing, and furniture making. Some retired members live from investments or pensions, and that pool of capital has been important to Earthaven's ability to develop in relative freedom, and to finance its unconventional enterprises.

Our initial pledge drive of \$100,000 has mushroomed into a \$2 million investment of community and private funds. None of this money has come from any conventional lender, but entirely from our own resources. Our now modest mortgage has three years to run and is held by a partnership of members. Now that the principal is being rapidly repaid to investor-members who helped finance our land purchase, those funds are cycling back into private development and businesses in the village.

Though most members who've joined us and made a finan-

cial commitment have stayed, a significant number have moved on. Some have stayed nearby, others have vanished to the winds. We have been fortunate that most of our ex-members have left on reasonably cordial terms, and we are gradually finding ways to reimburse their investments. This is often a challenging matter for young communities, and it has taken diligence to manage well in the face of endless demands for development capital.

### ***A mission to educate***

Earthaven's mission has always included the creation of a vital learning center in which to explore and push out the edges of what it means to live as ecologically literate and responsible, bioregionally adapted, spiritually conscious, and socially enriched human beings. These aims are consciously incorporated into much of what we do and our progress toward these goals, though cyclic, seems to be yielding a deeper, more fertile cultural matrix.

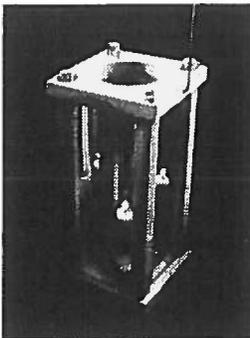
Early on, several Earthaven founders incorporated Culture's Edge as a non-profit, educational institution to further our permaculture, natural building, and village culture outreach programs. We continue to expand our

course offerings and this year will sponsor more than 20 courses, workshops, and events. The largest of these is a regional gathering, now in its tenth year, which last summer was attended by nearly 200 folks. We were thrilled to discover that this ceremonial village fit well within the confines of our real village landscape.

At present eight Earthaven members are active permaculture or natural building teachers, with several more members in training to become teachers. Culture's Edge has organized five Permaculture Design courses (consisting of the Permaculture Fundamentals and the Village Design Practicum sections of the design course), eight or nine natural building courses, as well as a number of advanced or related workshops. We have had a summer Permaculture residency program for the last four years offering in-depth exposure to village life and hands-on experience with development work. In October, 2002 we held our first teacher training course, attended by 27 new or continuing Permaculture teachers, an event that may yet lead to the revival of an active Permaculture teacher's guild for North America. All told, more than 100 people have trained here in Permaculture over the past seven years, including 36 of our 60 members.

Building on this success, we plan to host a number of large events over the next two years, including the Permaculture Southeast Summer Gathering, a natural building colloquium, a Katúah bioregional

There's been a largely invisible growth in diversity of species, varieties, and cultivars of useful and valuable plants, as well as expansion of our capacity to manage landscapes.



*One member's design for a candle lantern evolved into a part-time craft business for another member.*

America all claim to have learned their pharmacopoeia from observing the behaviour of sick animals. There are, however, inherent pitfalls in this approach (there is insufficient room to explain such dangers here) and so it is wise to make one's own observations rather than applying information secondhand.

Modern myths tell of animals with broken limbs making themselves plaster casts from clay and grass; of others rolling in herbs to protect themselves from snake bites; and some even miraculously curing blindness by rubbing on particular herbs. None of these myths is supported by even a cursory investigation.

It is for this reason perhaps that most folklore about animal self-medication has been easily dismissed by scientists—until now that is. In the last 10 years, the idea that animals do indeed use natural substances to relieve unpleasant symptoms has become a serious endeavour for many scientists around the world. For example, it is now accepted that chimpanzees purposefully seek and consume medicinal plants to treat intestinal parasites—and that this self-medication is effective. Less well known are findings that non-primates are also capable pharmacists. A recent paper in *Ecology* tells of parasite-infected caterpillars changing their diet to toxic hemlock, thereby managing to survive the potentially lethal infection.

In the pursuit of good health, animals use herbs, mineral waters, insect secretions, earth, and even charcoal to self-medicate their ills.

Observing the self-medicating skills of wildlife in our own bioregion could be one of our most valuable tools in designing more sustainable lifestyles. For those of us trying to rely less on the pharmaceutical industry, animals in zone 5 can show us sustainable, bioregional medicine. Let's take the European starling, for example. During nesting time (and only during this time), the male collects a selection of aromatic and astringent herbs

to bring back to the nest. He picks the smelliest plants around. In North America, he selects mainly wild carrot, yarrow, agrimony, and fleabane. While in Europe

he selects goutweed, hogweed, willow, elder, cow parsley, and yarrow. His ability to find these pungent plants varies according to season. Outside the breeding season, he can't seem to tell one plant from another, but during this critical hatching time, he has an uncanny ability to discriminate highly

complex odours. It is thought hormonal changes bring about this seasonal change.

Once back at the nest, the fresh green herbs are woven into the nest matrix consisting of the more usual dead twigs and dried grasses. He keeps the fresh greenery topped up all the while the chicks are hatching.

Experiments (in which the herbs are removed from nests) reveal that the fresh greenery helps the chicks better endure the huge number and variety of skin pests that prey on young birds. Laboratory experiments show that complex volatile oils in these herbs harm and/or repel feather lice, mites, and biting insects—and even more impressively—enhance the chicks' ability to cope with (and heal) bite wounds from blood-sucking pests. The birds don't eat or actively rub against these medicinal herbs. They simply bathe in the healing odours of the crushed leaves.

Starlings are just one of many bird species known to bring fresh medicinal greenery to the nest at hatching time. House sparrows and many birds of prey have a similar strategy. Nest fumigation is reminiscent of people hanging aromatic garlands of herbs around the house, particularly when sickness is present. These traditional habits no doubt have their roots in animal medicine. Observing which plants birds use in your bioregion could indicate potent volatile oils for use in herbal medicine.

Avian aromatherapy is not the only natural medicine birds practise. Canada

snow geese use herbal scours to clear themselves of worms. Each year they have to take their long migratory flight south: a journey involving little opportunity for feeding yet putting great demands on their energy stores. Consequently, they have little spare nutrient to share with the tapeworms they carry in summer. Before migration, the geese eat large quantities of rough grass that scrapes through the gut, taking with it intestinal parasites. Large boluses of undigested grass and tape-worms are found at this time. Scientists report that when they get to their destination, the geese are completely clean of parasites.

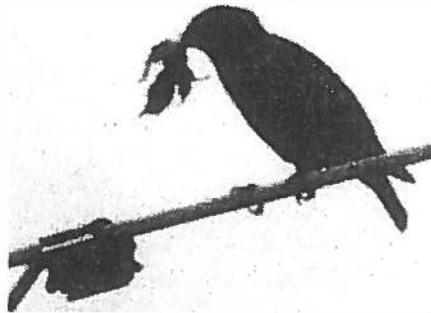
Bears similarly eat large quantities of rough fibrous sedges (of the *Carex* family) just before hibernation—and the scoured worms are found wriggling in the grass-rich dung masses.

Mechanical scours are much safer than the toxic chemical de-worming drugs we use in veterinary and human medicine. Not only that, but they (presumably) do not stimulate the drug resistance seen in major parasite pests around the world. Scours are one method we might therefore be able to add to our natural pharmacy for livestock.

Even rats have a few things to teach us. They are experts at avoiding and dealing with poisoning. One strategy we might explore is their habit of eating clay when they feel sick—a habit so reliable that it is taken as an indication of sickness in rats. Clay effectively binds poisons preventing them from entering the bloodstream.

Wild animals, by their very need to survive, discover simple, safe solutions to serious health threats. We would do well to study our own local wildlife in its natural undisturbed natural state so that we might with some humility, learn how to manage our health—the wild sustainable way. The only way to do this is to make sure we each have access to zone 5, and that we spend sufficient time patiently watching animals keeping themselves well. Δ

*Cindy Engel has a PhD in animal behaviour and is author of Wild Health: How Animals Keep Themselves Well and What We Can Learn from Them (Houghton Mifflin, ISBN 0-618-21893-9). She would be interested to hear of any personal observations of animal self-medication via her web site [www.animalselfmedication.com](http://www.animalselfmedication.com).*



*Male starlings weave aromatic herbs into their nests which help prevent skin pests from preying on their young.*

# A CHALLENGE to the Movement

Michael Kramer

**P**ERMACULTURE has not had a significant impact on American society, despite 20 years of courses and information dissemination. Why? Perhaps because its dissemination has followed a scatter pattern. There is no systematic permaculture movement in North America, but a rather slow and fragmented process serving 20 students at a time. With approximately 25 courses a year, Permaculture graduates may number 500 a year. If that number is too conservative, double it, triple it, multiply it by 10, it's still not making much impact. Of those graduates, perhaps 50% go on to apply permaculture, and only a tiny fraction of those become permaculture teachers or activists.

Any changes to the mainstream consciousness, to the fate of this society and the planet, will better occur if permaculture infiltrates the public sphere. But with perhaps 100 experienced teachers in this country, permaculture still remains a marginalized and misunderstood approach to regenerative living. Are we ahead of our time? Or are we just unwilling or unable to sell permaculture in a way that Americans can adopt? I think it's both.

## *Assessing the Flows*

Any permaculture planning process begins with thoughtful and protracted observation. In 13 years of observing and participating in the permaculture movement, I see the following flows across the social landscape:

### **The Permaculture Concept:**

Permaculture is an abstract interdisciplinary planning methodology. US society is shaped by practical, spontaneous specialists. Permaculture doesn't match the sound-byte style of mass consciousness, and its language is too intellectual to have broad appeal. Most people change their lives as the result of crisis, and a preventive discipline such as

permaculture seems less important than the perceived problems of the world. Of course, its advocates see permaculture as a problem-solving approach, but Americans still haven't picked up on this because our examples have been too far removed from the way most people live.

Permaculture could have been dovetailed with

potentially receptive audiences with abrasive masculine rhetoric or worse, apathy, tearing down or ignoring non-believers and institutions rather than finding ways to work with or within them.

Permaculture also has no public voice recognizable to mainstream society. There is no national point of access except the Permaculture Credit Union (still largely unknown), though there are small Permaculture guilds scattered across the country. There is this publication, but its circulation is relatively low.

Permaculture is primarily advocated, taught, studied, and applied by white middle class men, though this is shifting. There are a couple of Native American courses in the Southwest each year, and more and more courses have students of different cultural backgrounds, but given the growing diversity of America, permaculture is not keeping pace.

Permaculturists spend a lot of time alone or with each other, taking refuge on the fringe rather than participating in the mainstream. Even though we know society must change, many of us avoid confronting the need for value change head on in order to protect our own peace of mind. Some Permaculturists are ego-driven as well, attached to permaculture being "the answer," so remain unwilling to connect with other social, economic, and ecological movements or disciplines. This insistence on autonomy, based on anti-authority complexes and the fear of being co-opted, has isolated Permaculture and its proponents, minimizing the productive edges of the movement.

### **Educational Programs and Publications**

After 20 years, there are only about 25 courses each year in N. America, each with 15-25 students. This includes a few college courses. These courses are primarily at the introductory level, though recently teacher training courses have been offered in



**Permaculture  
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society.**

some of its cousins: Biodynamics, Holistic Management, the Natural Step, and the Green Party, for example—but few practitioners have explored or publicly highlighted these connections, leaving the movement marginalized and still relatively unknown.

### *People and Leadership*

Permaculture has poor leadership in America. Mollison was a global pioneer, but succession hasn't yielded national leadership, despite the work of many experienced permaculture teachers. Some of these, in fact, have followed in Bill's footsteps, avoiding or alienating

several locations. Most course formats and prices favor wealthier people who don't work a conventional schedule. Course marketing generally reaches the already converted but few new audiences due to advertising cost limitations.

Mainstream media outreach is sporadic, and there are few regular columns in existing national publications (Toby Hemenway has regular articles in *Natural Home*). There are some local guild newsletters, this national journal, and a handful of books on the subject, their coverage by no means comprehensive. The American permaculture teaching curriculum initiated by Permaculture Drylands Institute is still in draft form and would require funding to be completed and distributed.

Courses are still primarily lecture-based. This was Bill's pedagogical approach, but since few people have his storytelling ability, many courses lack vitality, and knowledge retention suffers as a result. There is an increasing emphasis on hands-on elements within courses, but it is not uncommon for students to graduate without a fundamental understanding of the permaculture design process.

### **Organizational Capacity**

There is now a permaculture credit union but no national educational organization. The Academy is not yet up and running in this country, and Americans have not taken seriously the Academy in Australia, as only a few people have applied for a diploma or further "permaculture degrees." There are a few long-standing teaching guilds (i.e. Tucson) with a formal teacher recruitment and apprenticeship process, but teachers are largely self-selected. There are no successful local organizations with full-time paid staff and only a few organizations at all. These largely rely on volunteerism, and face typical cycles of ineptitude, burnout, and collapse.

There is no dependable financial support, particularly no philanthropy with a permaculture focus, to build the national permaculture infrastructure; few charitable foundations know about or have supported permaculture education or other projects. Permaculture entrepreneurs cater primarily to affluent clients, and

most such businesses are geared towards individual homeowners. Regensis, in Santa Fe, is the only permaculture-based full-service development firm in the nation. The Credit Union is making loans for permaculture-based businesses, but only in New Mexico to date. There is no national permaculture website, though [www.permaculture.net](http://www.permaculture.net) has long sought to fill this role. Nevertheless, there are some good (and some unmaintained) regional websites with quality links to sites throughout the world. There is no well-established primary source through which to order the complete set of permaculture publications, though Rodale, Real Goods, and now the Permaculture Activist have attempted to act as such.

### **Demonstration Projects**

There are few examples of permaculture beyond landscaping projects, and even fewer mainstream examples of integrated home-scale permaculture. The common applications have primarily occurred at large ranches or estates, intentional communities, or farms rather than typical suburban or urban examples relevant to the way most people live. Many of these sites are private and not available for regular public contact. There are few permaculture community gardens or city farms to educate the general public. There is neither a network of permaculture demonstration sites nor a national internship program.

### **Promotion**

Permaculture courses and events are often not promoted well due to lack of funding, and they typically reach the already converted through listservs and publications. Permaculturists have a minimal presence at local fairs or related state or national events. The web has replaced other forms of promotion. There is no annual national conference (Build Here Now at the Lama Foundation comes close) or national directory (the 1998 version was a good start, but the updatable database has yet to materialize). The *Activist* does not advertise in mainstream publications. (*Only in Pomona, HopeDance, Talking Leaves, and Communities regularly, money a limiting factor—Ed. note*)



*Nepali Permaculture logo*

### **Conclusions**

Permaculture is not having much influence on American society, and the movement has not maximized its edges through which the public can access permaculture information and education. Permaculture is becoming more known, but the movement is evolving very slowly because its proponents have not sought key leverage points or funding through which to accelerate its acceptance. The language of permaculture remains too abstract, and its concepts too distant from the average American lifestyle, to catch on, and so the term and the design methodology are still largely a secret.

There is no recognizable national permaculture voice and no clear strategy for developing a receptive audience for its message. Most Americans view permaculture as some form of organic or xeric gardening, and this misperception has limited its mass appeal. And despite the evolution of a few permaculture demonstration sites, businesses, and educational guilds, permaculture remains in the shadows of the society.

### **Vision**

I believe the primary purpose of permaculture teaching is to help people form a commitment to sustainable living. To make such a major paradigm shift, the general public needs ideas and strategies, and the permaculture community has the

ability to do this. Success is based on building the movement's capacity to effect change. Through leadership, financial vehicles, educational organizations, publications, alliances, and activism, permaculture can become more publicly visible and influential. Permaculture will make a greater impact if it is better organized, and practitioners would be wise to turn the planning process Permaculture so eloquently offers for site design onto the movement itself.

Permaculture has the potential to be understood and embraced by people of all ages in every region. Permaculture can be integrated into mainstream institutions such as schools and colleges, public agencies, financial institutions, businesses, and community-based organizations. Professionals in such fields as development, architecture, planning, construction, finance, education, psychology, agriculture, and public policy are excellent candidates to incorporate permaculture into those fields, essentially transforming them into regenerative ethics-based disciplines.

Permaculture enthusiasts should become active in all zones of social influence, starting at home but including community and bioregional political organizing, economic development, and social justice endeavors. Permaculturists should run for public office, contribute to party platforms, operate businesses, educate, and increase public dialogue about how permaculture design principles can connect all levels of American society and culture.

Permaculturists should build relationships with other movements that share its values, in order to build the health and stability of a diverse system. The permaculture movement needs to ensure that its message will be spread by new generations of messengers, people with new ideas and methods of spreading its potency.

### **Conceptual Plan**

Looking toward the fulfillment of Permaculture's potential, I recommend a five-tiered strategy for our success:

1. **Language:** Permaculture must be explainable in terms the average citizen can understand. Its uniqueness as an ecological design system must also be clearly articulated to those who might be

philosophically sympathetic. Terminology should be practical rather than abstract.

2. **Organizing:** The permaculture community should have more collective national strength and a more visible public presence. This can be achieved through an annual national conference and participation in other related national conferences and events. The movement needs to create a strategic plan and establish national work groups to implement it. Funds must be raised to manifest our dreams. Effective leadership—from articulate bridge-builders—must emerge as the next stage of the movement's successional process. Great and continuous efforts must be made to introduce permaculture wisdom to the mainstream. A greater commitment to teacher training, particularly for women, will be beneficial, while advanced design courses and more opportunities for permaculture application will also increase graduates' abilities to effect significant change in the common mindset.

A national permaculture membership organization with nationally recognized board members could act as a clearinghouse for permaculture activity in America while also facilitating capacity-building, curriculum, program and fund development, grantmaking, and small business incubation in such areas as publishing, education, agriculture, finance, and development.

Practitioners should expand networking efforts and build cooperative programs to reach other like-minded groups and movements such as The Natural Step, ecological design and architecture, green building, new age spirituality, renewable energy, organic agriculture, landscape architecture, community development banks and loan funds, natural products, socially responsible investing, environmental education, and the Green Party. A greater public presence at local fairs, farmers markets, and conventions, as well as membership in civic, policy, and professional groups, chambers of commerce, and educational and business associations, will also enhance Permaculture's visibility and leverage greater support.

3. **Program Implementation:** The basic design course should be offered more

often and in more locations throughout the country. Different versions of the course should continue to be offered in order to satisfy the diverse learning styles and time schedules of working people. Advanced courses must also be developed and offered, as well as new courses geared towards specific audiences, such as planners and educators. Organizers should strive to increase student diversity, offering scholarships as necessary to ensure it. Additional permaculture teacher courses should be offered, and teaching teams should take on apprentices. The pioneers, having fertilized the barren soil, must gradually step aside as we build the capacity of course graduates to apply and teach permaculture in new and effective ways.

Curricula are needed for the basic design course, for people who wish to teach Permaculture, and for professionals, educators, farmers, and other special audiences who wish to integrate permaculture into their disciplines

Overall, permaculture teachers should expand the approach to teaching to include less lecture and more immediate application.

Additional books need to be written on permaculture topics, particularly on non-gardening systems. These books should be geared towards mainstream audiences and distributed by established publishers. Somebody needs to bring permaculture to a national talk show audience. Articles and columns should also be written and published regularly in sympathetic newspapers, journals, and magazines.

A national permaculture conference should be organized, perhaps in collaboration with other similar groups and events. Permaculturists should also speak to and have booths at other conferences consistently.

Permaculture should become a section in various national product and service directories (i.e., National Green Pages), and a national permaculture catalog would be an excellent addition to the *American Permaculture Directory*, which should continue to be published and maintained as an on-line database.

An American permaculture academy should be activated and used to formalize study beyond the design course. It could also conduct research and development to develop college-level courses or units that

could be placed into courses in other disciplines, college degree program development, and perhaps a permaculture college. The academy could also be used to certify permaculture teachers.

Additional permaculture financial vehicles are needed, such as business incubators, barter networks, and an alternative currency. Financing for permaculture real estate and development projects is also warranted.

The permaculture perspective is essential to the future well being of society, so participation on planning boards, regional councils, and in political parties and legislative initiatives is important and necessary.

Permaculture demonstration sites, particularly urban and suburban single family examples, will help show the general public how permaculture applies to their lives. In addition, permaculture cohousing neighborhoods, commercial development, city farms, and permaculture installations at parks and schools will accelerate the public's understanding of permaculture. Many of these projects require the education of and alliance with developers, financiers, land-use planners, and public policy makers.

#### **4. Marketing/Promotion:**

Permaculture must be promoted to new markets, particularly the LOHAS (Lifestyles of Health and Sustainability) market of "cultural creatives." Reaching these people requires direct mail, coordinated websites, columns, radio shows, television programs, publications, and special events that demonstrate the significance of permaculture.

**5. Fund Development:** Implementing any elements of this development strategy would require funding to employ people to carry out these myriad tasks. Through grant writing, venture capital, loans, and individual donations, funds should be raised and channeled through a national or several regional organizations to do this important work. It would probably cost \$250,000 per year to focus on all the concepts stated herein.

### **Master Plan**

In general, there has been resistance in the permaculture movement to "organizing" beyond volunteer grassroots activity. Most course graduates practice permaculture at the margins of their lives, but it takes a lot of people working full-time on something in a well-organized manner to create visible results. The movement could use consistent and systematic activism in many areas, such as:



**The permaculture perspective is essential to the future well being of society, so participation on planning boards is important and necessary.**

#### **Zone 1: The Educational Effort**

**Immediate:** Increase frequency, geographic range, and format diversity of basic design courses; offer more advanced courses, and include scholarships to increase student diversity.

**Next Year:** Expand teaching teams/guilds/associations in every state and create an on-line website/database of them all; develop formal local processes for expanding the cadre of teachers; and finish and publish the teaching curriculum started by Permaculture Drylands Institute in 1999.

**Within 5 Years:** Develop publicly accessible suburban and urban demonstration sites as teaching and internship facilities; create permaculture curricula that can be integrated into academic disciplines at all levels of education; and develop permaculture

degree programs in existing colleges and a permaculture college.

#### **Zone 2: Funding the Movement**

**Immediate:** Raise funds to convene a national conference and re-publish the *American Permaculture Directory*, and establish a small business incubator program.

**Next Year:** Convene a national conference and initiate national work groups; develop an on-going funding plan to include venture capital and revenue from enterprises; and build credit union membership and state loan committees nationwide.

**Within 5 Years:** Develop a grantmaking program, create a national barter network, establish an alternative currency; and build credit union loan committees in all regions.

#### **Zone 3: National Organizing**

**Immediate:** Empower a national permaculture organization, assemble an active board with representation from numerous regions; form an advisory board of well-known public figures; and create a strategic plan to coordinate the next five years of national permaculture activity.

**Next Year:** Update the *American Permaculture Directory* and make it an on-line database; get the Permaculture Academy USA up and running; assist state and local guilds with organizing and program development; and begin dialogues with charitable foundations about grants.

**Within 5 Years:** Provide seed funding to initiate guilds in new areas; and develop strategic partnerships with permaculture-related movements and organizations; develop a national permaculture chamber of commerce; integrate permaculture projects into various service and conservation corps.

#### **Zone 4: Spreading the Word**

**Immediate:** Identify a team of potential permaculture authors to evolve a mainstream permaculture language; write permaculture columns in nationally known magazine and journals, and seek publishers for permaculture books.

**Next Year:** Develop a marketing manual to assist local guilds with their course and

event promotion; expand distribution for the *Activist*; become more publicly visible at local and national fairs and conferences; and begin writing permaculture books in diverse topic areas.

Within 5 Years: Develop a coordinated clearinghouse of permaculture websites, a national permaculture product and services catalog, radio and television public service announcements and programs, and additional national and regional permaculture publications.

#### Zone 5: Community and Policy

Immediate: Document past and present planning and policy initiatives in which permaculturists have participated; chart forthcoming initiatives at the local, state, and national level in which permaculturists could participate; and assist political parties in integrating permaculture into platforms.

Next Year: Initiate municipal/regional sustainability indicators programs in places where they have not existed; participate on existing planning and policy task forces and boards; run for public offices or seek political appointments.

Within 5 Years: Participate in or commence state or bioregional interjurisdictional policy and planning initiatives in such areas as land-use planning, building codes, water

management, economic development, and soil conservation; establish a national permaculture legislative caucus and seek to reconvene the President's Council for Sustainable Development.

These ideas are meant as a starting point for further discussion. A national event could serve to develop a more formal consensus about these national priorities and kick-off the work groups. We're all doing good work now. But if we coordinate our efforts, think beyond Zone 1, pay ourselves to do this important work, and engage mainstream America in a systematic way, perhaps we will see the changes we all wish for in this society. The US needs to change its ways more than any other nation on this planet. We are precisely the people who can help. △

Michael Kramer is a 10-year permaculture teacher and a former Executive Director of Permaculture Drylands Institute and Youth Ecology Corps currently teaching basic and teachers' courses at La'akea Permaculture Gardens ([www.permaculture-hawaii.com](http://www.permaculture-hawaii.com)). He is a Registered Investment Advisor Representative exclusively managing socially responsible investments with Natural Investment Services ([www.NaturalInvesting.com](http://www.NaturalInvesting.com)). Contact [Michael@NaturalInvesting.com](mailto:Michael@NaturalInvesting.com).

## Plants for Difficult Environments

# Cactus and Succulents in Permaculture

C. Keith Laurie

**T**HE LACK OF WATER is going to be the most important factor in any future Permaculture development. In fact it is predicted that water, not oil or minerals, is likely to be the trigger of wars in the future.

The design of permaculture and other forms of sustainable farming has, to a large extent, assumed that the site chosen would have an annual rainfall of at least 30 inches (750mm). All sorts of ingenious devices have been developed to maximise the use and conservation of available water from rainfall, but surprisingly little attention has been devoted to the production of crops that can survive and produce food under drought conditions.

Israel is famous for the development of fruit orchards and vineyards in the desert. These have been irrigated from existing rivers or from wells; but the water contains dissolved salts, and as it is used by the crops and evaporated by the sun it leaves behind a buildup of salts. Under normal circumstances the salts are washed away by rain; in the desert they are concentrated to the point where the soil can no longer support conventional plants. Israel farmers have therefore had to switch to plants that can survive without irrigation and are, to some extent, tolerant of relatively high levels of salt in the soil.

Israel has started a programme of planting fruit bearing cacti using limited applications of water to replace the existing citrus and avocado fruit orchards.

### Succulents

Succulents are plants that store water in their stems or leaves. What is the difference between succulents and cacti? The answer

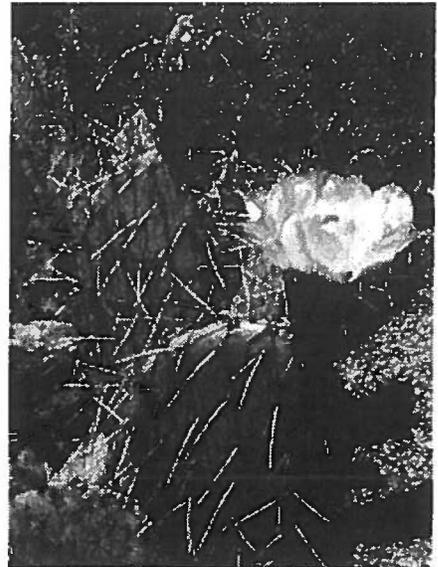
is that all cacti are succulents but not all succulents are cacti.

Cacti are plants belonging to a large botanical family, Cactaceae, all of which originate in the Western Hemisphere. It is erroneously believed the presence of spines marks cacti from succulents, however some cacti are not spiny, and some succulents are covered in prickles.

Plants are classified by the differences in their reproductive systems, and not by such external characteristics as the form of their leaves, colour of their flowers or even the degree of their prickliness.

### Some Likely Candidates

In selecting plants for your Permaculture garden that will not require regular watering it is obvious that you will want them to be economically useful and preferably edible. There are many



*Nopal (Opuntia ficus-indica)*



Maguey (*Agave americana*)

cacti and other succulents that produce beautiful flowers or are, by their growth habits, aesthetically pleasing. While this is appreciated it is more important to provide food.

**OPUNTIA**—The *Opuntia* group of cacti include many edible species which are now widely cultivated around the world. The *Opuntia*, with their palm shaped pads, come in both spiny and spineless varieties. The fruit vary from yellow to red, and contain a sweet pulp with small seeds.

Varieties have been selected

over the years for fruit size and sugar content. The pads—known in Mexico as *nopales*—are actually part of the stem as the true leaves are miniscule. The pads are edible and are served in many different ways.

The pads can be sliced thinly and placed in water overnight before being seasoned with spices and deep-fried like potato chips. The sliced pads may also be added directly to salads or to stir-fries and when incorporated in soups they give added body and flavour.

The water makes an excellent shampoo. It can be drunk directly, and is purported to be good for diabetics and sufferers of stomach ulcers. In India the water is added to the juice of sugar cane, then heated. This causes the impurities to coagulate, allowing their removal by skimming. It is also used to clear wines

## A Unique American Family of Plants

Cacti are succulent, usually spiny plants, with relatively shallow roots. The family originated in and diversified through the New World, mainly in the regions of the southwestern U.S., Mexico, the Caribbean, Central America, and the Andes. Ecologist Tim Flannery discusses their origins in his recent book, *The Eternal Frontier*:

“Given their fleshy, segmented branches, and the ability of some to put down roots wherever they touch ground, they have probably been dispersing over the sea between the (American) continents for a long time. By the Miocene cactuses had become well established in North America, and today they thrive as far north as the badlands of Alberta. By 10 million years ago the distinctive vegetation of the Sonoran and Mojave deserts, with their many cactuses, may have spread and acted as a barrier between other vegetation types to the east and west.”

He goes on to explain that their distribution is related to their ecological adaptation. With shallow root systems and the ability to store water during dry seasons, they are adapted to deserts and arid zones with seasonal rainfall, not to regions where rain may be absent for years at a time. In this way they reflect the intense seasonality that characterizes so many North American life zones and gives the continent its vivid fall colors, its tornados, and its hibernating squirrels among many other phenomena. △

of the suspended colloidal matter that makes them cloudy.

Some botanists claim that the spineless cacti resembling *Opuntia* are not true *Opuntia* but are *Nopalea coccinellifera*. In Mexico, the cochineal insect (*Coccus cacti*) which lives on *Opuntia* and *Nopalea* cacti, has for many years been collected commercially. The dried bodies of the insects are used to produce a scarlet dye for silk, and for colouring butter and cheese. A single pound of commercial cochineal requires some 70,000 insects!

**ALOE VERA**—This well-known member of the cactus family, whose gel is now widely used in cosmetics and shampoos, should be grown in pots on the windowsill of every kitchen. It is the best treatment for burns. Break off a leaf and rub immediately on the burnt area for instant relief. Aloe will flower once per year, and the immature flower stem when boiled makes an excellent dish similar to asparagus. The gel fresh from the leaf is used as a shampoo.

**AGAVE**—The agaves are famous as the plants used in making tequila and *mescal*.

The leaves are removed, and the heart of the plant, which contains sugars, is crushed and fermented, with the resulting beer distilled to produce the spirit.

*Agave sisalana* is the variety used for the production of rope fibre in many parts of the world and for the grass skirts of the South Sea Islands. The juice of the plant is used in traditional medicine for the treatment of jaundice.

**PURSLANE** (*Portulaca oleracea*)—This succulent is found growing worldwide, sometimes in cultivation but mostly as a weed in the wild. It can be added to fresh



Prickly Pear (*Opuntia engelmannii*)

salads or cooked as a vegetable with cheese. Medicinally it is supposed to be a diuretic, vermifuge, and a heart tonic. It produces a large number of very small seeds which germinate readily.

**AMARANTHUS**—The many species of this plant are mainly tropical, but it has been found growing on the streets of New York. Grain amaranths were used by the Amerindians of Central America before the introduction of wheat and corn. *Amaranthus hybridus* is used in the Caribbean as a replacement for spinach. It is high in potassium and is used medicinally for the treatment of stomach problems.

I am sure that those practicing Permaculture in the dry areas of the world are using many other succulents to reduce their water consumption. △

*Keith Laurie has spent much of his life working with all aspects of sugar cane cultivation and processing in the eastern Caribbean. He is member of the Barbados Senate, and may be reached by email at [cklaurie@sunbeach.net](mailto:cklaurie@sunbeach.net). He welcomes commentary on plants for arid climates.*

# . . . from the Regions

## Impressions of the South

Louis LaFramboise

### *Letter from Argentina*

October, 2001

I am in the town of Fernandez, Santiago del Estero province, north central part of the country, and am collaborating with a school oriented towards practical, hands-on work. The school is quite a rarity here in Argentina, and its form of education is what attracted me here in the first place. Jose Majer, originally from Germany, who started the school here, took part in the 2000 South American permaculture gathering at Gaia ecovillage, which brought him in contact with the Permaculture movement. He forms the thrust or backbone of the school and the foundation which supports it.

Among many other things, I am designing and planting a Santageño forest garden, experimenting with gley techniques for sealing ponds, as well as researching various specialty themes in gardening and landscaping, such as the use of fermented weeds for biofertilizers. The potential for growing here is spectacular given the intense sun and hot climate. The conditions can be harsh and challenging but there is a richness to the region as in so many others of Argentina. The honey is awesome, as are the thorny trees and cacti with their delicious fruit. I was able to witness some spectacular fires while traveling around: beautiful sights, but a powerful vision of what may happen if we continue with our unconscious culture.

Through my connection with Jose Majer I have also been invited to work among the Guaraní people of Misiones, and will take this opportunity to get involved in the areas of agriculture, permaculture and other social, human rights issues. I am looking forward to this as I have always been able to associate with the still natures and simple manner of communication usually associated with these people. I am also hoping to learn a few new words in Guaraní, as this language describes more deeply and richly the living world.

### *Bolivia: Where the Sandal is King*

May, 2002

Here, in the pre-cordilleras of the Andes about 2000 meters above sea level, people of the *campo* (countryside) are closely connected to the Earth. Their toes are covered with mud from the rivers they cross daily due to their work in agriculture and wet irrigation systems.

Sandals are the regional shoe; everyone uses them, even in the cold of the desert winter. Let us celebrate the sandal. In them the feet are free and open to the air.

### *Educational Work*

I am collaborating with an NGO called Arbolando (tree planter) in Tarija. They are supporting me in my work, providing room and board in various locations in the city as well as at their site in the country next to the beautiful Camacho River. It has been pleasant to meet here some other Canadians who are all collaborating with Arbolando, which is supported by Gaia, a project of the Sierra Club of British Columbia. We teach and practice ecological and environmental principles related to rivers, watersheds, trees, erosion, soil, water, and garbage. Through projects and workshops, with schools, organizations, and campesinos, we are encouraging and showing the importance of preservation and rehabilitation through activities of soil building, tree planting, erosion prevention, and the separation, composting, and mulching of biodegradables.

I am discovering that the technical aspects of the work are less important than our spiritual, eco-psychological connections to the land, the manner of communicating such values to a wide range of people and ages, and relationships between people that value each of our unique potentials. I plan to take back many of these ideas and experiences to my school community in Santiago del Estero, where I worked in northern Argentina. In Santiago there is much more reluctance to be connected to the earth which supports our very existence.

Here I am helping with workshops, collaborating with campesinos interested in changing over their agricultural systems to practices which are more ecological, planning a rural demonstration site, and performing various field research projects related to permaculture and landscape rehabilitation. I am also working with an orphanage organization in the city, hoping to educate those involved with it in the better use and management of soils, water, and biodegradable garbage, as well as consulting with them in the design and implementation of a rainwater harvesting system and a biologically-based filtration

system for grey- and blackwaters.

### *May the rivers run*

In this ancient, weathered, and windswept landscape, typically characterized as "badlands," the rivers have an important presence; they invariably set much of the rhythm of life. For those who cultivate the mineral-rich soils created by the rivers, life is inextricably linked with the flow of the waters. I'm choosing to read less of the written word, and am learning to read the rivers instead. Where the river displays a lighter shade of blue, a kind of aquamarine, the waters are deep. And often where sand deposits form is an ideal spot to take a swim. Jacuzzis pale in comparison to these ever-changing and flowing bubble baths. I love body surfing, riding the river as it flows over rocks, creating a topographic roller coaster.

At times, the raging flow of the river can easily tear out bridges, uproot mature trees, cause entire beachfronts to disappear, and liquidate important agricultural areas, which are strategically located to take advantage of the rich alluvial soils and ample humidity at its important edge. The river's potential to move material and reshape landscapes is impressive: hiding yesterday, making tomorrow insecure. A great variety of microenvironments exists along its banks, rich with life; the conditions changing as often as the course and hunger of its "engine" dictates. But the flows and energies of the river bring with them many opportunities for observing patterns; they provide useful models for our own designs. Maybe we can learn from the river's double personality as gentle provider and fierce destroyer, before imposing our ways on it. The Daur Mongol peoples of northern Manchuria (China) believe the river is a boundary between this world and that of the dead, linking us to our ancestral spirits and others who have moved on. In other words, maybe the rivers are something we should not be messing with. Have we not dammed, or otherwise altered, enough of the world's flowing treasures?

Canadian ethnobotanist Wade Davis wrote of a people who had a deep connection to the ancient cycles of Earth, and the time to know and observe them in *Light At the Edge of the World-A journey through the realm of vanishing cultures*:

"In the homeland of the Micmac, trees are named for the sound the prevailing winds make as they blow through the branches in the fall, an hour after sunset during those weeks when the weather comes always from a certain direction. Through time, the names can change, as the sounds change, as the tree itself grows or decays, taking on different forms. Thus the nomenclature of a forest over the years becomes a marker of its ecological health and

can be read as a measure of environmental trends. A stand of trees that bore one name a century ago may be known today by another, a transformation that may allow ecologists, for example, to measure the impact of acid rain on the hardwood forests."

#### **Avoided or biodegradable packaging**

Bolivia is called a poor, "backward" country. But is it really so? Here they reuse glass soda bottles to hold *refrescos* (homemade drinks.) Street vendors serve drinks and food in glass or other reusable containers. *Humintas*, a fried or boiled food from this region, made with young corn (*choclo*) and cheese, is cooked as well as served wrapped in compostable corn husks (leaves). I was a little startled, but pleasantly surprised, when just after I finished eating my lunch in a market, the uneaten bones and fat were quickly snatched from my plate by the staff. Economy, and also ecology, starts in or near the kitchen. These food scraps were evidently going home to feed the dog. Another example of local and renewable materials is the use of dried reeds (aquatic plants) to tie tomato vines to their supports. The ties amply serve their purpose for the relatively short time they

have to hold strong; then they decompose and return to the soil.

We do not yet have any idea how long the toxic artifacts of our contemporary society will persist. Archeological digs in any part of the world will discover similar remnants of our consumer culture. Whether in Africa, New Zealand, or China, the impermeable, non-degradable, and life-suffocating layer of plastic bags, soda bottles, car parts, industrial infrastructure, and toxic chemicals is leaving our mark. Future generations may reflect on the "progress" associated with our civilization, and deal with the consequences!

#### **Buildings past and present**

The legacy of a beautiful and rich earthen-building culture is still visible here. In pockets of revived or remembered construction, villagers work the same sun-baked mud bricks, or "adobe" that served their ancestors. Unfortunately, mass-produced, fire-baked bricks and cement from energy-hungry kilns predominate as the standard building materials of today, regardless their greater energy consumption. What happened to a once

thriving practice, where materials of the place one inhabited were used to provide shelter, and where an intimate knowledge of the rich earth mosaic formed the very foundation of a truly sustainable and appropriate culture of place? Traditional building technologies were of necessity decentralized and sustainable, only exceeding local limits when imperial resources could be brought to bear. Clay-rich local soils and rocks were used to make structures of integrity and endurance. When I see truck after truck hauling conveniently and freely deposited and graded river sand and other materials from the beachfront in greedy amounts day in and day out, I not only wonder about the health of an altered river morphology, but also about the intimacy with place we have lost by blindly adopting today's popular and "cheaper" building methods. Δ

*Louis LaFramboise apprenticed with Jerry Heath in eastern Ontario before taking Permaculture Design training in Patagonia in 2001. Since then he has been traveling and working in Chile, Argentina, and Bolivia. Contact him at [zuo@canada.com](mailto:zuo@canada.com).*

## **Costa Rica's ANAI and Talamanca Initiative Win Equator Prize**

At the World Summit on Sustainable Development in Johannesburg, South Africa, Asociacion ANAI and The Talamanca Initiative received the prestigious Equator Prize 2002. The prize honors "innovative community partnerships that exemplify extraordinary accomplishment in reducing poverty in the tropics through the conservation and sustainable use of biodiversity."

The Talamanca Initiative is a coalition of over 20 community organizations, small farmers and businesses, international scientists, and the Costa Rican Ministry of the Environment. While it is Costa Rica's poorest region economically, Talamanca, in the southeast of the country contains Central America's largest remaining intact rainforest and is home to nearly 3% of the world's biodiversity—as well as most of Costa Rica's indigenous population.

The Talamanca Initiative has created the Gandoca-Manzanillo National Wildlife Refuge, a 30-km stretch along the Caribbean coast and the Talamanca Biological Corridor, extending from the continental divide to the sea. It has also established a regional aquatic biomonitoring program, which promotes scientific research, and Central America's only permanent raptor migration monitoring program. The organization has greatly assisted the local economy by creating the Talamanca Small Farmers Association (with over 1000 farmers, now the largest volume producer and

exporter of organic products in Central America); a Marine Turtle Conservation Program which provides 10 times more local income than the previous selling of turtle eggs; and 13 locally owned ecotourism ventures.

Asociacion ANAI is a Costa Rican NGO that supports grassroots, community-based organizations to improve the quality of life in the Talamanca region through the preservation and environmentally ethical use of its outstanding biodiversity and unique ecosystems. Δ

### **Activist Awards Tree Tax Funds to Costa Rican NGO**

The Permaculture Activist recently awarded a Tree Tax Fund grant of \$750 to Asociacion ANAI to support village-level tree planting in Talamanca. Funds from the grant will help to ensure the continued distribution of tree crop seed to rural farmers and farmers' organizations throughout the region by supporting the maintenance of established plantations of fruit, nut, and spice trees at the ANAI farm, Finca Lomas. Funds are also earmarked for the collection, processing, and distribution of tree seeds. Located in Mata de Limon de Sixaola, Talamanca, the Finca Lomas plantations are a source of seed and germplasm of useful species for the region. Over 80 species have been planted since 1978

with a special focus on those crop species or varieties considered most valuable for small farm agroforestry systems.

In keeping with the Permaculture ethics of Earth Care, People Care, and Fair Share, the Activist Tree Tax Fund was created to offset the use of paper involved in printing the magazine. A quarter dollar is set aside from each paid subscriber issue for this purpose. Tree Tax funds have been awarded for planting, research, and community agroforestry programs in Ecuador, Botswana, Nepal, New Mexico, and Costa Rica. Awards of up to \$1000 are considered, with preference given to well-designed, multifunctional activities.

For more information on ANAI and the Talamanca Initiative, contact ANAI, Inc. 199 Uplands, Berkeley, CA 94705. Δ

### **Permaculture Newsletter in Eastern Canada**

*The Swale* is a Canadian permaculture newsletter created to exchange ideas and provide support following a permaculture class in Ontario. It features articles on subjects ranging from weeds to community gardens to "green" household cleaners, and has excellent lists of courses, events, and websites. Contact: Rona Fraser at [ronamontreal@hotmail.com](mailto:ronamontreal@hotmail.com), or write The Swale, 101-151 Reserve St., Almonte, ON Canada K0A 1A0. Δ

## Playing in Peoria— LA CASA VERDE

### Project on the East Bluff

Tall Maple (Laurie Winkler)

La Casa Verde Project functions as a family residence and as an urban sustainability demonstration model in the Central Illinois River Valley Region. It is also the home base of Urban EcoLogical Design, which provides services of consultation and education programs to residents, organizations, and schools in the Peoria Area community.

We are still learning ourselves, yet we want to share with our local community the knowledge and skills we have gathered and are gathering about the application of sustainable living designs/ permaculture systems. There is currently very little networking and resources available in our bioregion for anyone interested in finding nature-connected solutions to the unattractive consumer-dominated urban environments that we live in.

We are still in the process of establishment, and are currently building a foundation from which we aim eventually to provide the Peoria community with: a resource and networking center providing information on sustainability issues, practices, and research; an urban permaculture demonstration model for an average Peoria area household; educational programming and consultation services; provision of native plant and heirloom vegetable seeds/transplants (along with an urban seed savers exchange); and lastly to provide space for gathering in celebration and community.

As most permaculture practitioners believe, we are only limited by our lack of information and imagination. La Casa Verde Project aims to raise awareness of choice and empower individuals and communities to take responsibility and to nourish their whole selves with abundance and a little faith that the planted seed with grow and fruit. △

Email Tall Maple [laurie\\_winkler@hotmail.com](mailto:laurie_winkler@hotmail.com) for more information.

## Maryland Community Supports Permaculture, Urban Design

The Heathcote Community in Maryland has formed a relationship with the Rose St. Community Center, an inner city service center offering tutoring, a green park, a summer camp, and alternatives to drugs. The community center, which has faced attacks from drug dealers, was the site for an urban design permaculture course last spring. Heathcote offers internships combining permaculture, community living, the arts, and

## Canadian Organizations and Websites of Interest

Kootenay Permaculture Institute,  
[www.3telus.net/permaculture/](http://www.3telus.net/permaculture/)  
Permaculture Design Courses in Ontario and Quebec.

Ontario Public Interest Research Group,  
[www.OPIRG.org](http://www.OPIRG.org)  
Features OPIRG's permaculture garden.

Harvest Homes, [www.harvesthomes.ca](http://www.harvesthomes.ca)  
Straw bale building courses, building opportunities, etc. (Ontario)

[www.planetfriendly.net](http://www.planetfriendly.net), a free weekly listing of events, resources, and jobs. (Ontario).

Vancouver Permaculture Network,  
[www.alternatives.com/vpn/](http://www.alternatives.com/vpn/)  
A listserv with information on permaculture and ecovillages.

Seventh Generation Community Projects,  
[www.echelon.ca/7thgeneration](http://www.echelon.ca/7thgeneration)  
Strawbale building and Permaculture courses (Ottawa area).

Everdale Environmental Learning Centre,  
[www.everdale.org](http://www.everdale.org)  
Sustainable Living courses, Seed Saving, Permaculture, etc. (Ontario). △

## Sustainable Sister City Program Links Nicaragua/ Connecticut

SEED (Solutions in Education and Environmental Development) is a program begun by the New Haven/Leon Sister City Project to help Nicaraguans in rural Leon. Education of children and their parents in organic farming, composting, pest control, nutrition, and environmental stewardship help to create stronger, more cohesive and self-sufficient communities. Families plant and tend vegetable gardens and fruit trees, and children's self-esteem is boosted through sports, dance, and the arts as well.

Since 1996, over 100 families in 5 rural communities have participated in the SEED program. As a result of SEED's educational workshops with teachers in the rural schools, more children are finishing school. The after-school program is solely funded by individual sponsors in the U.S.

For more information, see [www.newhavenleon.org](http://www.newhavenleon.org); to receive the Sister City Project's twice-yearly newsletter, email [cwilkins@newhavenleon.org](mailto:cwilkins@newhavenleon.org), or call Cathy Wilkins, Program Director at 203-562-1607. △

## School Garden Calendar & Coloring Book

The San Diego Permaculture Center & Economic Conversion Council is promoting a school-community garden at Alice Birney Elementary School. The calendar is a collaborative project of the San Diego Pç Center, Alice Birney Elementary, a Kiwanis club, and the Park & Recreation Council. Featuring student artwork, the calendar will be used to raise funds for the school garden project. The long-term vision is to create community gardens at every neighborhood school, and jobs for many garden coordinators. A complimentary calendar will be sent to SDECC members. Contact them at 4452 Park Bl., Suite 205, San Diego, CA 92116. △

## Growing Food in the Southwest Mountains

A permaculture approach to home gardening above 6,500 feet in Arizona, New Mexico, Southern Colorado and Southern Utah.

A new book by Master Gardener Lisa Rayner. Thoroughly researched, beautifully illustrated. Preface by Dr. Gary Nabhan. Arid alpine design strategies, species listings, ecological pest control, planting timetable, extensive listing of resources for southwestern gardeners. 128 pages.

Send \$14.95 to: Flagstaff Tea Party, P.O. Box 22324, Flagstaff, AZ 86002.

Order online at:  
[www.FlagTeaParty.org](http://www.FlagTeaParty.org)

Or call (928) 774-5942 

green business. Heathcote's educational offerings in Pennsylvania and Maryland include Riparian Repair, Community Gardening, Urban Permaculture, as well as the Permaculture Design Course. To contact: Heathcote Community, 21300 Heathcote Rd, Freeland, MD 21053, (410) 343-3478, and at [www.Heathcote.org](http://www.Heathcote.org) to subscribe to their newsletter. △

# Movement Musings

## Tree Crops on City Streets

Russ Grayson

The idea of edible or otherwise useful street tree and shrub plantings has been around the permaculture movement since the beginning. The practice has never taken off, apart from a few instances, some of which have been accidental. Many proposals by permaculture designers for public space plantings involved high maintenance, and so were seen as impractical.

In the early 1990s, the idea of planting fruit trees in a park in Leichhardt, an near suburb of Sydney, was put forward by a council staff environmental policy developer. Local residents declined the fruit trees, but agreed to a grove of olive trees. In another suburb there are Australian bush food trees—a fruiting variety called Illawarra Plum—actually they are *Ecocarpus* and are indigenous to Sydney bushland. These trees receive no maintenance and the fruit makes good eating. They are “accidental” edible plantings.

### Suggestions

1. If fruit fly is prevalent in your climate, avoid fruit tree species susceptible to the fly. This will reduce the chance that the street trees become alternate hosts for the infection of home garden fruits. In Sydney, residents have sometimes planted the delicious tropical fruit loquat in their home gardens and on streets. Unfortunately, loquat harbors fruit fly.

2. In Australia, councils struggle to keep expenditure low. Any species should therefore

be economical in regard to maintenance, so select low-maintenance species.

3. Consider fruitfall and whether this will stain car paintwork or cause other negative impacts which would lead to pressure on council to remove the trees.

4. Non-edibles may be more appropriate along busy roads in case the fruit becomes contaminated by traffic exhaust. In Australia, leaded petrol has been phased out but may be a consideration in other countries. Try nut trees as street plantings. One thing going for nuts is that, with the edible part safely enclosed in a shell, they are not susceptible to contamination by vehicle exhaust. In Windsor (Brisbane, Australia), native macadamias are now well established as street trees.

5. Suggest that councils, in selecting edibles as street trees, also develop a policy of access to the pickings by citizens. This would head-off any entrepreneurs from gaining “official” access to the harvest and excluding citizens.

6. In Australia there has been an increasing interest in native “bush” foods. If there are groups of native food plant enthusiasts, perhaps they could suggest particular suitable species and may be encouraged to help in maintenance. Bush foods native to an area are adapted to regional climate and soils. Some bush food trees are used widely in Sydney as ornamental plantings in home gardens and parks. Near me are Illawarra plum, magenta lillypilly (*Syzygium paniculatum*), small leaf lillypilly

(*Syzygium leuhmannii*), and bunya pine seed (*Araucaria spp*); also the creepers, pigface and New Zealand spinach (*Tetragonia tetragoniodes*), on the beach dunes.

7. In rural areas, consider using trees that produce a foliage useful as fodder, such as carob. When the next El Niño brings drought to the land, council can harvest a portion of the foliage as emergency fodder for farmers’ cattle. This should engender public support for the plantings.

8. Street plantings, like most initiatives in public places, have a public relations component. Identify potential objections and develop persuasive approaches. The notion of planting fruit trees on streets may generate opposition from the influential native plants lobby. While it is true that native plantings could be a reservoir of genetic information for those indigenous species, a city in which the majority of plantings are native species simply furthers the need to rely on the hinterland for food. Because they are interested in environment and sustainability, it might help to point out the nutritional benefits of local food and the environmental costs (ecological footprint) of importing foods into the city. Δ

Russ Grayson PACIFIC EDGE Russ Grayson + Fiona Campbell Media, training and consultancy services for sustainable development. PO Box 446, Kogarah, NSW 2217 Australia. Phone/fax: +61-2-9588-6931. [pacedge@magna.com.au](mailto:pacedge@magna.com.au) or on the Web: [www.magna.com.au/~pacedge](http://www.magna.com.au/~pacedge).

# Networks & Resources

## Ecology is the Best Investment

An annual investment of \$45 billion in preserving large tracts of wild nature would yield an annual return to society of \$44 to \$52 trillion, a 100-1 return on investment, according to Robert Costanza, director of the Gund Institute for Ecologic Economics. A recent study he co-authored found that this investment would pay back in the form of ecosystem services like water filtration and climate regulation. In contrast, developing biomes (such as by logging a Malaysian forest or shrimp farming in Thailand) destroys about half of their value in ecosystem services. Δ

## Reducing Pesticide Use Through Bloom Time Tracking

Flowering times of trees and shrubs are predictably correlated with insect activity, according to phenology research by entomologist Daniel Herms of Ohio. This data will allow a precisely timed application of short-lived pesticide when target insects are most vulnerable, thus reducing environmental impact. See “Biological Clocks,” <http://ohioline.osu.edu/sc186> or call SCT, Ohio Agricultural Research and Development Center, (330) 263-3700. For phenology web links, see also [www.attra.org](http://www.attra.org), or call Appropriate Technology Transfer for Rural Areas: 1-800-346-9140. Δ

## Maritime Northwest Garden Guide - New and Revised

Published by Seattle Tilth, the third printing of the *Garden Guide* has updated its resource lists: seed houses, compost and gardening, reference books and websites. Still priced at \$10, the book has sold 15,000 copies since February '98, largely through word-of-mouth. Sales help support Seattle Tilth's gardens, programs, workshops, and education outreach. This organic gardening guide emphasizes diversity, crop rotation, and care for the soil, and gives helpful month-by-month advice for Northwest gardeners. Some enticing chapter headings include:

- 120 (or so) Ingredient Salads
- Kid-Smart Garden Art
- Shelter and Food Plants for Birds
- Flowers to Attract Beneficial Insects. Δ

## Lakota Community Nurtures Self-Reliance, Natural Building

Located on the Pine Ridge Lakota reservation, Slim Butte is 15 miles from Wounded Knee. It's a poverty-stricken community with unemployment at 73%, high rates of suicide, premature death, and disease. But the Slim Butte Agriculture Development Program is changing things. An organic gardening program is providing employment and far better nutrition than the government food rations on which so many residents have depended.

And the Slim Butte Land Use Association, formed three years ago, is promoting self-sufficiency in buildings, using resources directly from the land. The Tribal Council acquired an earthen block-making press, and they have built houses using clay and hemp-fiber blocks. Hemp fiber mixed with 10%

Portland cement makes light-weight building blocks and panels. However, their plans to raise their own fiber were foiled when Feds raided their hemp field, forcing them to import the material from Canada. A timber frame training program started by Fox Maple School of Traditional Building is allowing Lakota builders to better utilize the timber on their land. The long-term goal is to create a building company of skilled Lakota craftsmen.

On July 7-19, 2003, Fox Maple returns to Pine Ridge to continue their community building workshop program. Other courses at Fox Maple's site in Maine include introductory and advanced timber framing (May 2003), and clay building systems (June 2003). For more information: [www.foxmaple.com](http://www.foxmaple.com). Δ

## Biodiesel Newsletter Online

If you want to keep up with the burgeoning biodiesel movement, subscribe to a newsletter from Joshua Tickell (author of the highly recommended book, *From the Fryer to the Fuel Tank*). THE TICKELL BIODIESEL REPORT is at [www.VeggieVan.org](http://www.VeggieVan.org).

With over 8,000 subscribers in 20 countries, this newsletter recently featured such items as the switch to biodiesel by both the University of Massachusetts and the University of Georgia; a Cape Cod community which uses 20% biodiesel for home heating, vehicles, and boats; a 30 million gallon per-year biodiesel facility planned for Riverside, CA; a biodiesel demonstration project for Montreal buses; and the opening of Missouri's first biodiesel pump. Websites are offered for full stories.

Related technologies are also discussed. For instance, you can make 160 proof alcohol fuel for your gasoline vehicles for about \$0.80 per gallon, and when it burns, the 20% water content boils, expanding in volume 1800 times, resulting in more power and a cooler running engine. See [http://running\\_on\\_alcohol.tripod.com/make\\_your\\_own\\_fuel](http://running_on_alcohol.tripod.com/make_your_own_fuel). Δ

## Protecting Farmland Without Idling It

Working farmland can benefit ecologically and economically through the planting of more perennials, crop rotations, and the establishment of wetlands, according to a study by the Multiple Benefits of Agriculture Project. The study also found that on average, Minnesotans are willing to pay over \$200 annually for such benefits.

## Farming and the Natural World

*The Farm as Natural Habitat: Reconnecting Food Systems by the Land Stewardship Project of Minnesota* is a collection of farm stories edited by Dana and Laura Jackson. The book provides in-depth examples of farm families who are changing to more sustainable methods, balancing food production with ecological restoration and stewardship. See [www.landstewardshipproject.org](http://www.landstewardshipproject.org) or [www.islandpress.org](http://www.islandpress.org). Δ

## New Special Forest Products Website

For valuable tips on sustainable management of forests and their products, see [www.specialforestproducts.com](http://www.specialforestproducts.com). The new site has been launched by Giziibii RC & D, the U.S. Forest Service, MN-DNR and the Weyerhaeuser Foundation. They also offer a presentation for Midwestern loggers and landowners, and ads for forest products may be posted free on the site.. Δ

Other findings: rotational grazing of cattle can cut erosion by up to 80%. Downstream costs of sedimentation could be cut by up to 84% by use of soil-saving tillage, perennials, and crop rotation (e.g., hay, which is more profitable in the area studied than corn and soy).

See [www.landstewardshipproject.org](http://www.landstewardshipproject.org) for more details. Δ

## Honeybees Double Coffee Yields

[NewScientist.com](http://NewScientist.com) news service

Honeybee pollination can double a coffee crop's yield, according to researcher David Roubik at the Smithsonian Tropical Research Institute in Panama. Although the plants are primarily self-pollinating, Roubik believes bees improve coffee yield by increasing the amount of pollen placed on the stigma of each plant, thereby increasing the genetic diversity of coffee crops. Roubik studied plantations of the shrub *Coffea arabica*—the species that yields about 70 percent of the world's coffee, in western Panama. Roubik covered some coffee plant branches with netting. He found that in the uncovered branches, bees consistently increased coffee yields by around 36 percent, and sometimes by more than 50 percent. UN data on coffee yields worldwide backs Roubik's conclusions. Says Taylor Ricketts of Stanford University's Center for Conservation Biology: "Perhaps the best approach is to understand what roles native bees play in local agriculture, and try to conserve a diversity of them in the landscape, so that agriculture is not dependent on a single species of introduced bee, or on a managed pollinator industry." Δ

## Eco-Labeling Makes Family Farms More Sustainable

Label Rouge poultry producers in France now have 30% of the overall market for poultry in France. They specialize in slower-growing breeds, provide their flocks free range, feed them no animal products or antibiotics, and produce a superior product which is in demand. High certification standards are adhered to. The higher cost is offset by the higher price they can command - due to a clever regional marketing strategy and support from government, consumers, and trade associations. Thus they are helping preserve the economic viability of small family farms. Now the Label Rouge system is spreading to other animal products, and members of the National Center for Appropriate Technology (NCAT) are taking notice. There is a growing demand for eco-labels that ensure environmental protection, farm economic viability, and local food security. Greener Fields and Southern SAWG support this work.

To contact: Greener Fields: Michael Sligh. 919-929-7099. [msligh@rafusa.org](mailto:msligh@rafusa.org) To contact NCAT/ATTR: P.O. Box 3657, Fayetteville, AR 72702. (800) 346-9140. [annef@ncat.org](mailto:annef@ncat.org). Δ

*Adapted from Southern Sustainable Farming, newsletter of Southern Sustainable Agriculture Working Group: Box 324, Elkins, AR 72727.*

## Gardening Like a Forest

Ohio State University Extension's Dept. of Horticulture and Crop Science has published a Fact Sheet called "Forest Gardening in Ohio," written by Travis Beck and Martin Quigley. This article offers an overview, a list of suggested plants for Ohio, a detailed how-to guide for planting (which includes soil amendments and mulching), and tips for maintenance. For an on-line version, see <http://ohioline.osu.edu/hyg-fact/1000/1256.html>. Or write to: Ohio State University Extension, Horticulture and Crop Science, Columbus, OH 43210-1096. Δ

## A Handbook of Organic Farming

Agrobios, an Indian publisher, offers this handbook by Arun K. Sharma, which gives a wealth of information on soils, manures, compost, fungi, ecological pest management, certification and marketing. Other recent books (2001) available from this publisher include: *Principles and Practices of Agronomy*, *Biofertilizers for Sustainable Agriculture*, *Biotechnology and Biodiversity Conservation*, *Desertification Control*, *Mushroom Growing*, *Soil Conservation for Sustainable Development*, *Watershed Management*, and more. Email: [agrobios@vsnl.com](mailto:agrobios@vsnl.com). Δ

University of California Small Farm Center Online Resource Library is a searchable database of abstracts, with free full-text articles concerning small farms: [www.sfc.ucdavis.edu/library](http://www.sfc.ucdavis.edu/library). Small Farm Center: (530) 752-8136. Δ

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## Rare and Unusual Economic Plants Indexed

Plants For a Future ([www.pfaf.org.uk](http://www.pfaf.org.uk)) is "a resource center for rare and unusual plants, particularly those which have edible, medicinal, or other uses." This organization practices "vegan-organic permaculture" (growing plants without use of chemicals or animal products, except those obtained from humans). Their database gives information on over 7000 plants species—habitat, range, soils, propagation, uses. Δ

## Metaculture in India

The "Deeper Yet Welfare and Educational Society," founded by K. Vijay Kumar in 1994, is a school for children, an orphanage for street kids, an educational center for women, and an experiment in "metaculture" (alternative and sustainable agriculture). They are eager for volunteers with knowledge of permaculture, forestry, natural building, cottage industry, and renewable energy such as solar, wind, biomass, and small hydroelectric, to lend their expertise. Also needed are people with experience to share on setting up a sustainable village. Please contact and/or contribute to: The Deeper Yet Welfare and Educational Society, K. Vijay Kumar Dept. Z, Diwancheruvu 533103, Rajangaram Mandal, East Godavari District, Andhra Pradesh, India. Δ

## Rain Gardens in Maryland

An innovative program from Prince Georges County Department of Environmental Resources provides a means of preventing urban runoff and pollution. Rain Gardens, planted in yards, provide multiple benefits: natural beauty, habitat, wind breaks, noise absorption, and less maintenance than a lawn. Retention swales with layers of soil, sand, and mulch filter the rainwater and store it for the garden's grasses, trees, and flowers. Moisture-loving plants can include red maple, periwinkle, yellow flag, and Turk's-cap lily.

Manuals and a power-point presentation are available. Contact: Larry Coffman, Low Impact Development and Microcatchment Designs, (301) 883-5900. Δ

## Kansas Locally Raised Food Directory

is an interactive website for producers and consumers: [www.oznet.ksu.edu/kcsaac/fooddirectory/welcome.asp](http://www.oznet.ksu.edu/kcsaac/fooddirectory/welcome.asp). Or contact Jane Beckman, Kansas Center for Sustainable Agriculture and Alternative Crops, (785) 532-1440. Δ

## National Swine Census Released

The American Livestock Breeds Conservancy (ALBC) conducted the first comprehensive livestock breeds census in 1985 as a tool for understanding the scope of needed genetic conservation. While there is continuous monitoring of breed populations, a comprehensive survey is repeated about every five years. The results of the most recent ALBC comprehensive swine census are now available.

Genetic diversity in US swine populations warrants both research and conservation. The rapid consolidation of the swine industry is perhaps the greatest threat to genetic diversity. Fewer farmers are now involved in raising seed stock as more pork is being produced, processed, and marketed by the huge, integrated corporations. Industrial strains are usually not characterized as breeds, but are selected for specific production characteristics. Population data are not readily available on these strains.

There are two compelling reasons for the conservation of current genetics. First is the immediate need for the research and development of alternatives to intensive management systems. Systems such as deep litter, hoop houses, and pasturing can produce high-value specialty products. Second, conservation of diversity will maintain genetic options for the future.

The American Livestock Breeds Conservancy is the only US organization dedicated to the conservation and promotion of endangered breeds of livestock and poultry. Their efforts include research on breed status and characteristics; developing breed specific strategies for conservation; maintaining a gene bank of rare breeds; strengthening the stewardship skills of breeders; and educating the public. Established in 1977, ALBC is a national, non-profit, membership organization. For more information about this census, or about breed conservation, contact ALBC, PO Box 477, Pittsboro, NC 27312. 919-542-5704, [www.albc-usa.org](http://www.albc-usa.org). Δ

## Edible Oil Presses from China

Small and mid-scale screw oil presses, oil pre-press machinery, and more are available from Jinlong Grain & Oil Machinery Co., Ltd. Telephone: +86-3725-119967, fax: +86-3725-925185. e-mail: [screwoilpress@yahoo.com.cn](mailto:screwoilpress@yahoo.com.cn). Δ

# EVENTS

## GAIA Ecovillage Argentina Permaculture Design Course

**Dates:** February 24-March 9, 2003

**Location:** Navarro, Buenos Aires

**Description:** This is a 14-day certificate program. Asociación Gaia has a library on sustainability related issues, most of which is in English. For the foreign participants, it will be an opportunity to practice Spanish daily, and to experience the Argentine social and cultural context. The GAIA village site offers working examples of forest gardening, windbreaks, seed saving, pond construction and maintenance, natural building, appropriate technologies, greywater systems/compost toilets, wind energy systems, alternative economies, group dynamics, and plus community work collaboration (cooking, cleaning, maintenance). GAIA is located 110 km SW of Buenos Aires in the Argentine *pampa*.

**Instructors:** Peter Bane, Gustavo Ramirez

**Cost:** US\$650.

## Ecovillage Design Course

**Dates:** March 15-20, 2003

**Description:** This program will expose participants to the full range of issues involved in creating sustainable human settlements: vision and design, recruitment, creating community glue, making and keeping agreements, governance, finance, economic development, shaping the landscape, meeting infrastructure needs, testing and renewal, and enduring through time.

**Instructors:** Peter Bane, Gustavo Ramirez  
**Cost:** US\$350.

**Contact:** Asociacion GAIA,

Almafuerte 1732, San Martin (1650), Buenos Aires, Argentina (+54-2272) 492072. Fax: (+54-11) 47522197. [www.gaia.org.ar](http://www.gaia.org.ar), or email at [gaia@gaia.org.ar](mailto:gaia@gaia.org.ar).

## Ecological Gardening Email Course On-Line

**Dates:** Ongoing

**Description:** Email course of 8 modules, approx. 16 hrs. Each consists of short lecture, references, readings, and an assignment. Students may access the course email list for discussions. The instructor will provide individual feedback on each assignment.

**Instructors:** Bob Ewing.

**Cost:** \$25.00.

**Contact:** [ca.geocities.com/urbanpermaculture/ecogarden.htm](http://ca.geocities.com/urbanpermaculture/ecogarden.htm).

## La'akea Permaculture Gardens Island of Hawaii Permaculture Teacher Training

**Dates:** January 19-25, 2003

**Location:** nr. Pahoa

**Description:** A design course that introduces a revolutionary new way of teaching permaculture. We apply the principles of permaculture to the teaching of permaculture. We will cover every aspect of being an exciting and effective educator. The powerful teaching techniques you will learn in this course were gleaned from years of permaculture teaching wisdom from experienced Permaculture teachers around the globe. The prerequisite for this course is a certified Basic Permaculture Design Course. Course attendees will be eligible for Permaculture Teacher Certification.

**Instructors:** Michael Kramer and Christopher Peck.

**Cost:** \$700, includes housing, meals and all course materials.

## Permaculture Design Course

**Dates:** February 1-21, 2003

**Location:** nr. Pahoa

**Description:** A permaculture design course that focuses on integrating practical experience with the permaculture curriculum. The three-week format includes hands-on projects to compliment classroom time, as well as time for visiting local organic growers, farmer's markets, black sand beaches and the world's most active volcano. Additionally, while at La'akea Gardens course participants will spend time in an intentional community setting and participate in deep ecology sessions. Families are welcome.

**Instructors:** (depending on course) Douglas Bullock, John Valenzuela, Lonnie Gamble, Toby Hemenway, Jude Hobbs, Michael Kramer, Sean Canetta.

**Cost:** \$1450, includes meals, accommodations, and transportation.

**Contact:** La'akea Gardens at 808-965-0178 or register online at [permaculture-hawaii.com](http://permaculture-hawaii.com).

## Permaculture Design Course On-Line

**Dates:** begins March 16, 2003

**Description:** The course runs six months and includes reading assignments, 4 reports per student including a full permaculture design report, weekly "lectures" posted by instructors, and discussion via email. Most instructional posts will now be provided on the new course CD. For more information download the course reading list, course protocol, and course assignment schedule at (cont'd →)

## Cape Eleuthera Island School Bahamas Permaculture Design Course

**Dates:** January 24-February 14, 2003

**Description:** Three-week course allows for more in depth coverage plus guest lectures, field work, observation, participation in the Design Summit, and interaction with Ecological Architecture Course. Hands-on learning and exploration of local ecosystems of this sub-tropical savanna climate and application of permaculture principles makes for a course full of innovation and discovery.

**Instructors:** Morag Gamble and Evan Raymond of Crystal Waters, Australia, Island School Faculty and local Bahamians.

**Cost:** \$2000 includes lodging, meals, airport transfers, materials, and transport.

## Ecological Architecture Course

**Dates:** January 24-February 14, 2003

**Description:** Three-week course leads students through the design and construction phases of vernacular architecture and green building, participation in the Design Summit and interaction with Permaculture Design Course. Participants will study local ecosystems and collaborate with local residents and designers in the construction of a bio-diesel workshop. Build skills in technical drawing, carpentry, timber framing, passive cooling, renewable energy, and sustainable development. A unique opportunity to experience place-based architecture and team-building in a beautiful setting.

**Instructors:** Ben Falk, Ethan Korpi, Klas Templeman, Travis Bullard, and other guests.

**Cost:** \$2000 includes: Lodging, meals, airport transfers, materials, & transport.

## Design Summit

**Dates:** February 7-9, 2003

**Description:** Colloquium on sustainable development and renewable energies through design innovation.

**Panelists:** David Orr, John Todd, Nancy Jack Todd, Satish Kumar, and others.

**Contact:** (242) 359-7625, [benfalk@islandschool.org](mailto:benfalk@islandschool.org), [islandschool.org](http://islandschool.org) (Intelligent Design subheading).

<http://barkingfrogspc.tripod.com/frames.html>.

**Instructors:** Dan & Cynthia Hemenway, Dr. Willlem Smuts, Tim Packer.

**Cost:** \$1,000.

**Contact:** Dan Hemenway, [BarkingFrogsPC@aol.com](mailto:BarkingFrogsPC@aol.com).

## Lost Valley Education Ctr. Western Oregon Permaculture Teacher Training

**Dates:** January 8-14, 2003

**Description:** Join this 2nd annual course to develop teaching skills, discuss strategies and techniques, and review the rewards and challenges of teaching a Permaculture Design Course. The engaging curriculum takes into consideration different learning styles. Only graduates of a permaculture design course are eligible to attend this advanced training. Upon course completion participants will receive certification by the Cascadia Permaculture Institute.

**Instructors:** Jude Hobbs and Tom Ward.

**Cost:** \$550. This includes instruction, course materials, food and lodging.

**Contact:** Russ Reina 541-937-3351, Ext. 118 (russ@lostvalley.org) for more information. <http://www.lostvalley.org/>.

## A Women's Retreat: Introduction to Permaculture

**Dates:** March 7-9, 2003

**Description:** This workshop will concentrate on practical examples of how to design efficient, productive, and beautiful surroundings. Through lecture, discussion, and hands-on application we'll have the opportunity to connect with and learn from each other. The purpose of this workshop is to create a comfortable, supportive environment for women to learn Permaculture philosophy, principles, strategies, and sample techniques.

**Instructors:** Jude Hobbs.

**Cost:** \$195-\$225 (sliding scale).

This includes instruction, handouts, dorm room, and food. Limited work trades available.

**Contact:** Jude Hobbs at [hobbsj@efn.org](mailto:hobbsj@efn.org) or 541-342-1160.

## Permaculture Design Course Sonoma County, California

**Dates:** February 16-March 1, 2003

**Description:** A two-week residential course will be offered in land-use design based on the sustainable living philosophy of Permaculture. Will cover theory, food diversity, soil enrichment, water use, erosion control, natural building, organic gardening, forest farming, and more.

**Instructors:** Brock Dolman and Penny Livingston.

**Cost:** \$1200 incl. lodging and meals. Discount for 30 day advance reg'n.

**Contact:** OAEC, 707-874-1557, x 201, [oaec@oaec.org](mailto:oaec@oaec.org), [www.oaec.org](http://www.oaec.org).

## Permaculture Institute of Northern California

### Permaculture Fundamentals

**Dates:** January 10-11, 17-18, 24-25

**Description:** Ecological principles, water harvesting, permaculture gardening, urban projects.

**Cost:** \$450.

### Design Practicum

**Dates:** April 11-12, 18-19, 26-27

**Description:** Pre-requisite - Fundamental Course or prior Permaculture Design Course. You will receive a Permaculture Design Certificate upon completion of both courses.

**Cost:** Both Fundamental and Practicum: \$750.00.

### Permaculture Design Course

**Dates:** May 31-June 14, 2003

**Location:** Garberville, CA

**Description:** Skywater Center is an off-the-grid, outdoor educational training site. This wild and beautiful land will provide a setting for watershed-scale restoration work. This course will focus on wilderness awareness, tracking, understanding bird language, erosion and soil conservation, large-scale water harvesting. There are examples of keyline patterning, composting toilets, solar showers, outdoor kitchen & class room & swimming pond.

**Cost:** \$1100 includes camping and meals. Early Bird discount, \$950 til March 1st.

### Permaculture Camp & Skill Share

**Dates:** June 17-22 2003

**Location:** Garberville, CA.

**Description:** Teach What You Know, Play with Nature, Learn From Others. Permaculture, Aboriginal Skills, Natural Building, Mud Massage & More.

**Cost:** \$300 incl. camping & meals.

**Contact:** Permaculture Institute of Northern California, PO Box 341, Point Reyes Station, CA 94956, (415) 663-9090, <http://www.permacultureinstitute.com/courses.html>.

### CRMPI 17th Annual—

## Permaculture Design Course Central Rocky Mountains

**Dates:** August 25-September 5, 2003

**Location:** Basalt, CO

**Description:** High-altitude arid design strategies taught at one of North America's premier Permaculture sites. Nursery, mature forest garden, perennial greenhouses, integrated small animal & pest management systems, →

## Permaculture Design Course Interior British Columbia

**Dates:** June 2-14, 2003

**Location:** Winlaw, BC, Canada

**Description:** This is the basic two-week permaculture design course. It presents a good balance between theory & hands-on projects. The course will also include slide shows, lectures, discussion, field trips & design exercises. It is presented in cooperation with Selkirk College in Winlaw, BC.

**Instructors:** Gregoire Lamoureux and a team of local instructors.

**Cost:** Cdn \$750-850 includes course tuition & lunch only.

**Contact:** Kootenay Permaculture Inst. Box 43, Winlaw, BC Canada V0G 2J0

[spiralfarm@yahoo.com](mailto:spiralfarm@yahoo.com)

<http://www3.telus.net/permaculture>

## Permaculture Design Course Western Washington

**Dates:** June 9-23, 2003

**Location:** Port Townsend, WA.

**Description:** This 14-day course focuses on permaculture the science of sustainability with an emphasis on broadscale site design and sustainable building using bamboo, cob, strawbale, earthen materials. We'll also be looking at sustainable energy resources and design, biodiesel, low-tech wind, passive solar, mycology and the role of fungus in permaculture, ethical wildcrafting and seed harvesting, propagation and nursery skills, eco-village/community design, innovation restoration techniques and strategies, aqua culture, and holistic water stewardship/management.

**Instructors:** Bruce Hill, Doug and Sam Bullock, Simon "Corn-man" Henderson, and more teachers to be named later.

**Cost:** \$1000.

**Contact:** Cody Safadago  
707-443-3723

[healingearth2003@yahoo.com](mailto:healingearth2003@yahoo.com)

pond, solar thermal/electric systems, compost'g toilet. Learn to live well in harsh environments.

**Instructors:** Jerome Osentowski, Peter Bane, John Cruickshank, Becky Elder & guests.

**Cost:** \$1100 includes tuition, meals, camping, and course materials. \$100 discount before June 1st. Couple's discount \$50/person.

**Contact:** Jerome Osentowski/CRMPI  
Box 631, Basalt CO 81621  
970-927-4158  
[jerome@crmpi.org](mailto:jerome@crmpi.org)  
[www.crmpi.org](http://www.crmpi.org)

## Texas Hill Country Fundamentals of Permaculture

**Dates:** April 4-13, 2003

**Location:** nr. Austin, TX

**Instructor:** Learn to heal damaged cultural infrastructure in your community, to heal the land, to use economic strategies for sustainable rural and urban lifestyles, to garden and farm to feed your family, with lots of hands-on activities.

**Cost:** \$500.00

## Design Practicum

**Dates:** September 5-13, 2003

**Location:** nr. Austin, TX

**Description:** Patricia Allison of Earthaven Ecovillage will lead the class, with Richard Pierce of Austin and a team of Central Texas Permaculture teachers. Completion of both courses earns the participant a design certificate.

**Cost:** \$400.00

**Contact:** Martha Stevens  
830-864-4174

[martha@petestevens.com](mailto:martha@petestevens.com)

## Water, Soil & Plants

### An Introduction to Permaculture Middle Tennessee

**Dates:** April 2-6, 2003

**Location:** Short Mountain Sanctuary  
nr. Liberty, TN.

**Description:** The 3rd annual spring fling of permaculture for fairies and their friends. We'll build swales, move carbon, catch water, and plant edible landscapes. Oh...and we may play with goats, chickens, and old buildings. Join us on the mountain as we do our part to slow the erosion.

**Instructors:** Peter Bane, Keith Johnson, Jimi Kocher-Hillmer.

**Cost:** \$200 incl. meals and camping. No one turned away for lack of funds.

**Contact:** SMS-Permaculture Workshop,  
247 Sanctuary Lane  
Liberty, TN 37095  
615-563-4397 (voicemail)

## Women's Work:

### Creating Sustainable Futures

**Dates:** August 29-September 1, 2003

**Location:** Black Mountain, NC

**Description:** An introduction to permaculture and natural building as tools for a future that is economically, ecologically, and spiritually viable. Open to women only.

**Instructors:** Patricia Allison, Mollie Curry  
**Cost:** \$350 incl. tuition, materials, meals, camping. **Contact:** Culture's Edge →

## Fundamentals of Permaculture in Canada

### Southern Ontario

**Dates:** July 4-11, 2003

**Location:** Hillsburgh, Ontario, Canada

**Description:** Our classroom will be Everdale's 50-acre working organic farm, with forests, meadows, and demonstration models of sustainable technologies such as solar and wind energy. Everdale is located one hour northwest of Toronto. Visit [www.everdale.org](http://www.everdale.org) on the web.  
**Course topics:** Permaculture as the basis for Design; Natural Systems; Maps and Mapping; Home and Garden Design; Intensive Small Systems; Self-reliance and Food Security; Building with Appropriate Technologies; Economics; Rehabilitating Our Environment. Lots of slide shows, "hands-on," and group work in a beautiful outdoor setting.

**Instructors:** Gregoire Lamoureux, Richard Griffith, Anna Gibson

**Cost:** Cdn.\$950 includes camping and vegetarian meals; \$50 discount for reg'n. before June 11. Cabin accommodation extra.

**Contact:** Richard Griffith  
Permaculture Community Action Worknet  
RR1, Ravenna, Ontario, N0H 2E0 Canada  
519-599-5107; [mulchman@sympatico.ca](mailto:mulchman@sympatico.ca)  
Introductory weekend workshops as well!

### Eastern Ontario

**Dates:** August 18-24, 2003

**Location:** Ottawa, Ontario, Canada

**Description:** Seventh Generation is a non-profit organization actively promoting integrated sustainable living practices through workshops, lectures, tours, and resources for the community. The course will take place at their community center near Carp, west of Ottawa. See [www.seventhgeneration.ca](http://www.seventhgeneration.ca).  
**Course topics:** Permaculture as the basis for design; Natural Systems; Maps and Mapping; Home and Garden Design; Intensive Small Systems; Self-reliance and Food Security; Rehabilitating Our Environment. Lots of slide shows, "hands-on" and group work in a beautiful outdoor setting.

**Instructors:** Gregoire Lamoureux, Richard Griffith, Anna Gibson, and guests.

**Cost:** Cdn.\$900 includes food and camping; \$50 discount before July 18.

**Contact:** Seventh Generation  
4596 Carp Road  
Carp, Ontario K0A 1L0  
613-839-3997  
[info@seventhgeneration.ca](mailto:info@seventhgeneration.ca)

## Earthaven Ecovillage

### Southern Appalachians, NC

### Village Living Residency: Training in Permaculture Design

**Dates:** June 19-August 3, 2003

**Location:** Black Mountain, NC

**Description:** A six-week program including full permaculture design course certification. Add'l workshops, hands-on projects, mentoring, ecovillage immersion, and other opportunities.  
**Instructors:** Peter Bane, Chuck Marsh, Patricia Allison, Keith Johnson, Andrew Goodheart Brown, and Earthaven Ecovillage members.

**Cost:** \$2250 includes tuition, materials, meals, and camping.

### Fundamentals of Permaculture

**Dates:** June 19-27, 2003

**Location:** Black Mountain, NC

**Description:** Eight-day intensive introduction to principles and practices of permaculture in a community setting at Earthaven Ecovillage. First part of the certification curriculum in permaculture design. Natural systems, the built environment, observation and design skills, cultivated ecosystems. How to see, think, and do the future...NOW.

**Instructors:** Peter Bane, Patricia Allison, Andrew Goodheart Brown, guests

**Cost:** \$675 includes tuition, materials, meals, and camping.

**Contact:** Culture's Edge, 1025 Camp Elliott Road, Black Mountain, NC 28711  
(828) 669-3937, [culturesedge@earthaven.org](mailto:culturesedge@earthaven.org), [www.earthaven.org](http://www.earthaven.org)

### Village Design Practicum

**Dates:** July 25-August 2, 2003

**Location:** Black Mountain, NC

**Description:** Eight-day intensive practice in permaculture design for a developing ecovillage community: social design, governance, infrastructure, land use, water, waste & energy, presentations and costing; mapping & surveying. Presented by the Southeast's finest design team. Second part of the certificate curriculum in Permaculture design. Prior training in Permaculture required.

**Instructors:** Chuck Marsh, Keith Johnson, Peter Bane, guests

**Cost:** \$675 includes tuition, materials, meals, and camping.

# LETTERBOX

## Anarchy Meets Bureaucracy

Thank you for your heartfelt story in PA #47. I look forward to every issue as my lifeline to the permaculture community. Bravo for pulling it off one more time—bigger and better than ever. It is the only magazine I read cover to cover with unbridled eagerness. It was an added delight to see my own story, "A Garden by a Lake"—I only wish you had given the editor a byline!

Regarding the diploma issue, I applied for one in November of 2000 based on a three-year project and my teaching of permaculture. I sent in \$60 following my proposal and have heard nothing in two years. If this is standard procedure perhaps the process needs review.

I write this only to encourage others to pursue their work without outside validation. No piece of paper can prepare us for the work and anyone with a big heart and common sense can do it. Defining permaculture and the movement seems to be the question of the day. Certification seems like a prerequisite to carrying the ideas forward as originally intended but I have experienced such a variety of instruction that it all feels very free form by now. Also, I have met many uncertified practitioners who are happy with their own definitions. The marrying of anarchy and bureaucracy appears graceless at best and perhaps unnatural in its final form.  
Claudia Joseph  
Brooklyn, NY

## Perfect Diversion

Peter,

I don't know when the PCA arrived but I just found it, and sat down to give myself a break from the line-up of gotta-do-now activities. Thank you so much for the personal peek into your life in your editorial (#47). All of you at Earhaven are often on my mind and I wish I were more often there. (The ad on p. 30 is very

good with those happy faces of friends.) The collection of water articles is marvelous, along with a great array of book reviews. Jane Hunnicutt's rich article on rabbits was the perfect diversion keeping us close to the earth.  
Donald E. Bixby, DVM  
Technical Director  
Amer. Livestock Breeds Consvcy.  
Pittsboro, NC

## "Positions of Leverage"

Toby, Peter and Keith,  
Congratulations on #48. The "Making Changes" issue was chock full of interesting and provocative articles. Toby, we especially appreciate the tremendous editorial work required to pull this theme issue together.

And thank you for including our article. We are pleased and proud to be among such thoughtful folks working to change the trajectory of Spaceship Earth.

We've had a small but interesting response from the article. With our approach to "change insurgency," it isn't about how large the army is, it's about "positions of leverage."  
Jim Salmons & Timlynn Babitsky  
Raleigh, NC

## Healing Plants

Greetings Peter,

Just finished the first (grueling) year of medical school. Wonderful challenge and tremendous fun. It is interesting to watch the same dynamics in Naturopathic Medicine that I saw in Natural Building: ideals constantly under pressure from the need to be accepted in a larger audience and to be effective. Herbal and homeopathic and hydrotherapy techniques work, but they are of the "slow but sure" mode. Americans are so trained to think in terms of instant results that I see Naturopaths being seduced by plant extracts in place of the plant itself, or supplements instead of qualitative change in diet.

My progression so far, and it is a short path at this point, is more in the direction of plant spirit medicine and homeopathy. I don't think there are enough medicinal

herbs to fill the need if everyone starts going full blast into botanical medicine. I appreciate that you started your article on "Essential Plants for the Home Garden" by mentioning medicinal herbs right at the top. I have been banging on a drum beat of "Please plant medicinals!" since the days when I made a plant collecting trip through the Southeast with Sue Mullen and saw the state of the plant communities. I also appreciated your comment that many of these plants are medicinal for the land itself. When I journey with plant spirits I am often amused to find that many of them, while willing to be used for human medicine, are actually more focused on the health of the other plants as their work, not the health of some two-leggeds. Humans can get so damn self absorbed we just assume all these layers of reality are here for us alone.  
Keep up the good work!  
Ted Butchart  
Seattle, WA

## Homework

Dear Peter,

Thank you. I have just received issue 47 and want to say thank you for the story about the delayed publishing. I felt your passion for the work and your report encouraged me to do my own homework in other tasks I have on hand. In my case I do not have any complaint regarding the delays.

I have a comment regarding the matter of copyrights of PDC, registered by Bill Mollison and several letters printed in PCA, from several well known PDC teachers. I do not know what kind of personal problems are between Bill and all the other teachers, but I saw no benefit in the letters. They came from supposedly experienced teachers, but I was disappointed to see their opinions.

Regarding Bill's trademark registration, I do not know Bill's intention, and personally I am not bothered by it. If teachers felt uneasy about it, why not call him or meet with him directly? To be objective, that's the basic thing to do. Instead I see opinions,

personal assumptions, and conclusions without confirmation, touching of past problems, etc., flowing in letters without any constructive intention.

I suggest everybody have a look at the following book: *How to be an Adult* by David Richo. It is not a joke, and it is not just-a-simple-how-to-do book. One university professor of counseling told me: "That book is one of the best summaries of contemporary psychology." I hope it will be added to the reference library on building communities.  
Tsuyoshi Abe  
Brennan Healing Science  
Tokyo, Japan

## Beekeepers Seeking Advice

Dear Folks,

This past spring, Colleen and I began what we hope will develop into a long-term beekeeping project. Our initial inspiration came from an article by Emilia Hazelip in *Permaculture Activist* #36, "Breakthrough in Beekeeping." I was particularly interested in the method of making the hive bodies from plaster and straw, based on insights of French beekeeper Gilbert Veuille. We wrote Emilia to obtain a copy of her translation of Veuille's booklet describing his system. We read his book (as well as every other bee book we could get our hands on), built hives, got our bees, and delighted to see our little buddies take up residence in the garden.

All in all, we are pleased, but obviously, when beginning a new endeavor, many questions soon present themselves. This is especially true when not using standardized methods and materials. We have questions that would best be answered by others (preferably this side of The Pond, as our French is spotty) who have adopted G. Veuille's system. If you have experience with this system, please contact us.

Also, we are seeking info on earth/cob ovens. Can anyone point us toward such an oven that can turn out a good loaf of bread?  
In fer life,  
Randall Nocton, 3340 JB Pigg Rd.  
Cypress Inn, TN 38452

# CALENDAR

**December 15-27, 2002. LAOS. Self Reliant Network: Building a Community Center.** Janell Kapoor, U.S. contact. [janell@kleiwerks.com](mailto:janell@kleiwerks.com); [www.kleiwerks.com](http://www.kleiwerks.com) or [Wongsanit Ashram, ashram@cscoms.com](mailto:Wongsanit Ashram, ashram@cscoms.com); [www.sulak-sivaraksa.org](http://www.sulak-sivaraksa.org).

**January 8-14, 2003. Oregon. Advanced Permaculture Teacher Training Course.** Lost Valley Education Center. Russ Reina (541)937-3351, ext. 118 ([russ@lostvalley.org](mailto:russ@lostvalley.org)), <http://www.lostvalley.org/>.

**January 9-14, 2003. THAILAND. Wongsanit Ashram: Building a Community Center.** Janell Kapoor, U.S. contact. [janell@kleiwerks.com](mailto:janell@kleiwerks.com); [www.kleiwerks.com](http://www.kleiwerks.com) or [Wongsanit Ashram, ashram@cscoms.com](mailto:Wongsanit Ashram, ashram@cscoms.com); [www.sulak-sivaraksa.org](http://www.sulak-sivaraksa.org).

**January 10-11, 17-18, 24-25. No. California. Permaculture Fundamentals Course.** Permaculture Institute of Northern California, PO Box 341, Point Reyes Station, CA 94956, (415) 663-9090, <http://www.permacultureinstitute.com/courses.html>.

**January 13-26, 2003. AUSTRALIA. Permaculture Design Course.** ERDA Institute Trust at Djanbung Gardens PC Education Centre, Nimbin, NSW, [permed@nor.com.au](mailto:permed@nor.com.au), [earthwise.org.au](http://earthwise.org.au).

**January 16-25, 2003. THAILAND. Jo's Organic Farm Building and Finishing Work.** Janell Kapoor, US Contact. [janell@kleiwerks.com](mailto:janell@kleiwerks.com); [www.kleiwerks.com](http://www.kleiwerks.com) or [Wongsanit Ashram, ashram@cscoms.com](mailto:Wongsanit Ashram, ashram@cscoms.com); [www.sulak-sivaraksa.org](http://www.sulak-sivaraksa.org).

**January 19-25, 2003. Hawaii. Advanced Permaculture Teacher's Training.** La'akea Gardens, (808) 965-0178, [permaculture-hawaii.com](http://permaculture-hawaii.com).

**January 22-25, 2003. Pacific Grove, CA. Ecological Farming Conference at Asilomar.** Ecological Farming Assn., 406 Main St., Ste. 313, Watsonville, CA 95076, (831) 763-2111, fx/-2112, [www.eco-farm.org](http://www.eco-farm.org).

**January 24-February 14, 2003. BAHAMAS. Permaculture Design Course.** Cape Eleuthera Island School, [benfalk@islandschool.org](mailto:benfalk@islandschool.org) or [www.islandschool.org](http://www.islandschool.org) (Intelligent Design subheading), (242) 359-7625.

**January 24-February 14, 2003. BAHAMAS. Ecological Architecture Course.** Cape Eleuthera Island School, [benfalk@islandschool.org](mailto:benfalk@islandschool.org) or [www.islandschool.org](http://www.islandschool.org) (Intelligent Design subheading), (242) 359-7625.

**February 1-21, 2003. Hawaii. Permaculture Design Certification Course.** La'akea Gardens, (808) 965-0178, [permaculture-hawaii.com](http://permaculture-hawaii.com).

**February 3-April 4, 2003. NEW ZEALAND. Organic Gardening Course.** P.L.A.N.E.T.

Organic, a program of the Institute of Earthcare Education Aotearoa, PO Box 130, Takaka, Golden Bay, NZ. 64+3-525-8334, [planetorganic@ihug.co.nz](mailto:planetorganic@ihug.co.nz), <http://earthcare.nelson.org.nz>.

**February 7-9, 2003. BAHAMAS. Design Summit.** Cape Eleuthera Island School, [benfalk@islandschool.org](mailto:benfalk@islandschool.org) or [www.islandschool.org](http://www.islandschool.org) (Intelligent Design subheading), (242) 359-7625.

**February 15-24, 2003. THAILAND. Vipassana Center: Building a Meditation House.** Email [ashram@cscoms.com](mailto:ashram@cscoms.com).

**February 15-March 1, 2003. California. Permaculture Design Course.** OAEC, (707) 874-1557, x 201, [oaec@oaec.org](mailto:oaec@oaec.org), [www.oaec.org](http://www.oaec.org).

**February 24-March 9, 2003. ARGENTINA. Permaculture Design Course.** Asociación GAIA, Almafuerte 1732, San Martin (1650), Buenos Aires, Argentina, (+54-2272) 492072. Fax: (+54-11) 47522197, [www.gaia.org.ar](http://www.gaia.org.ar) [gaia@gaia.org.ar](mailto:gaia@gaia.org.ar).

**February 25- March 7, 2003. South INDIA. Buddha Smiles: Building a Model School.** Details posted at [www.kleiwerks.com](http://www.kleiwerks.com). Email [ramu\\_manivannan@hotmail.com](mailto:ramu_manivannan@hotmail.com) or [ashram@cscoms.com](mailto:ashram@cscoms.com).

**March 7-9, 2003. Western Oregon. A Women's Retreat: Introduction to Permaculture.** Lost Valley Education Center, Jude Hobbs at [hobbsj@efn.org](mailto:hobbsj@efn.org) or (541) 342-1160.

**March 15-20, 2003. ARGENTINA. Advanced Course on Ecovillage Design.** Asociación GAIA, (+54-2272) 492072. Fax: (+54-11) 47522197, [www.gaia.org.ar](http://www.gaia.org.ar), [gaia@gaia.org.ar](mailto:gaia@gaia.org.ar).

**March 16, 2003. On-line. Permaculture Design Course.** Dan Hemenway, [BarkingFrogsPC@aol.com](mailto:BarkingFrogsPC@aol.com).

**April 2-6. Liberty, TN. Introduction to Permaculture.** Short Mountain Sanctuary, 247 Sanctuary Lane, Liberty, TN 37095, (615) 563-4397.

**April 4-13. nr. Austin, TX. Fundamentals of Permaculture.** Martha Stevens, (830) 864-4174, [martha@petestevens.com](mailto:martha@petestevens.com).

**April 11-12, 18-19, 26-27. California. Design Practicum.** Permaculture Institute of No. California. (415) 663-9090. <http://www.permacultureinstitute.com/courses.html>.

**April 28-July 4, 2003. NEW ZEALAND. Advanced Permaculture Design.** P.L.A.N.E.T. Organic, a program of the Institute of Earthcare Education Aotearoa. 64+3-525-8334, [planetorganic@ihug.co.nz](mailto:planetorganic@ihug.co.nz), <http://earthcare.nelson.org.nz>.

**May 31-June 14, 2003. California. Permaculture Design Course.** Permaculture Institute of No. California. (415) 663-9090, <http://www.permacultureinstitute.com/courses.html>.

**June 9-23, 2003. Washington. Permaculture**

**Design Course.** Cody Safadago, [healingearth2003@yahoo.com](mailto:healingearth2003@yahoo.com), (707)443-3723.

**June 17-22, 2003. California. Permaculture Camp & Skill Share.** Permaculture Institute of Northern California. (415) 663-9090, <http://www.permacultureinstitute.com/courses.html>.

**June 19-27, 2003. Black Mountain, NC. Permaculture Fundamentals.** Culture's Edge, 1025 Camp Elliott Rd., Black Mountain, NC 28711. (828) 669-3937. [www.earthaven.org](http://www.earthaven.org), [culturesedge@earthaven.org](mailto:culturesedge@earthaven.org).

**July 4-11. Hillsburgh, Ontario, CANADA. Fundamentals of Permaculture.** Richard Griffith, Permaculture Community Action Worknet, RR1, Ravenna, ON, N0H 2E0 Canada. (519) 599-5107. [mulchman@sympatico.ca](mailto:mulchman@sympatico.ca).

**July 21 - September 26, 2003. NEW ZEALAND. Human Settlement Design.** P.L.A.N.E.T. Organic. 64+3-525-8334, [planetorganic@ihug.co.nz](mailto:planetorganic@ihug.co.nz), <http://earthcare.nelson.org.nz>.

**July 25-August 2, 2003. Black Mountain, NC. Village Design Practicum.** Culture's Edge. (828) 669-3937. [www.earthaven.org](http://www.earthaven.org), [culturesedge@earthaven.org](mailto:culturesedge@earthaven.org).

**August 3 -16. NW Pennsylvania. Permaculture Design Certification Course.** Three Sisters Farm, 134 Obitz Road, Sandy Lake, PA 16145, (724) 376-2797, [www.bioshelter.com](http://www.bioshelter.com), [defrey@bioshelter.com](mailto:defrey@bioshelter.com).

**August 18-24. nr. Ottawa, ON, CANADA. Seventh Generation, 4596 Carp Road, Carp, Ontario K0A 1L0, Canada. (613) 839-3997. [info@seventhgeneration.ca](mailto:info@seventhgeneration.ca).**

**August 25-September 5. Basalt, CO. Permaculture Design Course.** CRMPI, PO Box 631, Basalt, CO 81621. (970) 927-4158. [www.crmipi.org](http://www.crmipi.org), [jerome@crmipi.org](mailto:jerome@crmipi.org).

**August 29-September 1. Black Mountain, NC. Women's Work: Introduction to Permaculture.** Culture's Edge, (828) 669-3937, [www.earthaven.org](http://www.earthaven.org), [culturesedge@earthaven.org](mailto:culturesedge@earthaven.org).

**September 5-13. nr. Austin, TX. Pc Design Practicum.** Martha Stevens, (830) 864-4174, [martha@petestevens.com](mailto:martha@petestevens.com).

**September 13-27, 2003. AUSTRALIA. Permaculture Design Course.** [courses@permaculture.au.com](mailto:courses@permaculture.au.com), [www.permaculture.au.com](http://www.permaculture.au.com).

**October 13-December 12, 2003. NEW ZEALAND. Bioregional Community Development.** P.L.A.N.E.T. Organic. 64+3-525-8334, [planetorganic@ihug.co.nz](mailto:planetorganic@ihug.co.nz), <http://earthcare.nelson.org.nz>.

**October 27-31, 2003. AUSTRALIA. Sustainable Neighborhoods: Building Better Communities.** [courses@permaculture.au.com](mailto:courses@permaculture.au.com), [www.permaculture.au.com](http://www.permaculture.au.com).

Send Your Calendar Items to [pcactivist@mindspring.com](mailto:pcactivist@mindspring.com) with "Calendar" in the subject line.

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Black Mountain NC 28711  
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## Books & Publications

**Portable Dwelling** Info-letter; about living in tents, yurts, domes, trailers, boats, remote cabins, other mobile or quickly-made shelters plus plans for simple low-cost, low-impact comforts and conveniences. Sample \$1. 6/\$5. Box 190-pa, Philomath OR 97370. -49

## Miscellaneous

Seeking downeast Maine permaculture activists. Setting up new site in Franklin. Let's connect! 603-964-8496 until Spring 2003. Becka. [strivin@wildmail.com](mailto:strivin@wildmail.com). -49

Help write the new bottom line Permaculture organizing tool and accountability audit for urban sustainability. Send your contributing ideas to [cocogord@mindspring.com](mailto:cocogord@mindspring.com). -49

Handforged "jewelry for your home." See [www.plumorchardforge.com](http://www.plumorchardforge.com). Architectural Ironwork by David Brewin. From switchplates to garden gates. 828-293-3151. -49

## Seeds and Plants

Grow mushrooms for home use or profit. Shiitake, oyster, reishi, morels & others. For a free catalog and cultivation info, write to Mushroom Harvest, PO Box 5727, Athens OH 45701. 740-448-6105. -49

## Situations Wanted

College Grad needs Pc site within 200 miles of Colorado Springs for internship/work-trade Jan.-May. [cpicci@juno.com](mailto:cpicci@juno.com), 314-750-6860. -49

## Land Access

Established 12ac permaculture farm and tourist business bordering protected indigenous reserve in remote rainforest of southern Costa Rica. Ocean views & sports, fresh air, excellent birding. 5 rustic hardwood houses, spring water, mature and growing fruit trees, bamboo, hardwoods, lots of food. Off grid. Will sell all or lots, with or without houses. [brookeria@yahoo.com](mailto:brookeria@yahoo.com). -49

Start mile high pie country stand or Pc retreat lake acreage. TX hillcountry, 30 min to San Antonio. 25K. (925) 944-6334. -49

## Help Wanted

Office Manager for Sequatchie Valley Institute, a nonprofit education center, at Moonshadow Community. Room and board provided. Also seeking

interns interested in permaculture gardens, orchards, natural building, community living, etc. Contact: Rte. 1, Box 304, Whitwell, TN 37397. [www.svonline.org](http://www.svonline.org). [mediarights@bledsoe.net](mailto:mediarights@bledsoe.net). -49

Position open for Land Steward at Lost Valley Educational Center. Coordinate sound management of natural resources on LVC land using principles of sustainable use, permaculture, and the current LVEC Land Stewardship Plan. 2 yrs experience as land manager. Educated in Biology/Botany, resource management, and permaculture. Needs to be a community member. Lost Valley is a consensus-based intentional community and non-profit educational center.

[www.lostvalley.org](http://www.lostvalley.org). Contact: [garden@lostvalley.org](mailto:garden@lostvalley.org), 81868 Lost Valley Ln. Dexter, OR 97431, 541-937-3351. -49

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## Back Issues of *The Permaculture Activist*

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| I, 1 July '85 Permaculture In Oz  | I, 2 Nov. '85 Fruit & Nut Trees       | #38* Feb. '98 <b>Economic Transformation:</b> The Speculative Economy, No Middle Class Pc?, Worker-Owned Coops, WWOOF, No Money!, Global Warm-What Profits?, Holistic Financial Planning, Land Use, Adopt-A-Hive   |
| II, 1 Feb. '86 Garden Design  | II, 2 May '86 IPC-2 & Pc Courses      | #39† July '98 <b>Knowledge, Pattern &amp; Design:</b> Pc: A Way of Seeing, Sand Dunes, Native Conservation., Language Worldview & Gender, Patterning as Process, Land-Use Planning, Teaching Pc, Vietnam, Holmgren on Pc   |
| II, 3 Aug. '86 2nd Int'l PC Conference  |                                       | #40† Dec. '98 <b>New Forestry:</b> Regl. Devlpmt., Horselogging, Menominee Res'v'n, Forest Investing, Restoration, Old Growth, Homestead Tenure, Forest Soils, Forest Farming, Woody Agric., Rainforests, Windbreaks, Coppice  |
| II, 4 Nov. '86 Fukuoka, Keyline, Genetic Cons'vn, City Farms, Oceanic PC  |                                       | #41* May. '99 <b>Natural Building:</b> Oregon Cob, Cordwood, Bamboo, Thatch, Ethics, High Winds, Origins of Conflict, Greenhouses, Ponds, Adobe, Road-Building, MicroHydro, Bldgs. That Live, Under \$20K Houses, Dreams   |
| III, 1 Feb. '87 Networking, Natural Farming, D-Q Univ., Children's PC   |                                       | #42† Dec. '99 <b>Self-Reliance &amp; Community Cooperation:</b> Co-Intelligence & Self-Orgn., Archetype Design, Sovereignty, Samoa, Mondragon, Natural Housing, Comm. Gdns., Zone Zero, Solar Electric Tractor, Beekeeping   |
| III, 2 May '87 PC Restoration of Wild Lands, Design for Sacramento Farm   |                                       | #43† June '00 <b>Food &amp; Fiber:</b> Food for Hunger, Ferments, Seasons Salads, Heirlooms, Self-Fertile Gardens, Revolution in Rice, Cold Climate Food Strategies, Edible Insects, Chilies, Food Origins, Garlic, Ethnobotany, Wild Food, Bamboo, Fencing, Fibers, Hemp, Silk, Mulch Beds, Chicken Forage. |
| III, 3 Aug. '87 <b>Annual Planting Cycle</b>  | III, 4 Nov. '87 <b>Trees for Life</b> | #44† Nov. '00 <b>Earthworks &amp; Energy:</b> Spreader Drain, Horse Swales, Earth Dams, Machinery, Carpet-lined Ponds, Constr. Wetlands, Biogas, Windmills...  |
| IV, 1 Feb. '88 Marketing PC Products, Bamboo, Home Wastewater Treatment   |                                       | #45† Mar. '01 <b>Medicine &amp; Health:</b> World & Self, Healthy Home, Designing Care, Ayurveda/AIDS, Agents of Decay, Comm. Health Centres, Grafting, Women & Trad. Medic., 4th World Apothecary, Healing Weeds, Hawaiian Botanicals, Garden as Healer, Medicinal Crops, Ginseng.                          |
| IV, 2 May '88 <b>Urban-Rural Links:</b> Economics & Community Development   |                                       | #46† July '01 <b>Good Work &amp; Right Livelihood:</b> Pc Golf Course, Downsize Cost of Living, New Forest Economy, Energy as Currency, Buddhist Market'g. Escaping Wage Slavery, Meaning of Surplus, Urban Intl. Community, Enterprise Facilitation, Cosmic Bob's Sustainability Recipe.                    |
| IV, 3 Aug. '88 Social Forestry, Gabions, Jap. Org. Ag., Prodc/Cons. Coops   |                                       | #47† June '02 <b>Watersheds:</b> Water as Commodity, Basins of Relations, Watershed Development, Beavers, Peat Bogs, Skywater Center, Urban Stormwater, Dryland Rockwork, Conservation Investments, Rabbits.   |
| IV, 4 Nov. '88 Multi-Story Tree Crops, Greening Dom. Repb, Runoff Gardens   |                                       | #48† Sept. '02 <b>Making Changes:</b> Co-Intelligent Activism, Webs of Power, Urban Food, How to Change, Teaching for Change, Global Transformation, City Repair, Escaping the Job Trap, Argentine Recovery, Costa Rica Pc   |
| V, 1 Feb. '89 Permaculture: A Designer's Manual, Tree Bank, Water in PC   |                                       |  |
| 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 PC Def's, Water Conservation, Small Dams, Ponds, Keyline  |                                       |  |
| VI, 1 Feb. '90 Household Greywater Systems, Soil Imprinting   |                                       |  |
| VI, 2 May '90 Insectary Plants, more Greywater, Land Use for People   |                                       |  |
| VI, 3† Aug. '90 <b>Water:</b> Forests & Atmosphere, Catchment, Nepal, Pond Design   |                                       |  |
| VI, 4† Nov. '90 <b>Urban Permaculture:</b> Ecocity Conf'ce, Soil Detox, Suburbs & Pc.   |                                       |  |
| #23† May '91 <b>Politics of Diversity:</b> Greenhouse Mkt Gdn; PC in Nepal.   |                                       |  |
| #24 Oct. '91 <b>Creativity in Design:</b> Examples; <b>Index Issues #1-23;</b>  |                                       |  |
| #25† Dec. '91 <b>Design for Community:</b> CSAs, Restoring Forest; Garden Ecol.   |                                       |  |
| #26* May '92 <b>Soil:</b> Our Past, Our Future: Fertility, Worms, Cover Crops   |                                       |  |
| #27* Aug '92 <b>Integrating Pc:</b> Deconstructing Utopia, Grassroots Organizing, Garden Polyculture, Pattern Learning, Living Fences   |                                       |  |
| #28* Feb. '93 <b>Structures:</b> Comn'ty Dsgn, LETS, Industry, Strawbale/Timber-frame Bldgs.  |                                       |  |
| #29/30* July '93 <b>Networks:</b> Special Media Rvw, Rural Reconstr'n, Leaf Conc., Comn'ty Food Initiatives, Pc in Palestine, Do-Nothing Educ., <i>Feng Shui</i> , Pc Acad.   |                                       |  |
| #31* May '94 <b>Forest Gdnng:</b> Energy & Pc, Mushrm Cultvn, Robt.Hart's F.G., Spp for N. Cal., Alders, Agroforestry in Belize & China, Honeylocust, N-fixers.   |                                       |  |
| #32 April '95 <b>Animals &amp; Aquaculture:</b> Animal Polyculture, Small-scale Cattle, Goat Dairy, Keyline, Feral Chickens, Bee Plants, Constructed Wetlands   |                                       |  |
| #33 Dec. '95 <b>Cities &amp; Their Regions:</b> Green Cities, Independent Regions, LA Eco-Village, MAGIC Gardens, CoHousing, City Markets, City Animals, Micro-Enterprise Lending, Suburban conversion, Rails-to-Trails.    |                                       |  |
| #34 June '96 <b>Useful Plants:</b> Bamboo Polyculture, Medicinals, Pest Control, Root Crops, Oaks, R. Hart's For. Gdn, Russian Plants, Regl. Plants, Sources  |                                       |  |
| #35 Nov. '96 <b>Village Design:</b> Pattern Language, Consensus Democracy, Conflict, Historic & New Villages, Planning for Tribe, Vill. Economics   |                                       |  |
| #36 Mar. '97 <b>Climate &amp; Microclimate:</b> Climate Change, Microclimate Primer, Weather, Windbreaks, Low-Tech Sun Locator, Drylands, Cool Slopes, Subtropic Forest Gdn, Straw-Clay Bldg, Round Beehive, Water Catch.   |                                       |  |
| #37† Sept. '97 <b>Tools &amp; Appropriate Technology:</b> Dowsing, Workbikes, New Energy, Scythes, Japanese Saws, Nursery, Ferrocement, Greywater, A-frame & Bunyip Levels, Ram Pump, Solar Toilet, Log Yoke, Cookstoves... |                                       |  |

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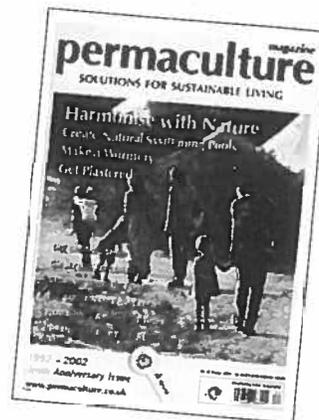
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*Council Hall rises above Consensus Circle, Earthaven Ecovillage, 1999.*

*photo credit Robin Bee.*

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