THE

# PERMACULTURE ACTIVIST

No. 39 $6.00

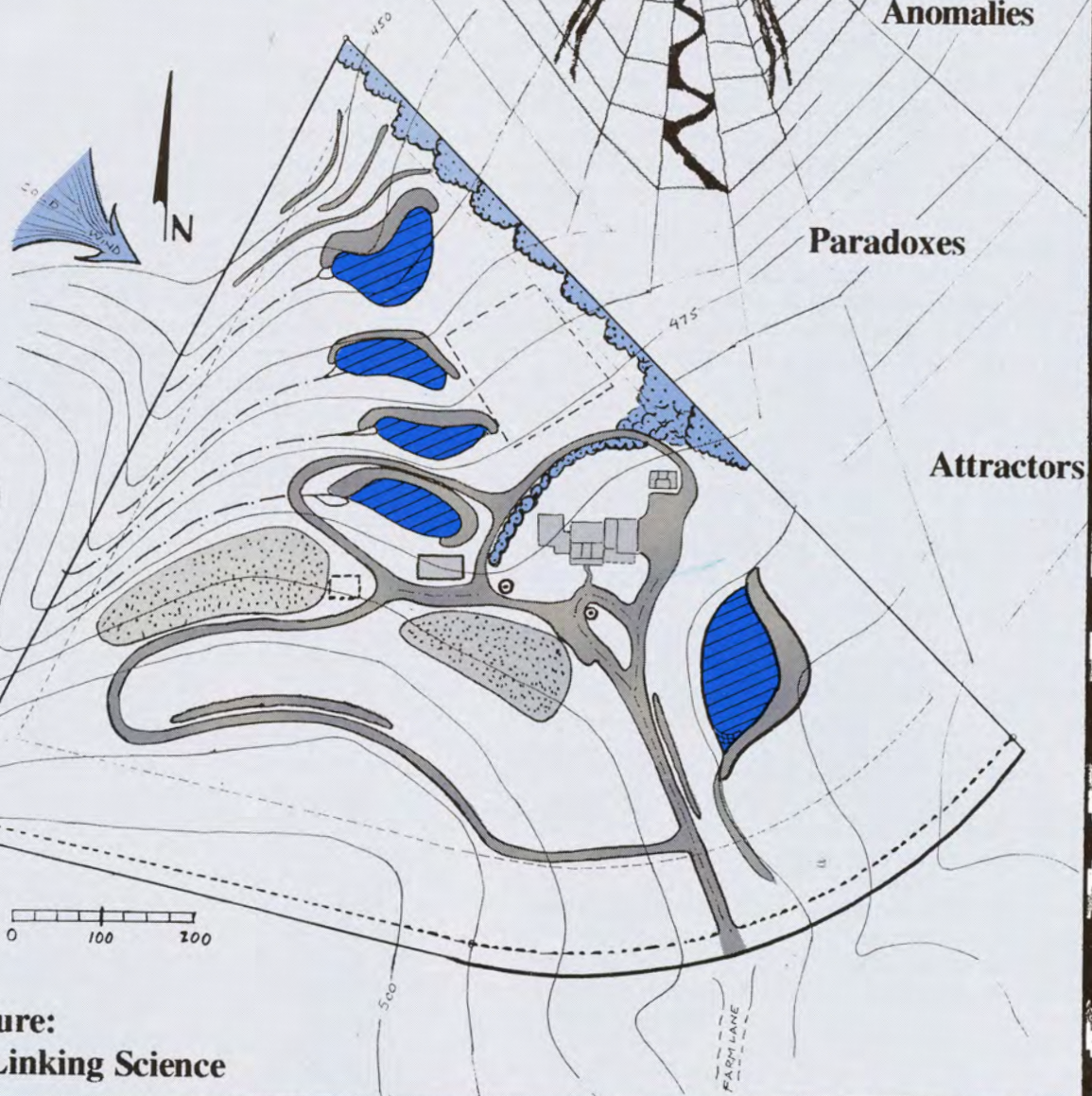
## *Knowledge Pattern & Design*

Indicators

Anomalies

Paradoxes

Attractors




**Permaculture: the Linking Science**

# The Pattern of Abundance

## Peter Bane

This issue is our 39th and marks the 13th anniversary of the Activist's first publication—not a milepost often remarked on, but if I read Marian Farrior and Patricia Michael correctly, it's more meaningful than most people would recognize. For thirteen is the seventh iteration of the Fibonacci series (if you don't know what this is, you'll have to read the articles on pages 16-23) and seven "...represents non-scaleable nature. Seven is mystical, almost unseen. It represents a complete but ongoing process, a periodic rhythm of internal relationships."

The mysterious pulsings of this body of knowledge called permaculture have expressed the interrelatedness of many things. This issue of PCA expresses the unseen relatedness of a community of practitioners across the continent and around the world. This is the first issue in my eight years as editor that has "written itself." In response to an editorial design, contributors from Oregon, California, New Mexico, Texas, North Carolina, the District of Columbia, Massachusetts, and Wisconsin, a full circuit of the regions, as well as Australia, Mexico, and Brazil sent a wealth of stories, essays, and reports—mostly original, mostly on deadline, mostly illustrated or accompanied by photos, mostly brilliant. The material flowed into our office almost unseen, silently over the airwaves and phone cables, patterns of electrons rearranging themselves in response to the urgings of a macro-neural network. This is the fulfillment of the design for this and other permaculture magazines, sketched out so hopefully a decade or two ago.

Bill Mollison has retired. He often joked that he had his chakras removed...wanted to discourage his audiences from putting faith in the unseen, imaginal notions of a New Age mysticism. Maybe he donated them to the planet. Wherever Bill's chakras went, they seem quite alive and vigorously talking with each other.

Frustrated often by the challenge of explaining the subtle yet profound shift of perception that permaculture requires to sincere (or skeptical) questioners, Permaculture students and teachers the world over may take some encouragement from Tim Murphy and Vicki Marvick's words (see page 24). Permaculture is a process of relationship. "Patterns are significant because they reveal relationship dynamics." For when asked "What is permaculture?" we can now confidently reply, "Permaculture is you...in the landscape of nature...feeling, sensing, cultivating respect for all forms of life...and expressing as you can, the harmonic understanding of your place on the earth, creatively, joyfully." That act is design.

The design for our next issue is "New Forestry," deadline October 15th. Beyond that, Natural Building, in the winter-spring, and Food, Fiber, and Medicine next summer. To join the conversation, share the language of your intimacy with nature. From this the body grows.

I give a great measure of thanks to Keith Johnson whose graceful service and support made this composition possible. His graphic renderings appear throughout the pages of this issue, beginning with the cover image, which is a sketch of a landscape design in process, part of our two efforts to know a particular piece of earth.

The unseen counterpart of this magazine now exists on the Web. Please visit the Activist homepage and let us know how it can be made yet more brilliant! Δ

## The Activist Wish List

Help us fulfill the next phase of the design. Though the magazine's revenues pay its bills (barely), growth has always come from the generosity of friends, donors, and faithful readers who gave us some of their surplus.

We would welcome, know exactly what to do with, and are prepared to receive any and all of the following:

- 1000+ new subscribers (lifetime, annual, gift, library, etc.)
- Advertisers
- Mac Imagewriter in good condition for printing labels
- Mac-compatible laser printer
- system upgrade for Mac Quadra (more memory, disk space)
- scanner
- PC zip drive
- digital camera
- video cam
- envelopes (business size, 9x12, 10x13, etc.)
- seeds of useful plants
- PV system for a new office at Earthaven

Our sincere gratitude goes out to all who have supported this magazine over its peripatetic career. We hope the walkabout continues to be fruitful.

## Of Special Note—

Though buried deep on page 62, the story on Terminator Seeds, regrettably truncated for lack of space in this issue, is worth every reader's attention. It has been widely circulated on the Internet, and is beginning to appear in print media as well.

David Holmgren's thoughtful essay (pp. 53-57) will be of keen interest to many of our readers. We have again devoted a substantial amount of space to the Musings of the Permaculture movement, David's piece included.

Lisa Wittrup's fine illustrations on pages 21-23 are a welcome addition to an issue filled with many words and often abstract concepts. For our readers who learn best by doing, this issue can still be traced, colored, cut out, folded, and of course, mulched.

# The Virtual Activist

Great! Fantastic! Brilliant!

So say some of the viewers of Permaculture Activist's new website, which can be seen at: **<http://sunsite.unc.edu/pc-activist>**. Many thanks to Larry London at SunSITE for offering to host our pages. And thanks, too, to all of you who offered feedback and support. The challenging, and often very frustrating, process of learning to design and manage a site was, nevertheless, very rewarding when it finally launched on June 19th. We hope to reach a much wider audience and base of support for our endeavors. We include an extensive listing and many links to Permaculture folks all over the planet. If you are not listed, or if your data needs updating, please let us know.

Some of the features you will find there are: history, definitions, and principles of Permaculture; several articles from previous issues of *The Activist;* extensive lists of suppliers for seeds and plants; lists of good books and videos; details of the Permaculture Fundamentals Curriculum; a very comprehensive list of global contacts; some good internet mailing lists on Permaculture; and subscription information.

Hope you'll take a look and add your comments in a quick email to us at <pcactiv@sunsite.unc.edu> or a note in the post. Δ

—Keith Johnson

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Mollie Curry
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the mutinous rabble...

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For each issue mailed to subscribers, 25¢ is placed in a Tree Tax Fund maintained by *The Permaculture Activist*.. From time to time these funds are distributed to individuals or groups working in reforestation and forest preservation. Recipients are selected based on need and demonstrated effectiveness in their work. To apply for funds, contact the Publishers and include a short description of your project and proposed use of funds. We have approximately $500 available per year.

*Cover art courtesy of Keith Johnson*

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***Winter/Spring issue, #41*—Natural Building**
***Summer issue, #42*—Food, Fiber & Medicine**

## DEPARTMENTS



**A NOTICE TO SUBSCRIBERS**
From time to time The Permaculture Activist rents or trades its mailing list to other permaculture or sustainability organizations.
If you would like your name withheld from these lists, please let us know.

# Permaculture: A Way of Seeing

Joel Glanzberg

When I first heard Bill Mollison speak about patterning he also noted that we treat everything as trivial. He maintained that because we see everything as separate from everything else, and nothing as affecting anything else, we trivialize everything—including ourselves. It makes us impotent, unimportant, and alone.

This seemed to me deeply true, and it also seemed that in patterning lay the key to all of permaculture and the remedy to this isolation. By looking from the permaculture perspective of patterning everything else fell into place. Permaculture no longer seemed like a complex system of strategies, ideas, and techniques, but a way of seeing.

This was a change of perspective I had been working toward for a long time. The patterns in patterning rang bells from way back. Spirals, pine cones, seashells, trees, old stories—all these had influenced me. When I was a little kid we lived in the city. Everything was man-created. Anything not man-made was at least man-placed. Everything seemed cold, objective and arbitrary. I was surrounded by objects, separate and isolated, capable of existing in any context or even in no context. My actions—even my existence—seemed not to matter or affect anything. I was just one being in a mass of humans going about their daily activities.

When I was about eight years old we moved to what was then the country on its way to becoming the suburbs. It was mid-winter. One snowy day I followed a flock of birds from bush to bush. They brought me to the edge of the woods. Far above my head towered huge trunks and branches, black against the snow and sky. Here was something entirely new in my experience. It made me feel so small, and yet it all seemed to be a part of me.

I spent most of my spare time in those woods. In every direction there was life and motion. The sunlit green leaves blew in the wind above my head, birds flitted from branch to branch around me, mayapples covered the hillsides, and squirrels and 'coons ran about while badgers and groundhogs burrowed under the ground. The woods seemed one big life woven out of many.

It was around this time I first found words from someone that seemed to describe this feeling or perspective:

> *Then I was standing on the highest mountain of them all, and round about me was the whole hoop of the world. And while I stood there I saw more than I can tell and I understood more than I saw; for I was seeing in a sacred manner the shapes of all things in the spirit, and the shape of all shapes as they must live together like one being. And I saw that the sacred hoop of my people was one of many hoops that made one circle.*
>
> *—Black Elk*

Black Elk was clearly seeing the whole world. It was made of the hoops of many: "the two-leggeds, the four-leggeds, the wings of the sky, and all the green things." But how do you make a circle out of hoops? To me, it seemed to be talking about a pattern like the one on the back of acorns and pine cones, where intersecting curves weave together to form a circular whole.

**Knots in the Flow**

It was already clear to me that the natural world was constantly changing, interchanging, and flowing. I saw the curves on a pine cone as representing these flows, and the pine cone itself was like a knot.

Years later I found another piece of the puzzle, from someone else's view of what Black Elk had said.

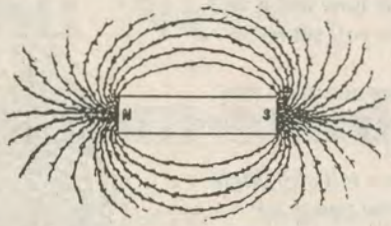
> *That reminds me of the Japanese term for song,* bushi *or* fushi, *which means a whorl in the grain. It means in English what we call a knot, like a knot in a board...like the grain flows along and then there's a turbulence that whorls...It's an intensification of the flow at a certain point that creates a turbulence of its own...but then the flow continues again. That's parallel to what Black Elk says in* Black Elk Speaks, *talking about the Plains Indian view of physical nature: that the trees, animals, mountains are in some sense turbulence patterns, specific turbulence patterns of the energy flow that manifest themselves temporarily as discrete items, playing specific roles, and then flowing back in again.*
>
> *—Gary Snyder*

This was very different from how I was used to viewing the world. I knew that all things are constantly in flux. Living things take in material and energy from which to build their bodies and shed waste and dead tissue. Mountains are certainly continually building rock or soil, and eroding. But I was still used to thinking of these "things" and their individuality as primary. I thought of nature as made up of individual "things" interacting. Here Gary Snyder was saying that it is *not* that flows occur between "things," but that the "things" are merely manifestations of the intersections, or knots, of flows. Rather than seeing the "things" as primary, and the flows as secondary, he reversed it. What if the flows are primary and my precious "things" secondary? What if the interactions are more real than the "things"?

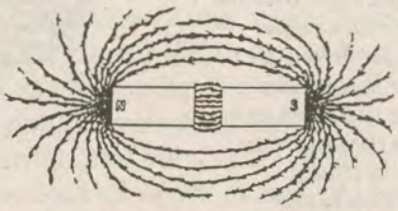
**The Visible and Invisible Worlds**

I encountered this same change in perspective when studying electromagnetism. Michael Faraday, a 19th century scientist, had insights into electromagnetism that showed this same reversal of focus. Before Faraday's time, scientists had talked about "charged particles" connected by "lines of force." They saw the particles as real and the lines of force as imaginary, or at least as

being created by the particles. The particles were like my "things," and the lines of force like flows.



Similarly, scientists had talked of "lines of force" as emanating from magnets. Again they saw the magnets as primary, and the lines of force as secondary. These magnetic lines of force can be seen by sprinkling iron filings on a piece of paper atop a magnet. When Faraday cut a magnet in half, the lines of force remained unchanged, no matter where or how many times he cut it. He realized it wasn't the magnet creating the lines of force. The lines of force were simply flowing through the magnet. It was the focus of the lines of force. Perhaps we could say that the magnet was a knot or whorl of magnetic lines of force. Faraday extrapolated from these findings that perhaps in the field of electricity there were no "charged particles"—they might simply be manifestations of the intersections of lines of force. Again, what had been seen as a "thing" now looked like a knot or focus of flows.



**What is the Pattern?**

I started to look at the pattern on sunflowers. The face of a sunflower reveals a pattern like that on pine cones and acorns. Two series of logarithmic spirals radiate out from the center. One series curves clockwise and is intersected by the other series curving counterclockwise. When I looked at this one way, it appeared to be a mosaic design, created by many seeds of the proper size and shape. But if I looked in another way, the flows or curves appeared predominant, with the seeds simply manifestations of the intersections of these flows.

The face of the sunflower reflects the patterns of streamline flows in trees and other plants. The sugars, created by sunlight in the leaves, travel to the roots as sap in the phloem. Nutrients and water travel up the plant from the roots to the leaves in the xylem. The patterns they trace are called streamlines. These streamlines connect leaves and roots on opposite sides of the plant (in much the same way as the right and left sides of our bodies are controlled by the opposite hemisphere of our brains). As the exchanges flow between them, they spiral around the center of the plant. They also interweave, changing places. The outer layer of the roots becomes the inner layer of the stem and vice versa. The plant is itself a focus or whorl of flows, twisted and woven together.

All of this got me looking at weavings of all sorts, and baskets in particular. When I looked at a Tarahumara basket I saw the sunflower pattern. Again, two series of intersecting curves formed a whole. In this case the curves or flows were obviously primary, and the diamond shapes created by their crossing were (like the sunflower seeds) just manifestations of the flows intersecting. Each diamond was a knot where things came together to form "something," and the basket was one big knot, made from many smaller knots.

Again Black Elk's words came to mind:

*"...one of many hoops that made one circle..."*

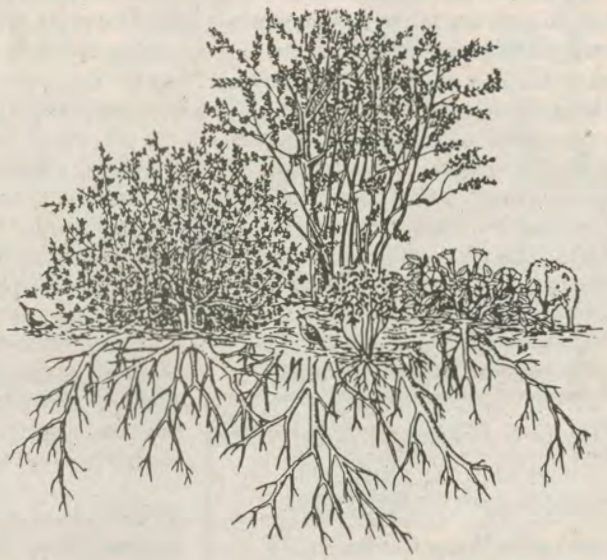
The basket seemed to me like all of nature: a complete whole, made up of intersecting flows held tight by their many strivings. I realized then that nature, like the basket, is not held together by

# A Knot in the Flow Called a Guild

On the hill behind my house there is a juniper tree, planted by a blue jay. The bird ate ripe berries one fall. Within her stomach, the seeds were acid-treated, and she deposited them in a nutrient bundle while sitting on a rock. The jay was not trying to plant a tree. She planted it simply by being a blue jay. The rain washed the dropping off the rock. In the moist shade of the rock a tree grew.

Eventually, other jays came to eat its berries. From its branches, they dropped packages of seeds they had eaten. In the shaded moist mound of good soil created from the wind-borne debris caught by the juniper, fertilized by its own falling leaves, and enriched by bird and animal droppings, prickly pear, currants, and gooseberries started to grow. While the berries drew more birds, which left their precious loads of seed and insect-derived phosphorus, the prickly pears helped to keep large animals at bay. Spreading outward from the tree's canopy, these spiny plants collected and held more soil and nutrients.

A pack rat family made its home beneath the plants and hid its winter stash of piñons there. One grew into a tree. In the winter, quail shelter in the plants, and fertilize them while planting grasses and eating berries and seeds.



***A low desert guild: wolfberry, hackberry, datura, chiltepine, quail, javelina*** *Illustration: April Baisan*

Imitate this scene elsewhere, and you have the beginnings of a little knot in the flow called a guild. Δ

cooperation, but by tension. Each strand of the basket is straining to be itself, trying to push the way it wants to go. When you look at the fibers of a basket, you see that by pushing against one another they support one another. It is stable by being a dynamic equilibrium.

A quote from Heraclitus sprang to mind at seeing this: "They don't see how pulling apart is bringing together, as in the back-bent tension of the bow and lyre." Here, I thought, is the beginning of the weaving, and of permaculture. This beginning has to do not with discipline, order, organization, planning, etc., but with the tension created by unconstrained interrelationship. In short, good natural order, rather than maintained disorder.

**A Basket Woven of Strivings**

It became clearer to me that it is not cooperation and compromise that make nature work. It is flows and their manifestations interacting and pushing on one another. They do not go out of their way to push. Just being themselves creates the tension that draws them together. This pushing also puts things in their right places. When things are in the right places, unity is created.

In nature and in permaculture, everything has needs and products. Any needs not provided by the system must be provided by us, and that is work we have to do. Any products not used by the system are wasted and hence become pollution. In a permaculture system where things are put in their right places, the chicken gets to be a chicken (scratching, eating bugs, plants, and fruit, shitting, laying eggs, mating, etc.) and its products help us and the system that supports it.

Order is created, not by cooperation, but by the tension of things striving to be themselves. This also applies to us. Our consciousness can enable us to deflect or ignore the pressures that keep us or put us in our right place. But not forever. Eventually we must assume our right place, be put there forcibly, or be pushed out of creation. No matter how much we damage the web of life, it will survive, with or without us.

Luckily, the same consciousness that allows us to disregard the pattern of nature allows us to see it. Look!

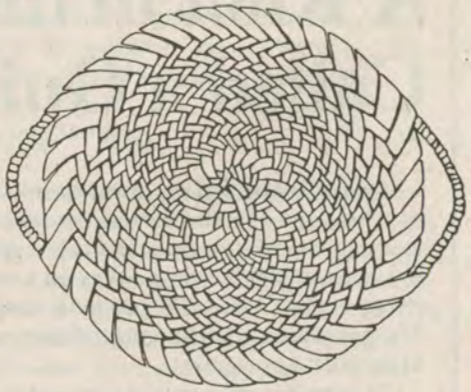
*Imagine you are atop a tall cliff, high in the mountains. All about you is the circle of the world. You are at its center. A thin cloud cover moves and shifts over the sun. You notice a single golden eagle rising up from the valley far below. He spirals higher and higher in long slow arcs, each spiral seeming to tighten as he climbs. As he rises above the peaks you see him against the back-lit clouds. Sunlight fills the shifting clouds with colored light. This light seems to stream from the eagle's tail and wingtip feathers, spinning outward, crossing and recrossing, like the curves on the face of a sunflower. As you watch, the light streams downward. You imagine these streams of light connecting to everything around you. You see the tall spruce trees spiraling up into these colored threads of light. Connected to them are all of the lives associated with the trees: the animals, bugs, soil, you. All twisting together in one huge interwoven thread. The colored strands continually shift with the eagle's circling. Everything around you is alive, and you see that it is holy.*

In this place nothing is trivial. Without need for pride everything is important. It matters intensely whether you toss that can out or recycle it. It matters intensely whether you use redwood from California or home-grown black locust. Your actions affect everything. Everything is you.

This is a tremendous responsibility, but also a blessing. Our actions are no longer small and meaningless but important and powerful. Suddenly all of the power to "fix" the mess we are in is in our hands. This power does not come from our being better, stronger, smarter, faster, or above anything. Our importance never comes from our accomplishments. It comes from our having a place, and accepting it. Δ

*A Pennsylvania native, Joel Glanzberg is a permaculture designer and teacher working with the Living Structures Cooperative in Santa Fe, New Mexico. Together with Roxanne Swenzell, whose illustration(s) grace the opening pages of this article, he developed Flowering Tree Permaculture at Santa Clara, New Mexico. Contact the author at: 1594-A San Mateo Lane, Santa Fe, NM 87505.*





***Above, from top to bottom:***

***Pattern on the face of a sunflower***
*Illustration: Roxanne Swentzell*

***Pattern on a pinecone***
*Illustration: Silvia Parsons, from an illustration in* The Power of Limits

***Pattern on a Tarahumara basket***
*Illustration: Roxanne Swentzell*

# Mats and Nets:
## Patterns from Sand Dunes

*"I reckon you know what you got into," Hank says. "A devil's stovepipe, I guess."*

*"Yeah. . . . You see, buh, this here was a pine forest a long, long time ago. These dunes didn't use'ta be here, just trees. But the winds kept bankin' the sand higher and higher and finally covered up the forest. Clean to the top of the trees. And the trees eventually rotted out, leaving these hollows where they use'ta be, maybe just barely covered at the top. An' you stepped into one. . . . most people who fall into a devil's stovepipe pull the stovepipe in after 'em. . . ."*

*(from Ken Kesey's* Sometimes a Great Notion.)

Toby Hemenway

Smothered beneath the dunes that blanket 150 miles of the Oregon coast are ancient, dead forests. Yet on these same dunes, the crumbling of delicate mosses and lichens on naked sand builds new soil, and begins new forests. Ecologists love sand dunes, because here, raw pioneer plants are mingled with many-centuried forest giants and with all the many stages of ecological succession that lie between. Sand dune ecology offers vivid examples of the shifting patterns that time weaves with plants and earth. It should be no surprise, then, that we can use the ecological patterns of the dunes in permaculture. After all, in many ways, permaculture is applied ecology.

On the dunes, all the many phases of ecological succession—the journey from pioneer species to forest, which normally takes centuries to unfold—have been stacked together and shuffled by the disrupting forces of sand and wind. Sand drowns a whole forest here, while over there it etches out a plate-sized circle of moisture where a beakful of clover seeds can root. The result is a rich fractal patchwork: on every scale pioneer plants, shrublands, and old forests are blended together. Patterns in time have been transformed into patterns in space, and these patterns tell a story.

In twenty years of exploring ecology on the Oregon dunes, I've never seen a devil's stovepipe; never ended up, like Hank Stamper's brother in Kesey's novel, at the bottom of a bark-lined tunnel in the sand left by a rotted tree. But I have stepped through other transitions on the dunes that were almost as abrupt as Lee Stamper's fall. I've walked from shrieking wind and scouring sand on the naked beach into a tall shrub thicket just a few feet away that was calm and cool and quiet. Here, on sand that's been stilled and enriched by plants, a dense wall of evergreen huckleberry, western rhododendron, Oregon wax myrtle, salal, and manzanita forms impenetrable tangles that will reduce a howling Pacific gale to a whisper. These thickets dance with birds, rustle with scampering lizards, are tunneled with the trails of small mammals, and offer a sweet harvest of flowers and berries to the hiker.

How has the force of raw, blasting sand been gentled into rich soil and diverse habitat? What patterns can we see here, and how can we transfer these patterns to our own homes to create a thriving ecosystem?

### Pioneers in the Sand

Dry sand habitats are tough places for plants to colonize. These dry environments come in two types: actively blowing sand, and stable sand. Nature uses different tactics to deal with each. But behind the dissimilar tactics lies the same strategy: To damp down wildly fluctuating, erratic processes and energies, like rainstorms, wind, or temperature extremes, and convert them into rhythmic, reliable sources of food and habitat. For example, rain pounding onto dry sand is fiercely erosive, and the rainwater quickly drains away, since bare sand can't retain much moisture. The sand dries out in the first minutes of sunshine. That's a violent flood/drought cycle. But the situation changes when plants protect the sand with a leafy cover and humus binds the rocky grains into spongy soil. Now, life has filtered and smoothed the wild oscillations of eroding flood and searing drought into a gentle rhythm of wet to not-quite-dry. The battering energy of rain has been turned, by a kind of biological *aikido*, into a useful, reliable source of plant growth.

Photo by the author

*A moving sand dune drowns a forest of shore pine.*

On my dune walks, I often linger in the windless shelter that lies behind dunes or forests. This is the dry, stable sand environment, the first of the two mentioned above. Here, protected from the constant ocean wind, I gladly stop to eat lunch or take notes. In these quiet patches, ecological succession begins when clumps of red fescue grass colonize the bare sand. The grass mounds act as miniature windbreaks, stopping air movement near the ground. This creates a welcoming environment for a type of moss that loves sunny, dry sites. Incoming spores sprout quickly. When I picnic or write in these sheltered spots, I'm often surrounded by thick crusty mats of these primitive organisms.

The growing moss, in the pattern of ungratefulness familiar to ecologists and parents everywhere, eventually crowds out the fescue that nurtured it. As the seasons pass, the carpet of moss alternately dries and renews, crumbling nutrients into the sand. Lichens move in and add their load of organic matter. The resulting patch of shelter and soil tailors an ideal habitat for the next occupant: kinnikinnik, a creeping evergreen shrub with red berries.

Kinnikinnik sprouts from bird-dropped seed or from dormant tendrils remaining from earlier waves of colonization. Like the moss, this trailing shrub grows in a mat shape, but on a larger scale, and covers the shade-intolerant moss. The moss is now relegated to the margins of the expanding kinnikinnik mat, and creeps outward into the sunny, protected edge, transforming more sand into soil. The growing kinnikinnik cover lifts the wind enough for new, taller shrubs—evergreen huckleberry and salal—to enter the ensemble. A patch of bare sand has become an expanding island of fertile, densely vegetated soil.

In a few years the loamy center of the moss and shrub island is rich and protected enough to germinate shore pine seeds, shat out by birds lured to the tangled shelter and to the fruit of kinnikinnik, salal, and huckleberry. The young pines stretch upward into the ocean wind, which buffets and flags the pines into another layer of mat-like vegetation. This largest mat, ringed by an advance guard of habitat-preparing kinnikinnik and moss, captures an ever-expanding circle of ground. Inside the circle, the wind-flattened trees eventually shoulder upward. The protected vegetation in the middle grows taller, giving the island a domed profile. Finally, straight and tall pines, completely sheltered from the wind, stand at the center. A forest island has been born.

**Fruits of Succession**

Here, the first tactic in nature's strategy for building habitat has been to reduce the most disruptive force—the wind. After the grass windbreak forms, an ever-enlarging series of mat-forming plants follows. As the pattern proceeds from moss to shrub to pine, each succeeding plant community needs more nutrients and milder conditions to prosper. Supplied with these, each community can wrest a larger space from the raw and fitful environment. The new inhabitants enfold this space, quiet it, transform it into a home. Each generation uses the litter and habitat bestowed by the earlier occupants as a pump-priming, an investment to be wisely applied and increased. The fuel for this work is freely supplied sun, water, and air. As succession proceeds, organic matter, biomass, and nutrient recycling increase. Roots dive deeper, stems thrust higher. Increasingly, the plants regulate the temperature, moisture, and nutrient levels of their environment. Enticing habitats form, and a dense web of connections links the many species.

This rich tapestry—a whole forest—began with a tuft of grass and a tiny crust of moss.

Stay with me for a second sand-dune survival strategy, and then I'll tie both examples more explicitly into permaculture.

**Networking on the Dunes**

The most hostile habitat on the Oregon dunes is dry, blowing sand. Few plants can survive this environment's combination of alternating burial and exposure, scouring sand, desiccating salt air, and lack of moisture and nutrients. I don't linger in these inhospitable places, but usually huddle with my jacket flapping and billowing around me, staying just long enough to list the species growing here. Some of the hardy plants that manage to colonize these howling bare dunes are seashore bluegrass, large-headed sedge, gray beach pea, and beach silver-top. These plants all use the same set of survival gimmicks: deep, spreading roots that don't mind exposure to air, and large seeds that are easily carried by wind yet that hold enough nutrients to give the seedlings a good start in poor soil. These species are also unfazed by burial—they respond by happily putting out tillers to the surface.

Instead of forming mats the way stable-sand pioneers do, pioneers in active sand grow as single plants, randomly established wherever the wind's vagaries drop a germinating seed. The shape of these plants—either a clump of grass or a mound of tightly clustered leaves—creates a small sheltered zone around each individual. The plant forms its own microclimate, a tiny ring of unmoving sand that holds moisture and litter. Once again, life has moderated high wind, extreme dryness, and sterile ground into a more tolerable range. Thus bolstered, the plant builds enough reserve energy to send out runners, and constructs a network of clump-forming clones, each spaced one to three feet apart.

This network sets the stage for the community's jump to a new level of self-organization. Picture each plant with its small zone of benign microclimate. Each sheltered zone nearly touches the ones around it, creating a network of protection that covers a few hundred square feet. The individual plants have coalesced into an interconnected region of reduced wind, more stable sand, higher fertility, and more reliable moisture. Yet the plant density is very low: There's plenty of unoccupied ground that can be colonized by new species. A second-generation community now moves into this friendly neighborhood, and soon, seaside tansy, coast angelica, seashore lupine, bracken fern, and pearly

## Some Species of the Oregon Dunes

| | |
|---|---|
| Red fescue | *Festuca rubra* |
| Moss | *Rhacomitrium canescens* |
| Lichen | *Cladonia spp.* |
| Kinnikinnik | *Arctostaphylos uva-ursi* |
| Seashore bluegrass | *Poa macrantha* |
| Large-headed sedge | *Carex macrocephela* |
| Gray beach pea | *Lathyrus littoralis* |
| Beach silver-top | *Glehnia leiocarpa* |
| Seaside tansy | *Tanacetum camphoratum* |
| Coast angelica | *Angelica hendersonii* |
| Seashore lupine | *Lupinus littoralis* |
| Bracken fern | *Pteridium aquilinum* |
| Pearly everlasting | *Anaphalis margaritacea* |
| Evergreen huckleberry | *Vaccinium ovatum* |
| Salal | *Gaultheria shallon* |
| Oregon wax myrtle | *Myrica californica* |
| Manzanita | *Arctostaphylos columbiana* |
| Western rhododendron | *Rhododendron macrophyllum* |
| Shore pine | *Pinus contorta* |

everlasting are thriving amidst the pioneers. Pollinators now enter the scene, as do birds and seed-eating rodents, enticed by food and shelter.

It's not long before some familiar shrubs show up: evergreen huckleberry and salal, along with western rhododendron. The pioneering grasses and sedges begin to disappear, driven out by shade, resource competition, and lack of sand deposition. The pioneers have unselfishly programmed their own obsolescence. Soon the shrub community progresses toward forest.

**Patterns for Permaculture**

The two patterns of colonization that I've noticed on stable and unstable sand, mat and net, illustrate two strategies for converting poor habitat to good. On stable sand, plants form a stack of overlapping mats, each layer on a larger scale than the previous. This creates a continuous, densely populated cover that radiates out from a secure beginning. On unstable ground, where a young mat might be quickly and totally buried, the wiser strategy is a more open net of plants, cast over a wider area. This net is less dense than a mat, but also less prone to catastrophic disruption. A net can be torn and still function—and nature builds self-repairing nets. If sand buries a section of a plant network, vigorously growing rhizomes will quickly stitch together the gap.

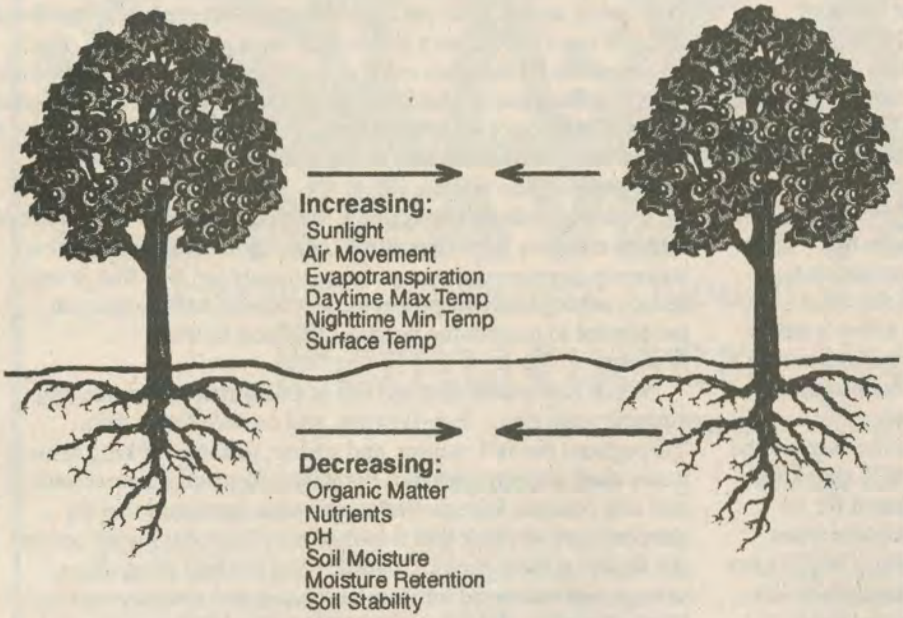
Permaculture already employs the mat and net strategies, though I've never seen them formally identified as such. By recognizing when we are using mats or nets, and applying our observations from the dunes, we can fine-tune our strategies, and increase our chances of success.

When we plant in Zone One, we're essentially using a mat technique. First, we blanket any weeds and build soil with a continuous, deep sheet-mulch. Then we colonize the entire terrain with dense planting. Presto, we've built a mat. The mat technique works best where we can keep tight control over the area, in Zones One and Two. There, we'll quickly notice and squelch any attempted "burial" by weeds or pests.

One technique for permaculture, inspired by the dune's mat pattern, is the use of mat-forming plants of ever-increasing scales to quickly colonize new ground. Let's say there is a spot we want to cover with plants, but we don't want to spend a lot of time tending it. First, put down a small, tight mat of sheet-mulch, and fill it with low-growing, spreading plants such as strawberry, clover, purslane, Nepalese raspberry, or others of your own choice. In the center of the mat place prostrate shrubs, like lowbush blueberry, gooseberry, or bushy willows. To speed spreading, we can pin down a branch or two to encourage layering. As the mat spreads, or at the beginning, add trees or tall shrubs that sucker and sprawl, such as figs, bamboo, or black locust. We'll have a forest in no time. We could also interrupt the mat-forming process anytime after the first low-growing plants have colonized the zone, using non-spreading plants in the next phase. (Maybe we ought to—several layers of madly sprawling plants might uncork unstoppable rampancy.)

In more distant zones and over larger areas, a mat technique is too labor-intensive—we don't have the time or the plants to control a big space. For planting larger areas, permaculturists often use a scatter of mulched circles: clumps of mulch and small plants, centered around a tree or shrub. This creates islands of controlled space. If we design our pattern of mulched circles with the recognition that we're linking them into a network, we can optimize the spaces between clusters. Remember that each mulched circle is surrounded by a ring of benign microclimate (high humidity, small temperature fluctuations) and improved soil (more organic matter, soil life, and moisture retention) that gradually diminishes with distance from the circle's center. If we space our mulched circles so that each ring of influence almost (but not quite) touches its neighbors, we maximize the "edge" and the number of different niches and microclimates in our net. The circles should be distant enough to avoid producing too much shade or root competition for new plants to thrive between them. But the circles should be spaced close enough to include the raw ground between circles in the "network effect." Proper spacing is what binds the separate mulched circles into a network: the area behaves as a unit and has qualities that are more life-welcoming than those of unlinked plantings. The benign habitat between each networked circle will quickly fill with planted or opportunistic flora and with wildlife.

In permaculture, we're often trying to accelerate succession, rapidly creating mature ecosystems. By observing places such as sand dunes, where many different stages of succession are visible at once, we can see what patterns nature uses to colonize difficult environments quickly. With a little creative modification, we can tailor these patterns to aid us in the restoration and enrichment of our world. Δ




The Network Effect. When trees are grouped in a net pattern, a gradient of microclimate and soil conditions forms between them. This gradient creates a wide range of growth conditions, and many species can thrive.

*Toby Hemenway is a contributing editor of* The Permaculture Activist. *He is writing a book on permaculture sites in No. America.*

*Indigenous Knowledge—*

# Traditional California Indian Conservation

Malcolm Margolin

It is often said that California Indians "lived lightly on the land." But before the Europeans arrived in the Americas, California was the most densely populated area north of Mexico. Living lightly was not as simple as it might seem at first glance. The volume of plants, animals, minerals, water, firewood, and other resources that were necessary to feed, clothe, house, and otherwise outfit this large population was truly spectacular.

Yet despite such heavy demands on the land, California Indians did not deplete their bountiful resources or degrade their environments. Early European visitors to California did not find polluted waterholes, diminished game, or impoverished vegetation. Far from it. California was a land of "inexpressible fertility," noted French sea captain Jean Francois de La Perouse in 1786, a description repeated and elaborated upon by countless visitors to virtually every part of California. It was no accident that such a dense population could sustain this abundance. It came about through conscious and highly evolved policies of what we now call conservation.

**Hunting**

Because traditional conservation practices were so deeply embedded in the lives and habits of California's native people, and because they do not always line up with the attitudes and practices of today's conservationists, such practices are not always easily perceived. Take, for example, the communal rabbit drive. These drives were common throughout most of California. Often, an entire community—men, women, and children—turned out for the event. Usually they would fan out over a broad area, and—with much yelling and waving of arms—flush the rabbits out of the brush, driving them toward long nets or a row of waiting hunters, who would cripple the game by hurling rabbit sticks at their legs. Sometimes fire was used to flush the rabbits. Hundreds at a time might be slaughtered in this manner, the meat and skins later shared by everyone who partook. The entire event was said to have been festive, with laughter, feasting, and a general air of celebration.

This image of laughing men, women, and children engaged in the wholesale slaughter of rabbits would hardly gain the enthusiastic approval of most present-day environmentalists. Modern hunters might condemn these communal drives as unsportsmanlike. They would surely be illegal in today's world. Yet if we can put aside modern thoughts and values, at least for a moment, we may find a more productive way of understanding the social and ecological dynamics of the practice.

For one thing, the rabbit drive often had a purpose beyond the obvious one of obtaining meat and skins. It served to check the numbers of a potentially ravenous animal, one known for its reproductive enthusiasm. These events often took place when fresh greens and seed-producing plants were growing lushly after winter rains. To allow these voracious browsing animals to eat their fill day by day would have reduced the potential food supply.

A similar dual purpose was at work in the hunting and gathering of squirrels, mice, gophers, and especially grasshoppers and moth larvae - all species that not only provide nutrition for people (grasshoppers taste like shrimp!) but, if left alone, have the capacity to damage plants upon which humans and other wildlife depend.

In cases where fire was used to help flush out the game, the fire itself, as has been better understood in recent years, was beneficial in the management of land. By suppressing brush and coniferous trees, fire helped maintain a meadowland environment of healthy seed-bearing grasses, bulb-producing flowers, and other plants important to both humans and game.

Another aspect of the communal rabbit drive that is worth examining is the fact that the food and skins were shared by the entire community. The sharing of food, especially game, was common throughout California. In many places, for instance, it was forbidden for a hunter (at least under certain circumstances) to eat what he had killed, lest it ruin his luck. He would have to give his kill to others, and he would receive sustenance from others in turn. This economic system (quite different from modern systems based on competition and private consumption) had important social implications, knitting a community of people together. It also promoted what we are calling conservation. A system in which individuals hunt alone and compete against each other for a limited number of game animals leads to shortages and insecurity for the hunter who fails to bring in game, while the successful hunter may tend toward overconsumption and hoarding. In an economy based on sharing, the peaks and troughs are leveled out somewhat, discouraging hoarding and overhunting on one hand while hedging against famine and insecurity on the other.

Finally, an essential part of Indian conservation practice is the fact that once killed, very little of the animal was wasted. Not only was the rabbit meat eaten or dried into jerky: the skins were used to weave warm blankets and cloaks, and (as with other small animals) the bones were sometimes crushed into a powder with a mortar and pestle and eaten along with the pounded meat and often much of the viscera.

In short, while the image of a festive people driving hordes of rabbits into nets might not fit the modern idea of conservation, when we examine the picture more closely we find that it was indeed ecologically responsible, serving not only to nourish people but to respect the needs of the land as well.

**Fishing**

When Europeans first arrived in California, the rivers and streams were clean, free-flowing, and crowded with fish. Throughout the fall, winter, and spring, millions of king salmon made their way through San Francisco Bay to the Sacramento and San Joaquin Rivers. Early visitors commented that the salmon were so thick that it looked as if one could walk across the water on their backs. Coastal rivers too had great runs of salmon and steelhead while inland lakes and streams were rich in trout, perch, sunfish, crappie, bullheads, and other native fish.

Wherever there were fish, there were people who were highly skilled at catching them. People fished with hook and line, with gigs, with a variety of nets and traps. In some areas people spread certain roots and herbs over the surface of the waters to "poison"

a section of the stream, killing or stunning all the fish. Some created "drags" that were pulled up a river, sweeping fish along as if with a broom. In other places people built fish dams (weirs). It was not because the natives lacked technology that the waterways were so full of life; rather, it was because potentially destructive technologies were applied with great restraint and intelligence.

As the salmon make their way upstream, in the weir traps there gets to be a mass of fish, so full that they make the whole structure of the fish dam quiver and tremble with their weight, by holding the water from passing through the lattice-work freely. After all have taken what they want of the salmon, which must be done in the early part of the day, the upper gates of the traps are opened to let the fish pass on up the river, while at the same time great numbers are passing through the open gap left on the other side of the channel. This is done so that the upriver tribes have a chance at the catch. And the upriver fishers keep a close watch to see that there are enough salmon left to effect the spawning, by which the supply is kept up for the following year.

**An Attitude of Respect**

There is an aspect of European thinking that sees "wilderness" as fundamentally hostile. Nature is understood to be cruel; people must wrest their living out of a land that is less than forthcoming with its bounty. According to this way of thinking, we live in a dog-eat-dog world, one that rewards survival only to the fittest, a world in which humans are in constant competition with other life forms and with each other. This sense of scarcity and competition is built into all modern institutions—education, economics, government, etc.—and indeed into our daily habits and innermost thoughts.

While traditional native people hardly felt that their life was easy—it clearly wasn't—their attitudes toward the land and toward other creatures were nevertheless marked by a greater sense of camaraderie, by respect, affection, and caring. These are the qualities that lend many native conservation efforts a remarkable kindness and quiet dignity.

In her article "Conservation as Formerly Practiced by the Indians of the Klamath River Region," Ruth Roberts says:

> "The Indians, of necessity, avoided diminution of any natural resources upon which their life depended. Public opinion and community law disapproved of any waste. Trees were felled only for construction of canoes and houses, and dry brush and sticks were used for firewood... To destroy wildlife for any other reason than to meet his need of food would have been as ridiculous a procedure to the Indian as if we entered our own gardens or went among our own herds and destroyed for the sheer enjoyment of our prowess as destroyers...In contrast to the white man's idea of sportsmanship, the Indian killed only what he needed for food, and he wasted no edible parts of the game. Even the entrails of animals were dried for winter food for the dogs. Anyone who caught more fish or killed more game than he and his family could use shared it with others who were less fortunate. To destroy this supply meant nothing short of self-destruction."

What we now call "conservation" was an everyday practice of these native peoples, embedded in religious belief, social structure, good manners, and everyday habit. It was spread so widely over so many cultural practices that it is difficult to sum up, impossible to define.

For the first Europeans who settled in California, the land was a "wilderness"; it belonged to no one, and its wealth was here for the taking. Certainly too much of that attitude remains today, worked into our laws, our institutions, and our daily habits. To native people who have lived here for thousands of years, however, and whose actions shaped the landscape, it was indeed a garden—a garden that needed tending and care and that rewarded such efforts with bountiful food, a sustainable way of life, and an environment of almost unimaginable health, vigor, and beauty. Δ

*This article is condensed from a longer piece by the same title that first appeared in* News from Native California, *Special Report No. 3, ©1998, and is used here by permission of the author and publisher. Malcolm Margolin has written several books on the native peoples of California including* The Ohlone Way, *and is the author of a book on simple restoration and conservation techniques,* The Earth Manual, *available from The Permaculture Activist (see page 64). To obtain a sample copy of* News from Native California, *send $1.00 to PO Box 9145, Berkeley, CA 94709.*

# Fairness and the Fourth System Condition

## Donal Kinney

I recently attended a five-day Natural Step workshop in Chicago. As a Permaculture practitioner and activist, I had been interested in learning more about The Natural Step for several years. The Natural Step, an organization which originated in Sweden, is dedicated to creating a sustainable future. At the heart of the Natural Step are the four system conditions, which were developed in an arduous consensus building process. They are requirements for human survival, or sustainability, that the scientists of Sweden agree upon. They are:

1. Substances from the Earth's crust must not systematically increase in nature. This means: fossil fuels, metals and other minerals must not be extracted at a faster rate than their redeposit into the Earth's crust.

2. Substances produced by society must not systematically increase in nature. This means: substances must not be produced faster than they can be broken down and be reintegrated into the cycles of nature or be deposited into the Earth's crust.

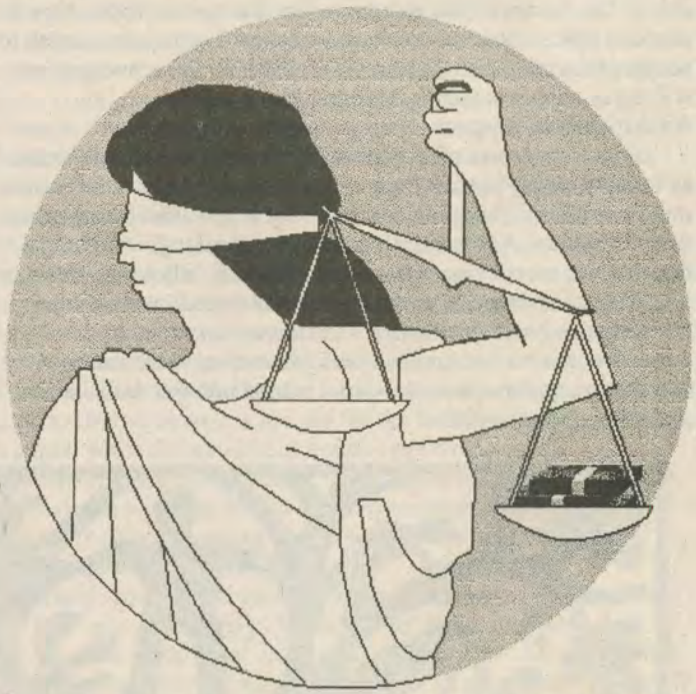
3. The physical basis for the productivity and diversity of nature must not be systematically diminished. This means: the productive surfaces of nature must not be diminished in quality or quantity, and we must not harvest more from nature than can be recreated and renewed.

4. There must be fair and efficient use of energy and resources with respect to meeting human needs. This means: basic human needs must be met with the most resource efficient methods possible, including fair and equitable resource distribution.

The potency of these four system conditions, that scientists of all disciplines can agree upon, is remarkable. Their relative simplicity and their clarity have revolutionized how I think about and communicate sustainability and Permaculture.

Consider, for instance, how the system conditions can be applied to global climate change. Scientists have been debating for years what outcomes might result from a buildup of greenhouse gasses, especially carbon dioxide ($CO_2$). They agree that $CO_2$ is a greenhouse gas, allowing in short-wave radiation (light), but trapping long-wave radiation (heat). Since greenhouse-gas-induced warming would create increased evaporation and cloud formation, which has a cooling effect on the planet, it is not at all clear what the outcome of increasing greenhouse gasses will be.

With the aid of system condition 1, we can break through the debate. We can not and should not systematically increase $CO_2$ (mined from the Earth's crust in the form of fossil fuels) in the atmosphere. On this the scientists agree, regardless of the myriad possible outcomes. The limit to human-generated $CO_2$ is therefore



the capacity of natural systems to assimilate $CO_2$. Since scientists agree that there has been a significant increase in $CO_2$ in the atmosphere since we began recording $CO_2$ levels, it is clear that we have already surpassed a sustainable level of $CO_2$ production.

Once we accept that there are limits to the amount of $CO_2$ that humans can generate, the importance of system conditions 3 and 4 becomes apparent. We must not destroy the productivity of natural systems (condition 3)—in this case the ability of those systems to assimilate and redeposit $CO_2$. Since the assimilative capacities of natural systems are a resource, we must have fair and efficient use of this resource with respect to human needs (condition 4).

### Sharing the Surplus: a Requirement of Sustainability

In Kyoto, an agreement was made among nations which is an attempt at fair allocation of the limited resource of sustainable $CO_2$ emissions. The system conditions tell us that this type of agreement is urgently needed. The U.S. should stop dragging its feet, and should move to comply with the agreement.

Part of the power of the four system conditions is that they can be applied at any level. We have just seen an application at the global level, but the greatest success of The Natural Step to date has been in applying them to corporations and municipalities. Swedish corporations such as Electrolux, IKEA,

and Swedish McDonald's have come to see that there is a strategic imperative created by the four system conditions.

By incorporating the system conditions into long-range planning, companies can move early to avoid disruptions that must inevitably result from violating the conditions. In the planning process, it will not always be clear what disruptions may arise. Disruptions to profitable business activity could result from shortages and price increases for raw materials, insurance rate increases, consumer pressure or bad publicity, competitive pressure, regulation and fees, or could take many other forms. What can be clear, however, is that those companies that move quickly to comply with the systems conditions will experience the least disruption.

Since the system conditions are science-based, built upon the laws of physics, biology, chemistry, and other sciences, they are easily understood and accepted by business leaders. In the four years since The Natural Step was introduced to the United States, it has already had a significant impact. At the Chicago workshop, I sat and listened to the founder and leader of a billion-dollar carpet manufacturing firm explain that his company has accepted The Natural Step as a compass for guiding their organization. They have a long term goal of zero emissions, and I believe that they mean it.

At the same event, I listened to a number of case studies involving applications of The Natural Step to corporations. One element was conspicuously absent from all of the presentations that I heard, however. This was a thorough application of the fourth system condition. All of these companies can list a variety of changes that they have undertaken to comply with the first three system conditions. When they get to the fourth condition, they inevitably described how they have become more "efficient" in their use of energy and resources. I was left wondering if any of them have become more "fair." By all appearances, The Natural Step is only succeeding in implementing three and a half system conditions.

If the four system conditions are indeed requirements for sustainability, then meeting three and a half conditions is admirable, but insufficient. To me, the source of this dilemma seems obvious. As Karl Marx pointed out long ago, capitalism is unfair. Companies in an inherently unfair system cannot deal with fairness. In America, capitalism has allowed 10% of the population to amass 90% of the wealth. With the exception of Ayn Rand, and a few others on the fringe of the political right, no one has argued that this is fair.

Before you jump to conclusions, let me clarify my position. I am not advocating communism. Just as I believe that capitalism is unfair, I also believe that state-level communism, or any large economic system that does not allow the operation of markets, will be inefficient. We have allowed the debate about economics to become polarized on the axis of capitalism and communism, with each end of the spectrum in violation of condition four. Fairness and efficiency are the yin and yang of System Condition 4, and must be balanced in any economic system that is to be sustainable.

Most economists would say that it is the job of business to be efficient, and that government is responsible for bringing fairness into the system. I disagree with this perspective. Government, especially on the federal level, is too clumsy and inefficient(!) to ensure fairness without crippling business efficiency. This is particularly true in a special interest/money-dominated government. A necessary condition for sustainability is the development or creation of business institutions capable of internalizing all four system conditions. This is the challenge.

Despite its democratic gloss of equal opportunity, market capitalism in the United States and most western industrial nations is unfair because those individuals and institutions that already have wealth control access to capital and resources, are able to manipulate markets, and thereby reap the rewards. The adage that the rich get richer and the poor get poorer isn't just an old saw, it's a fundamental, structural, economic truth. Those who have wealth find it easier to gain more wealth, while those without, struggle merely to survive. Since most corporations are controlled by shareholder investors, with the other stakeholders (employees, customers, suppliers, and nearby residents) largely left out of decision-making, they are inherently undemocratic and unfair institutions.

The question then becomes: are there institutions which can function in a market economy that are more democratic and fair, but retain the profit motive as an essential component of efficiency? I believe the answer is yes, and that those institutions are cooperatives. In a cooperative, ownership and control of resources are vested in the employees (worker-owned cooperatives), customers (consumer cooperatives), or suppliers (agricultural cooperatives), ensuring a fairer distribution of profits. Because each of these groups of stakeholders is a part of the same community where the business takes place, wealth stays in the local area, instead of flowing to distant metropolitan centers. Owner/stakeholders are also more likely to make decisions that balance overall community welfare with profitability than absentee corporate shareholders, who are interested primarily in short-term profits.

For those of us who have studied Chapter 14, "The Strategies of an Alternative Global Nation," in *Permaculture: A Designer's Manual,* cooperatives are not a new idea. Bill Mollison, in a section entitled "The Formal Economy," describes a village-focused economy in which those needs not met by the self-reliant home economy are addressed primarily by cooperatives. I would refer all interested readers to that section for a definition of cooperatives and a list of cooperative principles. There is also a description of the Mondragon Cooperatives in the Basque region of Spain, the most exciting example to date of a successful cooperative system.

As a consultant who has worked for many years with cooperatives (the truth comes out), I am familiar with the 200-year history of the modern cooperative movement. I am acutely aware that the movement has had many more failures than successes in the United States. I attribute most of the failures to the alien nature of a cooperative philosophy in our individualistic and consumer-based culture. The success of The Natural Step, particularly in developing such a comprehensive and well-thought-out set of system conditions, gives me hope that it may not be long before we are ready to embrace cooperative economics, and the interconnected world view that is required for its success.

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*Donal Kinney is that rarest of creatures, a student of both permaculture design and of economics. A consultant to cooperative businesses, he writes from Santa Fe, NM and can be contacted at <donal@nm.net>.*

# Language, Worldviews & Permaculture

*The issue of language, gender, and worldview grew out of a conversation on the Internet. It didn't stop with Marsha Hänzi's provocative essay.*

At 11:38 PM 6/10/98 you wrote:

Hello Marsha -
I like your article, but I wonder if you shouldn't clarify what you mean by other languages. I agree that other European languages are more influenced by gender than English, but I don't know about non-European languages like Arabic, Malay, or Chinese. Surely they have different patterns?
What do you think?
Peter

At 12:22 AM 6/15/98 you wrote:

Hello Peter,
JUST out of curiosity, I have asked around to other people about the gender thing in language. Got this answer: In Maori, nature has gender: the sea is a woman, sky is a man. In one of the Malay languages there is no gender (these are people who just cut down their forests, and are cutting down ours in Brazil—any connection?) Here is the beautiful reply for Arabic, which I will send intact!
Best wishes!
Marsha

At 10:56 PM 6/12/98 you wrote:

Hello Nadia!
I would like to ask a question about the Arabic language. To explain: In English we divide the world into two categories : "us" and "all the rest" which we call "it" (tree, flower, sky, etc.).
In Portuguese, Spanish, French, and German, objects have gender. In Portuguese, for example, a tree is "ela" (she), the sky is "ele" (he), etc.
I think this makes English-speaking people look upon the world as a "dead" place, full of objects, whereas the other languages

Marsha Hänzi

How do you see the world? As a collection of objects? A sea of energies? A magic stage in which gods and goddesses play out their dramas? To what degree are you aware of your worldview, its origin, its cultural biases? To what extent are you able to enter and understand the worldviews of other cultures, or other people from your own culture but of different origins or temperaments? All this will influence the way we teach Permaculture and our effectiveness in getting it into an understandable context for our students.

In analyzing this question in view of my experience in Brazil, I came across an important linguistic factor, a difference between the English language and most other languages, which to me seems significant in pointing out an fundamental cultural difference. In English, anything which isn't "us" is "it." A tree is "it." A bird is "it." That is, whatever isn't human—he or she—is without gender, basically an object. Now imagine a language (Portuguese for example) where a table is "she," a bird "he," a tree "she," the wind "he," the whole world full of gender; gender implying life.

Behind a modern veneer of materialism in Brazil, there exists a dynamic world of movement and life—generally unconscious to the speaker, but nevertheless present. I have observed that Brazilians deal easily and naturally with the world of energy. Teaching them how to find water with rods, for example, does not in any way threaten their worldview. It comes so naturally that about 70% of them are successful at the first try. At the same time I have seen that this technique can be upsetting for some Americans and English (but not for Germans or French, among whom the technique is already an established science, known and accepted by many), as if they will have to change some of their beliefs about the world to admit that it works. (I am speaking from personal observation.)

Is there not a relationship between a language where all is "he" or "she" and the fact that its speakers see an inherent sacredness in everything? Most meetings in Brazil, especially with country people, begin and end with a prayer. Is there not a relationship between seeing a world full of gender and life, and accepting that one can cure with energy? Homeopathy is not outlawed here—it is highly respected, and actually taught in some medical schools. Is there not a relationship between a language which gives gender even to manmade objects, and the easy (sometimes too easy!) acceptance of invisible beings (nature spirits, extraterrestrials, angels)?

I don't know many old European cultures, but I do know that the same view of the living world was common to the dwellers of the Alps in Switzerland. One of the highest mountains there was known as the "flower-angel," a being who visited villages in the guise of an old lady bearing medicinal herbs. The German languages also give gender to objects. There are three genders—feminine, masculine, and neutral—but even so the neutral does not refer only to objects, nor masculine-feminine only to living beings.

What I am saying is simplistic and a bit polemic but the point is, for us, as English-speaking people, to be aware that our language has an anthropocentric bias, treating **everything else** as objects, whereas practically all the other languages do not function this way.

How has this changed my form of teaching permaculture? The first few courses were "textbook copies" of Bill Mollison's course, translated into Portuguese: the teacher in front transmitting information, the students taking notes. (Treating permaculture like a concrete object, a concrete body of information.) Little by little the course evolved, becoming dynamic, with activities that involve the whole person and not just his/her passive intellect. Brazilians don't like to take notes or sit passively; they are very creative. They are very good, for example, at designing properties and creating solutions for absurd situations, one of our favorite exercises.

Sometimes in the past the courses went to the other extreme, touching on the magic. We have seen it rain at the moment when we say "We dedicate this work to the planet, to Nature, and to our unborn children..." in the middle of the dry

season with no rain before or after, and this one falling exactly over the university where the course was happening. We have had incredible rainbows at the exact moment of starting the course, or sudden violent windstorms at the exact moment of doing a group visualization of rain for the semi-arid region. At that time Permaculture courses became incredible initiation-like experiences for many people, who measured their lives before and after the course. These were profound experiences, but sometimes absorbed time from the course curriculum.

Today we have found a happy middle ground for the courses, with ample fieldwork, a lot of designing and creative small group work, and some information-passing classroom sessions. We still teach the basic curriculum, but with a distinctive Brazilian style. We have now added energetic techniques and information that we know to be effective. We still dedicate our work to Nature, and celebrate her beauty. And we continue to receive little signs from her...

So, today I would say that through becoming sensitive to the temperament of the people, and through speaking and singing their language, we have developed a truly Brazilian style of teaching permaculture which works successfully within their worldview, teaching them what they want to know in the way they learn best, rather than imposing on them a prefabricated "foreign" curriculum transmitted hierarchically, with the teacher at the top, the student at the bottom. It is a question of sensitivity and respect for the people within their own context. Δ

*Marsha Hänzi was raised in the United States, married a Swiss and has lived in Brazil for more than 20 years. A native speaker of English and fluent in Portuguese, German, Spanish, and French, she studied permaculture design, teaching, and advanced design in Hawaii in 1991. Returning to her adopted homeland, she established the first Permaculture Institute in Brazil, and has cultivated a special interest in agroforestry for the arid and semi-arid tropics. She has translated* Introduction to Permaculture *into Portuguese and has trained more than 600 Brazilians in permaculture design. She can be reached at <hanzibra@svn.com.br> or Cond. Aguas Finas, Quadra E. Lot 4, Lauro de Freitas, Bahia, 42700 BRAZIL.*

look upon the world as full of life.

What is it like in Arabic? Do objects have gender (masculine and feminine?)

Best wishes!

Marsha, BRAZIL hanzibra@svn.com.br

At 02:15 AM 6/14/98 you wrote:

Re: A question about Arabic

Hello Marsha :)

Nice to hear from you!

About the Arabic language—we have genders on everything. A tree is female, so is the ocean. (I think that's apropriate somehow since both give life.) Mountains are male.

The structure is different. We don't use descriptive words like "ela" to show the gender. It is part of the name itself. Usually if the word ends with an "a" it is feminine (though that's not always the case).

I think the more a culture has to depend on nature to survive the more its people come to respect it (and in a desert, Nature is your only friend. Maybe in a plentiful place like England it's not quite as obvious that without Nature no one can survive.).

A part of "Arab" belief (originally) is that "man" is responsible for protecting his home. Every tree, animal, person... is his responsibility, and to waste anything is sinful. You are supposed to pray for an animal you are about to slaughter, and if it suffers while you are killing it you will be punished by God.

I agree with you that languages and cultures as well as the way people see things, are connected very much. I speak three of them and I noticed that they even feel differently when spoken. German is a more scientific language I think (not so flexible and with fixed ways of using each word) maybe that's why German technology is so well known. English is a lazy but practical language. You can do practically anything with words in English. I don't know if it has anything to do with the world falling apart but it is something to think about.

Take care...

Nadia

### *And to Japanese-speaking friends, we directed similar questions—*

At 12:35pm 6/24/98 you wrote:

Hello Keith,

In answer to your question: "Do objects have gender in Japanese?"

No, Japanese has no gender; no articles, conjugation and few plurals either, for that matter. It is a very vague language without all of the specifying pieces of information we fill our sentences with. It is extremely common to drop subjects all together, and the listener often does not even "fill in" the "missing" information. They are much more accepting of "not knowing everything."

There are words that correspond with "that" and "this" (as subjects, not adjectives), again without gender or usually plural. They can be used to refer to objects, but NOT people or animals. There is also a strong distinction in verbs for animate and inanimate objects—also separating people and animals from the rest of creation. But, before you jump to the conclusion that there is no distinction between animals and people, there are verbs that refer to one but not the other.

The speaker's relationship to the listener or the person/people being talked about also affects the grammar. Another interesting distinction is that men and women often speak using very different sentence structures and/or grammar, creating a difference that is almost the same as a gender dialect.

I think the issue goes much deeper than gender for objects. There are many other linguistic constructs that strongly influence thought patterns. These are often interwoven with cultural and historical issues.

Since in English it is linguistically possible, and not even that difficult, to envision ourselves as one with Nature, it is hard to reason that our language has lead us to believe we are separate. It is more likely our view of logic and reason as valuable intellectual skills that has lead us down the path that gives science the final word and that validates its tendency to dissect things in order to see them more clearly. And this belief system is not restricted to English speaking countries!

Placing a high value on wealth also pushes people away from earthly things.

Well, that's my take on it.

Eric Storm

emstorm@metro.net Δ

# Pattern—Key to the Universe

*"The pattern is design,*
*and design is the subject of Permaculture."*
*—Bill Mollison*

Patricia Michael with Bill Meacham

My work as a Permaculture designer continues to impress upon me the importance of pattern. Through observation of pattern we can learn much more than we can by merely measuring things. And with the application of pattern we can achieve fundamental changes in a system. Every day we work with pattern in design. It is the basis of all computer design, management, financial systems, social systems, health and healing. A keen observer can recognize the patterns of a system and identify where to make input or change the pattern to create a desired outcome. A skilled designer can see the relationships of pattern from the micro-scale to the macro-scale, the holographic relationships of a system, and its orders of magnitude, and can design the relationships from one order of magnitude to the other with flows that work effectively. This is the difference between people who only work trees and those who deal with the entire forest as one ecology. The latter understand and use pattern.

In undergraduate school at Wichita State University I had the privilege of attending an honors physics course called "The History of the Concept of Physical Reality." It taught me how agreed-upon beliefs about "natural reality," our concepts of the world, have been the primary creative influence for all human cultures. Our paradigm of "nature," what we think it is and how it works, influences all the thinking and behavior of our culture. Our current cultural bias is that of systems.

When we could all view the world from deep space as that little ball that the NASA photos revealed to us, we got, at a profound level, a new world-view: our world is a tiny sphere in a vast emptiness. Richard Bartel, Chair of the Physics Department at Trinity University in San Antonio, Texas says that less then a billionth of anything is occupied by something. The rest is empty space. If the nucleus of a molecule of steel were the size of a tennis ball, the electrons would be 30 miles away. The whole atom would be 60 miles across.

When the advances of medical research revealed to us a view of the smallest particles within the human body, reality changed. The smallest particle is so small that it is just a point.

We now know through observation that the pattern characteristics of the smallest known events in the universe mirror those of the largest known events, the galaxies and the universe itself. Since we are an undivided part of the natural system we are observing, and our own physical body patterns are the same as those of all matter and energy in the universe, we are like the universe looking at itself. This gives us a responsibility in nature that will shape the significant contributions for our whole future. Brian Swimme and Thomas Berry in *The Universe Story* liken the view of the nature of physical reality we now experience to the universe folding back upon itself. "Each member of the Earth community has its own proper role within the entire sequence of transformations that have given shape and identity to everything that exists." The language of relationships and transformations is pattern.

**What is Pattern?**

Among the dictionary definitions of pattern are "an artistic or decorative design," "an archetype," "an ideal worthy of imitation," "a plan, diagram, or model to be followed in making things," "a composite of traits or characteristics," "a representative sample or specimen," "a design of natural or accidental origin ("...in the crystalline pattern of new ice on a country pool"—William Carlos Williams)," "a composite of traits or features characteristic of an individual—behavioral patterns." Pattern is repeated regularity. It is the principle by which the universe seems to be designed.

In space, pattern is shape. On every scale, every natural pattern is related to one of only a few fundamental shapes *(see Table A, "The Basic Physical Patterns")* But pattern is not only static form; it is also the rhythm of growth and movement. Our system of counting and language comes from direct observation of natural systems. Each number, one through nine, has a direct correlation with nature. *(see Table B, "The Fundamental Numerical And Geometrical Patterns")* Patterns embody principles of wholeness, polarity, structure, balance, cycles, rhythm, and harmony. All these words imply both movement and rest.

Nature is full of movement. The world we perceive is a small slice of a vast, mostly invisible, energy-event. But nature is also full of movement that is slow enough that it appears to be stationary. For instance, the Greek word *kosmos* means "embroidery," which suggests a static world of orderliness and harmony. Inherent in nature are these two contrasting principles: activity and stasis. Pattern is the key to understanding both.

Pattern is the primary organizing factor in the universe. It is the science that we have often overlooked. It is the key to survival.

**Pattern and Symbol**

Everything stores information, and we can use our intelligence to read that information, to read nature. But literate cultures, East and West, have gotten off the track. We have confused information stored in words and symbols with real wisdom, and we have given too much weight and power to those who rely only on verbal knowledge. The symbol is not the thing it symbolizes. As Korzybski says: the map is not the territory. Real wisdom is

available to each of us at any breath by sensing ourselves as a part of the whole and being awake to read that whole. We must unhook ourselves from the "taught thoughtlessness" of verbal knowledge, and awake to the ordinary enlightenment of using our whole being to observe and create. We are matchmakers who can rearrange and design the world to create greater abundance and beauty.

To do this we must pay attention to pattern. To illustrate, think of water. Think of its liquidity, its flowing grace, its downward movement. It moves like air, but is more solid. It is solid like earth, but doesn't want to stay put. It is in some ways the opposite of fire; too much water can douse fire, but too much fire can boil away water. It mediates energy.

Theodore Schwenk, an extraordinary explorer of the patterns of water, says that earth and the various forms of life present on it function in harmonious accord with universal processes. Almost every rhythm, from moon rhythms reflected in the hydrosphere and planetary rhythms known to meteorology right down to the numberless physiological rhythms found in every kind of living organism, is based on water's mediation. For example, wood cutters in Brazil still set the price of the wood they fell by the date of its cutting—by the phase of the moon when it was cut—because its water content, and thus its keeping quality, depends on that cosmic influence.

***Pattern is repeated regularity.***

**As Above, So Below**

The patterns of movement planets weave in space are reflected in the structure of the various plant families. Thus, for example, the apparent movement of Venus through the heavens is mirrored in the regular pentagram common to all rose plants. If it were not for the mediating role water plays, these formative forces could not work their way into terrestrial manifestation. In the tides, the seas are caught up in the swing of cosmic rhythms that they then hand on to the earth and its creatures. All movement in water is affected by cosmic forces; water serves the function of transmitting them. Water occupies a middle position between earth and sky and is the port of entry through which cosmic forces pass into the earth realm. This understanding of water is far different from the knowledge that it freezes at 0° Celsius and boils at 100°C., that it is composed of two parts hydrogen and one part oxygen, that it covers 69.7% of the earth's surface.

***Through observation of pattern we can learn much more than we can by merely measuring things.***

Bill Mollison, a co-founder of the art of Permaculture, says "We are the universe attempting to define its processes." That definition must come from the deep wisdom that recognizes that the one who defines is part and parcel of that which is being defined. "Pattern is design, and design is the subject of Permaculture," says Mollison. "Pattern tells us that all is streams, all particles, all waves. Each defines the other. It tells us that all is one plan." Mollison calls pattern "the linking science." Pattern, he says, is nature's language, and each shape represents a different problem-solving strategy.

**Using Pattern**

Because pattern is a fundamental underlying principle of all reality, we can use pattern as an intervention point in a system to change it to a different form. Here are some examples from several different realms.

Landscape design

In designing a landscape I look at the mechanics of form. I look at the basic patterns and observe them in action. For years I have carried a camera and looked for and photographed patterns constantly as a way of studying them. Through that practice I realized what they do. For instance, I use a SCATTER pattern to break up and absorb energy from a flow. A number of rocks placed on a dam in a stream breaks up the flow into smaller flows. I plant trees scattered across a field to diminish the wind and redirect it. This is not a full windbreak, but a way to soften the air flow. Another application of scatter is to distribute fertilizer plants throughout the system so that their services are widely available. They make nitrogen or leaf-fall available for mineralization and mulch throughout the whole system.

I also apply the CIRCLE constantly. I get great yields from vegetable gardens designed in a circle around a source of water. When people sit in a circle in a gathering or in a class, something happens that is different from what happens when they sit in rows or in any other pattern. A circular window—letting light in through a circle—is always commented on. This emulates sacred architecture. There is a sense of wholeness and completion. I like to employ circular columns instead of square columns, especially in public places because they do not inhibit the flows from any direction. Nested circles is my favorite planting pattern because I can put the highest plants in the center. Paths past these assemblies can be narrower because the lower plants are placed on the outer edges of the circles. A stacked, nested system grows lots of biomass in a small space.

***A skilled designer can see the relationships of pattern from the micro-scale to the macro-scale, the holographic relationships of a system, and its orders of magnitude, and can design the relationships from one order of magnitude to the other with flows that work effectively.***

Healing and Human Growth

Patterning can be used for healing and human growth. My first experience of this was with my grandmother, who, in dealing with people who had experienced trauma, would watch them, spend a little bit of time with them, and then set up a whole pattern for their lives with family and people around them. Then she would alter the pattern a little bit every week and coach people into health.

Jackie Shift, of the Cathexis Institute in Oakland, California, took young adults who had been in mental institutions from a

very young age and brought them out of their schizophrenia through a series of environmental patterns of physical nurturing. First of all, everyone was on a schedule to provide regularity. Patterns of breath, light and sound, heartbeat, and touch were used to regress people, to help them to re-experience a younger age. Once they were in that state, Shift set up patterns of nurturing, actually re-parenting them. She and her staff fed and bathed them. She gave them tender loving care and then helped them to process the emotions that came up. One of her clients later earned a Ph.D. in psychology!

***...less then a billionth of anything is occupied by something.***

In Philadelphia, the Better Baby Institute teaches parents how to multiply their baby's intelligence. This work with healthy babies originated in work with people who had been severely brain damaged. Some had been born with half a brain and some had lost part of their brain through accident. Using repeated patterns, Glenn Doman and his associates can assist people in linking capabilities with parts of the brain that normally do not have those capabilities. The patient learns to use a different part of the brain to do something a missing part used to do. First the parents move the child's body in particular patterns. Then the child can do it on its own. The parents show the child how to creep and crawl across the floor. Then they have the child brachiate, swing from an overhead ladder. Other patterns, such as bouncing on a trampoline and rhythmic movements to music, are used to grow the brain in new ways. The same patterns, when used on healthy children, speed up learning and create geniuses.

You can begin immediately when the child is born. Put the child in a pattern of flickering light such as the dark and light patterns of branches and leaves seen from under a tree. The child's learning abilities increase tremendously. Or you can put large black and white checkerboard patterns on the wall next to the newborn's bed. This emulates the flicker-fusion lighting that evolution has adapted us for.

We know from studies of childhood development that eye-gazing with infants is essential to their mental and psychological health. The same principle can be applied in a pattern for healing groups. The Spiral Dance that Starhawk leads allows a large group of people to dance and see everyone's face, and importantly, to look into each person's eyes. In two circles or in partner dances, you only see half the people.

Spiritual Practice

All spiritual traditions use pattern—the repetition of sounds, breathing, movement, or posture—to achieve a different level of consciousness, deeper, calmer, and more in touch with the spiritual dimension of life. Chanting, the repetition of sacred sounds, is found in many traditions, from the serenity of Gregorian chant to the ecstasy of Hindu Bhakti, Sufi Qawwali, or Christian Pentecostal singing. Mantra meditation is the silent repetition of a sacred phrase designed to still the mind and induce a deep alpha or theta level of brain waves. As we become more deeply attuned to our inner Self and the divine nature of all that is, we can become more conscious of our connection with nature and with all of life. We can experience a reverence for our natural heritage that inspires us to take action to protect it.

***The symbol is not the thing it symbolizes ...the map is not the territory.***

Software Design

Classical forms of software system design such as Data Flow Diagramming rely heavily on observing patterns of the flow of data from place to place, process to process, storage area to storage area. The designer then constructs and models a more efficient and encompassing way to handle the data in a computerized system. New forms of object-oriented analysis have started to discern a number of repeated patterns of typical problems and typical design solutions. Good program design uses only a few fundamental patterns of process, such as sequence, iteration, and branching, to construct very complex systems.

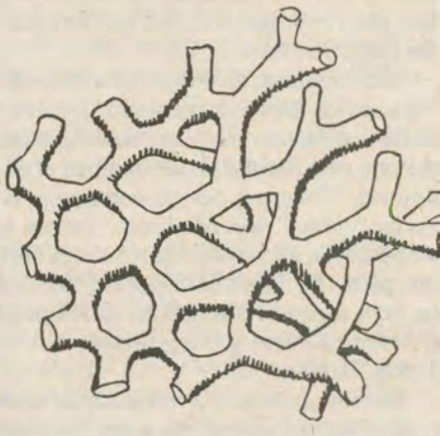
Summary

In all these and many more ways, the intelligent application of pattern—which is what the design process does—can create beauty and harmony where there is chaos and unpleasantness. If we are to create a world of peace and plenty for all, we must understand and apply these principles. In this we learn from and emulate the natural world. Δ

***Pattern, "the linking science," is nature's language, and each shape represents a different problem-solving strategy.***

*Patricia Michael taught design at the University of Oklahoma before taking up permaculture and bioregional organizing in south Texas. A resident of Austin and a consulting landscape designer, she is teaching ecovillage design for the University of Texas (see pg. 68), and will be a featured speaker on Permaculture at the International Feng Shui Ecology Conference in Prague, September 18 to 23. Last year Patricia's design for a green hotel won The City of Austin and Hill Country Foundation's highest ecological Design Award and she was selected for Who's Who In Science and Engineering. She appeared on the cover of PCA #27 - as a tree. She would like to express her gratitude to Laura DeLaGarza whose interest in pattern has encouraged her work.*

*Bill Meacham lives and works in Austin Texas, designing and building software systems. He studies whole-systems design in the context of Eastern and Western philosophy, teaches Sufi Dancing, and seeks to awaken a consciousness of and gratitude for divine love in all its manifestations.*



# Fundamental Patterns

*"Nature's forms are the most practical and functional and most efficient in terms of space, materials, energy, and time. Nature's patterns teach us how to get the most from the least."*

*—Michael S. Schneider*

Mollison says, "Learning a master pattern is very like learning a principle; it may be applicable over a wide range of phenomena, some complex and some simple. As an abstraction it assists us to gain meaning from life and landscape and to comprehend allied phenomena." The two tables summarize the basic physical and geometrical patterns.

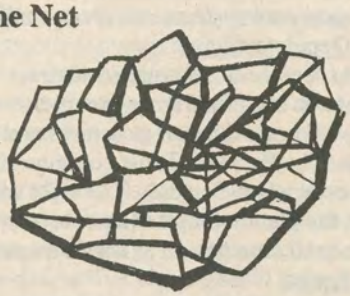
*—Patricia Michael*

## Table A : The Basic Physical Patterns

### The Branch

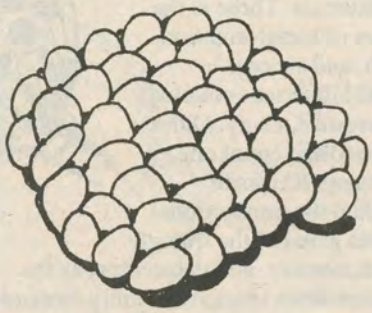
The Branch gathers, collects and distributes the flow of water, air, energy, or material. It increases exchange and transport and anchors them. You can see patterns of branching in trees, in blood vessels, and in the flows of water. Vaginal fluid drawing sperm dries in a pattern of branching. Naturally flowing water collects and distributes as branches. There are orders of magnitude of branches. It is unusual to have more than seven orders in a system; five is more common.

### The Net



The Net or Mesh is useful for sorting, collecting, filtering, and small surface exchange. It distributes both tension and force. In nature we find this pattern in spider webs and birds' nests. We can use the pattern to strengthen and reinforce. For instance, straw mulch is very stable; when stacked at different angles it is not easily removed by wind or rain.

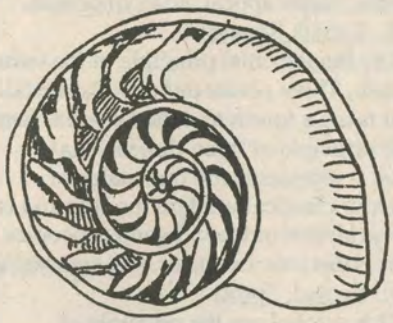
### The Lobe



The Lobe provides surfaces for exchange, edges, or interfaces where two things meet. The edge is the most productive and fecund part of a system, where the most interesting things happen.

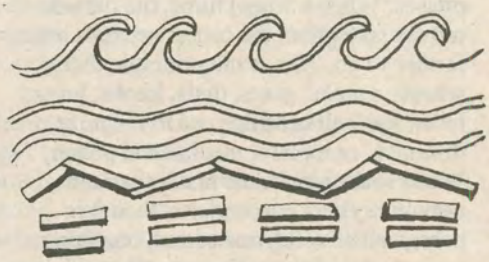
This is the best pattern for bioremediation because it provides lots of surface for growth. For instance, to provide natural wastewater treatment, build stacked rocks with lots of places for things to grow and clean the water, and lots of opportunity for water's movement, bubbling and gushing. Lobular patterns are seen in clouds and the flow of sheets of water across an almost-flat surface. The Great Lakes—formed by retreating glacial ice sheets—form an immense lobular pattern.

### The Spiral



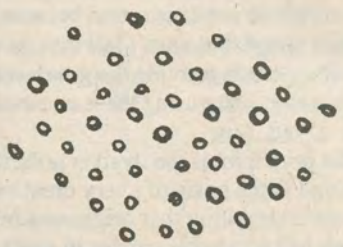
The Spiral, found in water swirling down a drain, the shell of a snail, and in tornadoes, has the function of speeding up or slowing down, of concentrating or dispersing, depending on which way the flow is going. Branches off the stem of a plant go in a spiral, maximizing exposure to the sun. Thermal convection in air provides an effortless ride for migrating geese or human glider pilots.

### The Wave



The Wave patterns—streamlines, zigzags and flows—provide pulsation, timing and the possibility of measurement over time into a system. Waves are found in water, of course, but also in static fixtures such as swales on contour. Your heartbeat is a wave pattern.

### The Scatter



The Scatter pattern introduces the element of chance into a system. It breaks things up and slows them down. Δ

# Table B : The Fundamental Numerical And Geometric Patterns

(Taken from Schneider, *A Beginner's Guide to Constructing the Universe)*

Schneider calls pattern the principal by which the universe is designed: "On every scale, every natural pattern of growth or movement conforms inevitably to one or more of the simple geometric types. Identifying shape and patterns and knowing what principles they represent allows us to understand what nature is doing in any given situation and why these principles are applied in human affairs."

1. Monad, Point or Circle

The circle represents both equal expansion from a point and rotary motion, or cycles. In ancient times the circle symbolized the number one. A circle is an expanded point. The smallest particle is a point. The entire Universe came from one point. The point is the center of the circle. A point with a circle was the Egyptian, Chinese, and Mayan glyph for light. The circle represents nature's universal cycles, circulation, circuits, orbits, periodicities.

All cycles have rising and declining phases. When a wheel turns, the outside moves faster than the center because it has farther to go. This is the principle that wheels, cranks, gears, dials, knobs, levers, belts, and ball bearings use to magnify, diminish, or transfer mechanical power. When something turns faster than our nervous system can register, then it is perceived as solid, one sound, one thing, one smell, taste, etc. Cooperating with nature requires that we recognize the existence of, and learn how to design with, the waves of its omnipresent cycles.

A circle expresses the most efficient geometric space in which for human creations to occur. Of all shapes the circle encloses the most area with the smallest perimeter. A round shield gave the ancient soldier maximum protection behind the largest area while employing the least material and having the least weight.

A manhole cover is round because it is the only shape that won't fall into its own hole. Ring roads provide the greatest access to a city center using the least pavement.

2. Dyad, Line

The principal of the dyad is polarity. The dyad is the basis of every creative process. Everything that originates from the tree of knowledge carries in itself duality, says the Zohar, a mystical Jewish text. The ancient Sumerian words for woman and man are also those for one and two. It shows up as rhythmic oscillation between opposite poles, as close as our own heart beat, and as far away as quasars pulsing at the edge of the universe. Polarity, balance, harmony, pattern, and wholeness are basic to all sciences. The dyad's fundamental characteristic is the existence of a pair of distinct but equal opposites that seek to unite in an urge to return to unity.

3. Triad, Triangle

Triangles bestow strength, balance, and efficiency of space, energy, and materials. Three is the number of transformation, rebirth, and success.

The Sumerians counted man, woman, many. Older cultures often count one, two, many. Karpman identified the transactional analysis game of the triangle (victim, rescuer, and persecutor) as the transition from tension in family dynamics to harmony. If one can identify these positions in relationship dynamics and move away from them, most problems can be solved in a win/win solution.

A triangle encloses the smallest area for the greatest perimeter. It is the only polygon structurally rigid by virtue of its geometry alone. It is synergetic in that its stability and superior strength are not predicted by any of its parts, which, by themselves, do not have these properties. We need triangles to create self-supporting structures. The more triangles it has, the more weight a structure will support. A triangular level with a plumb bob is one of the oldest and most efficient of leveling devices. Triangular structure gives the rose's thorn and shark's teeth their bite, the wedge and axe their splitting power. We use triangles in our designs for reasons of superior structure, strength, efficiency, balance, visual appeal, and symbolism.

4. Tetrad, Square

The fundamental principle of the tetrad is depth. Three points define a flat surface, but it takes a fourth to define a solid. Four is the principle of three-dimensional space. It represents the four states of matter in classical western thought and in the worldview of the indigenous peoples of the Americas: earth, air, fire and water.

5. Pentad, Spiral

This symbolizes the principle of regeneration. Pentagonal symmetry is the supreme symbol of life. The quintessence of nature encompasses and infuses the four elements with the life they cannot create by themselves. The spiral's role in nature is transformation. Every "thing" is not something static but a process, a dynamic energy event.

6. Hexad, Hexagon

The hexad stands for strength, for it is a double triangle. Six represents the maximum efficiency of material, labor, and time by using straight lines to approximate the efficient circle. A beehive is a mere 1-1/2 pounds of wax, but holds four pounds of honey. In the human lung, alveoli form a hexagonal net.

7. Heptad

This figure represents non-scaleable nature. Seven is mystical, almost unseen. It represents a complete but ongoing process, a periodic rhythm of internal relationships. Traditionally every seventh year was a "year of release" when a field was allowed to lay fallow, debts were forgotten and slaves were freed. In the Judaeo-Christian-Muslim tradition, the seventh day of the week is a day of rest. The seven-note scale is meant to model the hidden side of macrocosmic design, the universe ruled by mathematical harmonies of music. There are seven spectrums of visible light (ROY G BIV - Red, Orange, Yellow, Green, Blue, Indigo, and Violet, the colors of the rainbow). There are seven crystal systems and seven chakras.

8. Octad, Octagon

Eight represents internal structure. Octagons as starting frames are used to explore a form's internal structures and patterns. The Periodic Table contains eight groups or types of elements. The eight white keys of the piano comprise an octave, a fundamental structure of Western music.

9. Enead

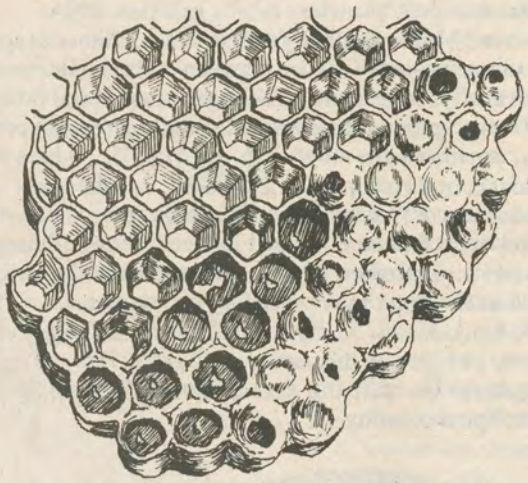
Nine, is the birth of a new whole. Nine is the greatest single digit within the Decad or first ten digits. Ancient mathematical philosophers called nine "the finishing post" and "that which brings completion." Nine-fold forms seem to be associated with the process of birth. One arrangement of nine points forms an X. From this nine pointed core comes the secret for constructing the mythic labyrinth.

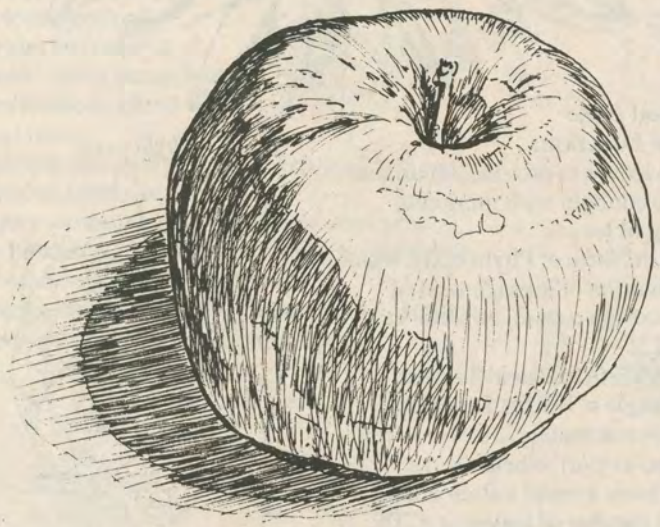
# Patterns in Nature

Marian Farrior

The permaculture principle of observing and replicating patterns in nature can become a fascinating study—and a life-long one. Here is a short outline of the primary patterns that occur in nature. These patterns are about forms in space; timing and rhythms influence them as well, but as my observations are part of a life-long study, I have not yet had enough opportunity to research the time dimension!

This synopsis follows the outline from Peter Boyle's wonderful book, *Patterns in Nature* (see references), with a few additions.



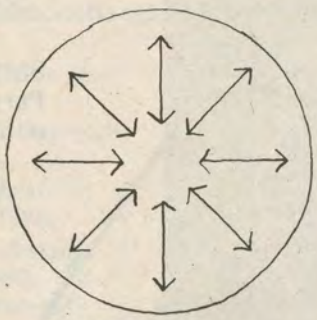


*Sphere: expansion and contraction*

## Pattern of Perfection

**Shapes:** Sphere, Hemisphere, Dome

**Purpose or Function:** The sphere is a balance between expansive and contractive, outward and inner forces. Spheres provide the least amount of surface area for the most volume; this shape minimizes heat loss.



**Examples in Nature:** Planets, stars, drops of water, radiolarians, volvox algae, diatoms, eyes, eggs, seeds, cherries, crabapples, squash, pumpkins, breadfruit.

**Associated Mathematical Terms:** Volume = 4/3 $r^3$; Surface area = 4 $r^2$

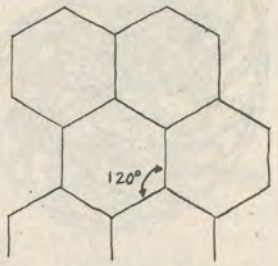
**Examples in Garden and Permaculture Design:** circle gardens, solar umbrellas, geodesic domes.

*Illustrations by Lisa Wittrup*

## Patterns of Packing & Cracking

**Shapes:** Polygon, Nets

**Purpose or Function:** Three-way joints with shared partitions minimize surface area required to enclose the same amount of volume. This shape saves space, material, energy, and creates the shortest path (besides a line); it also provides a rigid structure.




*Hexagon: 120°*

**Examples in Nature:** soap bubbles, ice crystals, honeycombs, corn kernels, turtle shells, snake skin scales, basalt columns, cilia struts, bird bones, network of veins in plants.

**Associated Mathematical Terms:** hexagon: 120° angles

**Examples in Garden and Permaculture Design:** hexagonal spacing of plants in Biodynamic systems; triangular spacing of seeds or plants; storage

## Patterns of Growth

**Shapes:** Spiral, Helix

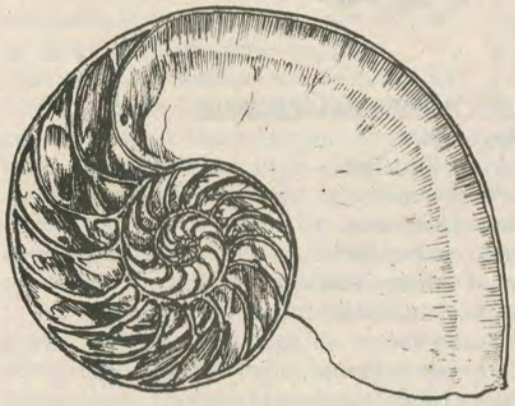
**Purpose or Function:** Spirals add size without changing the shape. They uniformly fill a space and maximize the amount of material within it. The ability to contract like a spring adds length without adding width. "Spirals are found where harmonic flow, compact form, efficient array, increased exchange, transport, or anchoring is needed" (Mollison, p. 83).

**Examples in Nature:** spider web, mollusk shells, sea shells, horns, composite florets, cacti, fern fronds, vine

*Logarithmic spiral*

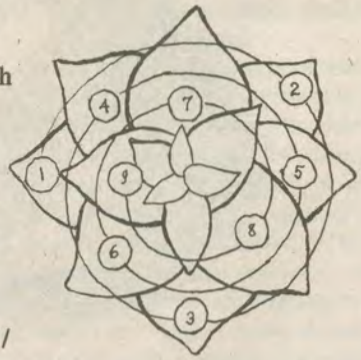
*Archimedean spiral*

tendrils, pine cones, pineapple, eddies, hurricanes, convection currents, sunspots, planetary orbits, galaxies, DNA.
**Associated Mathematical Terms:** The Archimedes spiral maintains a constant distance between coils and increases arithmetically (see picture). The logarithmic spiral (also called equiangular or proportional spiral) increases geometrically, usually by the number $\phi = 1.61803\ldots$, where $\phi = \phi^2 - 1$. Phi ($\phi$), or the proportion 1.61803:1, is called the Golden Mean or Golden Ratio. Phi ($\phi$) is approximated by the ratio of each number in the Fibonacci series of integers to the previous number, where each number in the series is defined as the sum of the preceding two numbers, i.e., 1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89, 144, 233, 377, 610, 987, etc. The ratio of $F_{16}/F_{15}$ in this series is 1.618032786.
**Examples in Garden and Permaculture Design:** Spiral garden; Spiral plowing



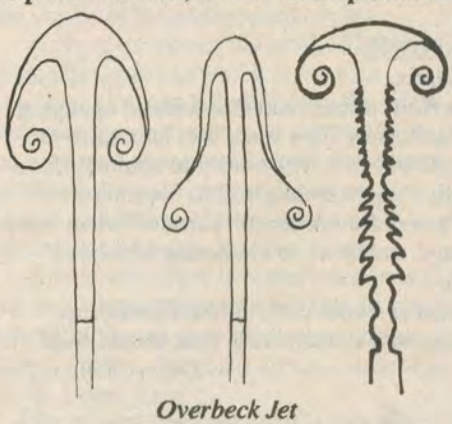
**Shape:**
Fibonacci
angle or ideal angle
**Purpose or Function:**
Distributes leaves to provide maximum exposure to sunlight with minimum overlapping of leaves.
**Examples in Nature:** Phyllotaxis, which is the distribution or arrangement of leaves or buds on a stem, or seeds in a flowerhead.
**Associated Mathematical Terms:** Fibonacci angle = 137.5°; Divergency constant, approximately .3819 = 137.5/360, defined as (t/n), where t = the number of turns around a stem or axis, and n = the number of leaves; e.g. 1/2, 1/3, 2/5, 3/8, 5/13, 8/21. Notice the Fibonacci numbers recurring in the ratio Fn/Fn+2.
**Examples in Garden and Permaculture Design:** spiral garden

*Phyllotaxis*



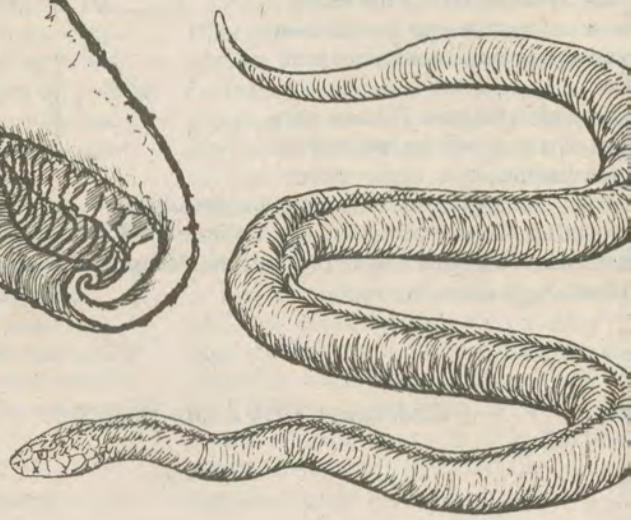

## Patterns of Flow

**Shape:** Meander, Waves, Ripples
**Purpose or Function:** movement, circulation, transportation, uniform expenditure of energy
**Examples in Nature:** streams, rivers, glaciers, sand dunes, moray eel, snake
**Associated Terms:** laminar flow, vortices, turbulence, elliptical intervals, lobes. **Examples in Garden and Permaculture Design:** edge effect, crenelated edge of pond, lobular pathways and gardens.



*Overbeck Jet*

**Shape:** Streamlines, Overbeck jet
**Purpose or Function:** Natural streamlinin of fluids and gases past fixed bodies;



generates vortices or spirals.
**Examples in Nature:** mushrooms, jellyfish, rivers flowing into the sea, cream in coffee, van Karman trails in water, Ekman spirals in wind Associated Term: Torus
**Examples in Garden and Pc Design:** keyhole garden; mandala garden; flowforms, permanent forest edges, windrows, and hedgerows.

## Patterns of Branching

*Forks*

**Shapes:** Forks, bilateral symmetry, explosion and double explosion.

**Purpose or Function:** Collection and distribution of nutrients or physical properties, such as energy. Diffusion and infusion of materials and heat. The most efficient way to reach all points in a large area while moving the shortest possible distance (less weight and stress). Multiple branches help to preserve information, and permit regrowth in case of damage. A common pattern for small flowerheads—yielding a dense array of florets to attract insects; or barbs for protection, or for seed dispersal.

**Examples in Nature:**

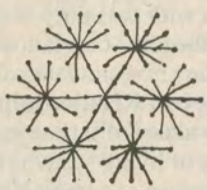
Forks: Trees, roots, leaves, antlers, feathers, blood vessels, river systems

*Bilateral Symmetry*

Bilateral symmetry: evergreens, ferns, leaf veins

Explosion and double explosion: seed pods, clover blossoms, Queen Anne's lace, wild parsnip, goatsbeard, other umbel flowers.

**Examples in Garden and Permaculture Design:** garden pathways; heat exchange.



*Explosion and Double Explosion*

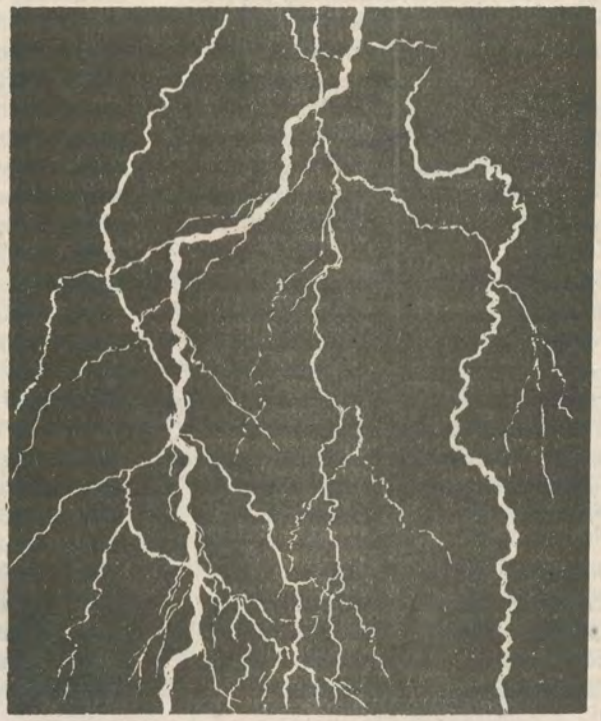
**Shape:** Fractals, Scatter patterns

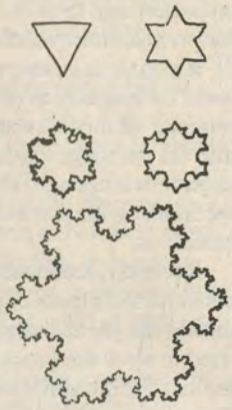
**Purpose or Function:** Self similarity—repeated duplication of shape on smaller scales (iteration); detail looks like larger picture. Irregular complex structures.

**Examples in Nature:** rocky coastlines, ferns, lichens, tree branches, roots, clouds, frost crystals, snowflakes, fault lines, lightning, neuronal nets, information nets

**Associated Mathematical Terms:** fractal geometry, nonlinear equations, chaos dynamics

**Examples in Garden and Permaculture Design:** pathways, networks, clusters





*Fractal: iteration*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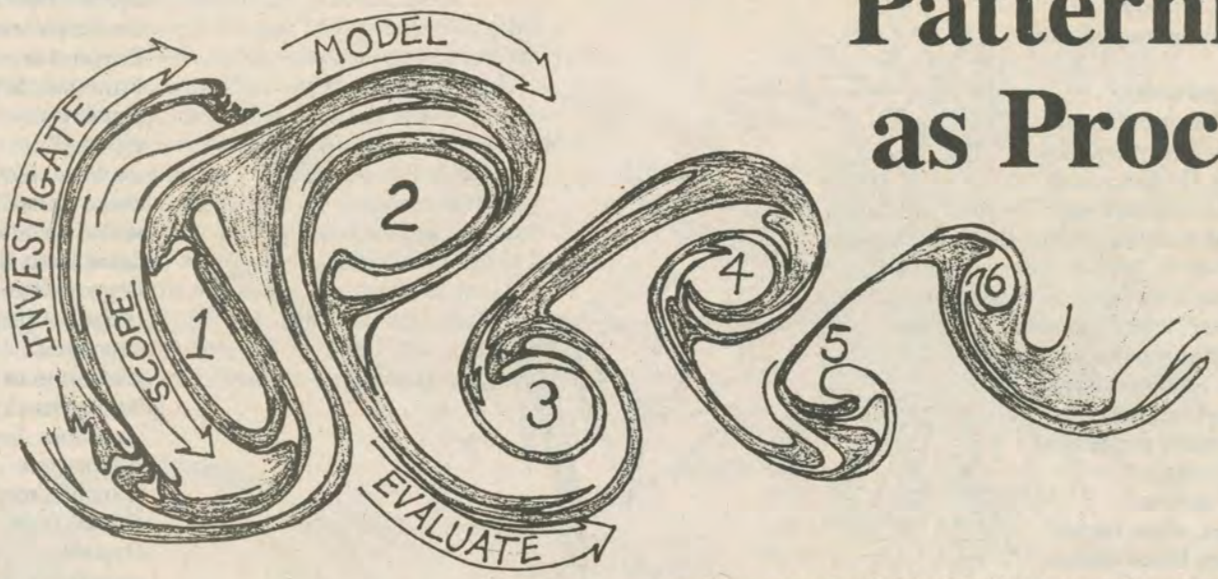
# Patterning as Process






When we first encountered the concept of patterning, it was like hearing a chord that resonated with our longing for connectedness within ourselves and the natural world. We were responding to a way of being in the world which is common to indigenous people, a way that contrasts sharply with our own cultural programming about how the world operates. Our friends who teach permaculture in indigenous cultures tell us that they don't need to teach patterning. Even where Western culture has disrupted other aspects of life, people still speak the language of pattern. As teachers of permaculture in the U. S., we've observed that many people in our culture get stuck on pattern recognition and pattern understanding. Some "get it" immediately, and many others don't. Those that "get it" often can't explain what they're doing in words. The design of harmonious relationship depends on patterning, thus this seems to be a core problem/opportunity for permaculture teachers in "overdeveloped" countries.

A zonation strategy for developing pattern literacy would build on learning in other areas of our lives where we have retained an intact awareness of pattern. Every cell of our bodies mirrors the mega-pattern of life. We each enter the world fluent in pattern language, and we have within us everything we need to reconnect with that awareness. We need only learn to trust ourselves.

Recently, increasing demand for our work as permaculture consultants impelled us to increase our clarity about what we do during the permaculture design process, and how we do it. We tried to slow the process down in our minds enough to get a feeling for the skills and states involved. We quickly realized that the emerging description of the process of site assessment and design not only gave us a shared language with which to plan the work flow in consulting jobs, but also revealed significant information about pattern recognition and patterning for permaculture educators.

In a recent letter to *The Activist* (PCA *#38),* David Jacke observed that the permaculture design methodology is poorly articulated. We agree, and believe this is because it is difficult to articulate in words, for reasons discussed below. We hope this article will contribute to a dialog among permaculture practitioners around understanding permaculture as process. We believe that growing this body of information is a key strategic action toward increasing our effectiveness in many areas—including conveying to the larger population outside the permaculture movement the significant contribution that permaculture could make to the emerging methodology of ecological design.

**Why Are Patterns So Significant?**

The core insight of permaculture is the idea that we can shift from dominance to intimacy with nature through mutually beneficial interaction with the entity of place. This depends on knowing "place" on the level of relationship. Patterns are significant because they reveal relationship dynamics.

**Why Do Patterns Reveal Relationship?**

Permaculture was ahead of it time in recognizing the self-organizing properties of living systems that the sciences are now confirming in their studies of complexity. Energy organizes itself in multi-dimensional relationships. Tissue builds around the flow of energy, and becomes the physical expression or embodiment of that energy—form. The essential nature of the flow and the corresponding nature of the medium through which it passes determine its expression in form. Energies moving over and around form further shape it. Form repeats in predictable arrays called patterns. Each part of a system expresses a form of the pattern of the whole. At certain levels of complexity, systems shift to a higher order of organization, and patterns shift to a higher order as well, as demonstrated mathematically by fractals.

All living systems share a common mega-pattern which the permaculture literature calls the "general model." Patterns such as turbulence, spiraling, oscillation, collection and runout (or distribution), orbit, succession, growth, and decay nest inside it. Because of these properties of living systems, patterns reveal a significant portion of the story of the underlying energy flows and relationships—actual and potential—of a system. Peter Warshall has recently written that four concepts describe how humans and other creatures embed themselves in landscapes:

1. Composition of each governing part,
2. Configuration of the parts,
3. Connectivity between parts, and
4. Community, a boundary defined by geography.

The beauty of patterns is that they simultaneously reveal

configuration, connectivity, and community. Patterns stack information—more information than can be described in words or quantified by any number of lists.

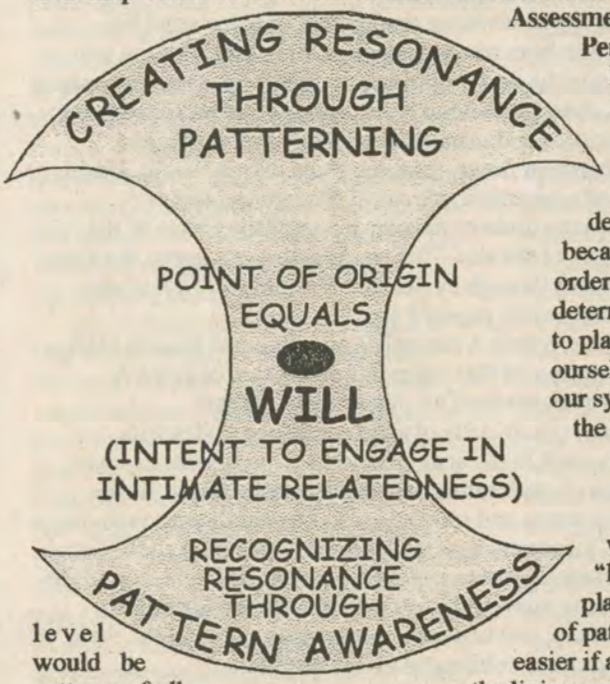
**The Map Is Not the Territory, It's the Language**

Unlike structures, patterns can't be measured, weighed, or quantified. They don't lend themselves to analytic or objective verbal depiction. Patterns reflect qualities in a context. Because they consist of arrays of relationships, the language of pattern must be capable of representing relationship. We speak pattern language when we map relationships.

Anything that reveals relationship functions as a map. Mollison has observed that indigenous peoples' art, dance, song, and stories communicates pattern understanding. These things model patterns of relationship; their added dimensions offer more surface on which to hang information.

When we produce permaculture site assessments for clients, we attempt to paint a vivid picture of the dynamic interrelationships of place with photographs, storytelling language, flow diagrams, colored tables, and colorful maps. We use color and pattern in such a way that the client intuitively recognizes their meaning—for example, red for warm and blue for cool. (We mention this because we've been surprised by how often mappers do not use color and other aspects of pattern to convey meaning.)

Each additional facet added to a map—color, shading, fill patterns, intuitively recognizable symbols, etc.—increases its capacity to express additional dimensions of relationship. The ideal map would be three-dimensional with movement.




**Assessment: Perceiving Place as Pattern**

Assessment precedes design because in order to determine where to place ourselves so that our system and the living system of place both benefit, we need to "know" the place on the level of pattern. This would be easier if all the patterns of all the living systems that make up a place were fully visible to our eyes. But many are only partially visible, or only visible through evidence of their effect on other systems. Imagine a carpenter ant looking at a tree. What part of the flow of "tree" would the ant perceive? In looking at place, we are as ants to trees in relation to many of the flows that interact to form "place."

Assessing a site is like being a detective. We pick up evidence of flows—fragments of patterns perceptible to our senses; clues which indicate the pattern of each flow and point toward the overall pattern of the energetic web of the whole system. We capture these clues through the process of mapping and eventually build up an image of the relationship dynamics of place.

**The Dynamics of "Place"**

What we call place is actually an entity--a unique constellation of patterns nested within patterns, interwoven with other patterns in families and guilds and social relationships, all endlessly changing, cycling, evolving, and building to greater levels of complexity over time. "Place" is an incredibly dynamic and complex being. In coming to know place, we become aware of individual flows and their relationship with each other. We go beyond questions of composition and structure—What does this flow consist of? What are its parts?—to the qualities it exhibits as a result of its essential nature. These qualities correspond to multiple dimensions:

- How quickly does it move? (Velocity, viscosity, resistance encountered.)
- Which direction is it moving? (Spatial dimension: directional orientation.)
- How much is flowing at various points? (Volume-indicates order of flow.)
- How big is it? (Spatial dimensions of height and breadth.)
- How often does it flow? (Dimension of time: cycles/periodicity.)
- How long does it flow? (Duration.)
- Where does it overlap and interact with other flows? (Social dimensions.)
- What's the significance of this flow for our aspirations for relationship? (The social dimension between our system and the entity of place.)

The things we encounter in the landscape provide clues about the qualities of various flows. Disturbance or evidence of disturbance commonly reveals the grain of flow through the system.

**Flows Come Together**

Flows have a tendency to converge, forming nodes—points of connection between dynamic processes. Nodes are significant to permaculture design because they represent edges, which support greater complexity. They tend to jump out and grab the attention of an observer. Some nodes reveal "richer" information than others. Indicators, anomalies, and paradoxes represent levels of phenomena that correlate with increasingly complex flow dynamics.

Indicators are familiar signatures of broad or very relevant processes and phenomena. For example, if you see a lone hackberry in a woodland, you can infer that there was a large oak there at one point, or that there are oaks nearby.

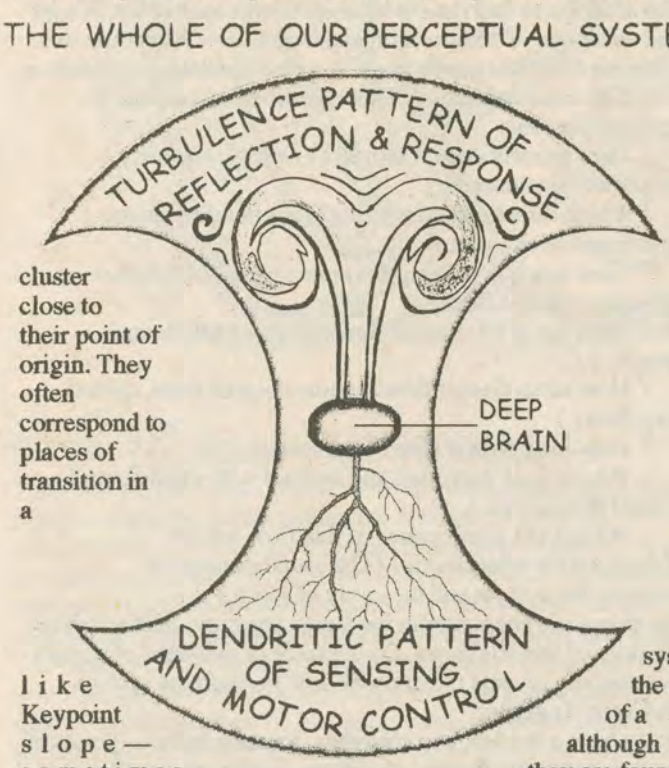
Anomalies are phenomena that stand out of the grain of the flow. Often they represent something common to two flows and may be a node or connection between contributing dynamic processes. For example, a tree severely deformed in two different directions may indicate impact from prevailing wind as well as water flow.

Paradoxes are phenomena that contradict one's expectations. They often point to a very large magnitude of flow in one or more dimensions. For example, Tim once found a bunch of volcanic boulders on a ridge in an alpine limestone landscape. (Paradox 1.) A soil core on the crest of the ridge found nothing but clay and gravel—not limestone bedrock as expected. (Paradox 2.) After more research and field work it became clear that what appeared to be a ridge was actually a glacial moraine. The volcanic boulders were part of the debris pushed in front of the glacier, and the entire ridge was essentially a tall, unstable pile of unconsolidated fill. The paradoxes were the signs of

processes that had occurred thousands of years before. As we gain experience with reading the landscape, and build a "library" of familiar patterns, phenomena which originally manifested in our perception as anomalies and paradoxes become indicators.

**Clues Point to Attractors**

In the language of physicists, an attractor is a region of an abstract space that pulls a system toward it. We use the term informally to refer to places in the landscape where several flows cluster close to their point of origin. They often correspond to places of transition in a system-like Keypoint—the slope—of a sometimes although they are found at a crest. Attractors represent the core of a system, the point of origin of a larger landscape system analogous to the *Ki* (chi)-point of a person. Attractors are mega-nodes. They relate to nodes in the same way that a cluster of trunks relates to the crotch of a peripheral branch of one tree—the magnitude of flow through an attractor is far greater than through a node. Sometimes the magnitude of flow through the attractor is so great that it almost loses form; the area can look as though a bomb hit it.




Attractors are powerful places, and people often intuit their presence. In the absence of awareness of how to align safely and beneficially with flow, they tend to place themselves in the middle of attractors. Attractors are significant places because, in general, the more flows that pass through an area, the richer the resource base, the greater the diversity of opportunities, the more complex the edge, and the higher the potential for relationship (within limits of safe and manageable orders of magnitude of flow).

**The Process of Pattern Awareness**

In order to perceive and capture pattern, all the parts of our sensing and information-processing system need to work cooperatively and harmoniously in feedback loops. We've identified two skills which we use in these loops.

During **scanning,** the sensory system and primitive brain take in information and pass it to the right brain without restriction. The right brain recognizes the existence and characteristics of flow patterns. While scanning, evidence of flow usually leaps out as disturbance: fractures, displacement, deformations, traces of scouring, regrowth at various levels of succession. Disturbance indicates a story of the pattern of particular flows. The idealized map of the general model helps us determine what part of the flow the disturbance is describing.

During **honing,** the left brain collects information on structure and composition of elements, makes inferences and deductions, and determines fruitful directions for further sensory and analytic exploration. Scanning and honing oscillate in a pattern corresponding to the general model. We use these skills as we explore the system through a progression of processes:

During **scoping,** we define the boundaries of systems, beginning with the natural boundaries of place. These often correspond to a tributary catchment of a watershed, but are sometimes more complex. Scoping defines the extent of exploration. We also use scoping as a first step in investigating individual flows and their scale. Gravity-driven flows tend to nest within the scope of place (the watershed), while flows driven by solar energy tend to extend outside watershed boundaries.

During **investigating,** we explore the composition and pattern of systems.

During **modeling,** we map the patterns we are recognizing. Maps of what we encounter serve not only to record what we find and where it was; they help develop the larger context that cultivates understanding from our observations.

During **evaluating,** we test our assumptions and redirect our approach as needed. We spiral through these processes of exploration repeatedly in the course of getting to know "place."

**Spiraling Through Exploration**

Exploring the interwoven dimensions of place involves viewing the site from many vantage points, from walking it to viewing it from the air. We note each point where we encounter a disturbance, indicator, anomaly, or paradox and try to envision the characteristics and magnitude of individual flows, and interaction between flows, from the clues we are seeing. During the process of assessment, we spiral through the cycle of exploration many times to develop a composite image of the dynamic whole of the site. This process does not move in a line, but rather moves through cycles that resemble a von Karman trail. *(See illustration, page 24.)*

Imagine that points A through Z are all linked to each other (as in a hologram), so that when our perception of point A clarifies, our perception of all other points changes simultaneously. Each cycle of exploration concludes with integration, a shift in the state of the observer, and then begins again. Cycles of exploration nest inside larger cycles. As we observe phenomena and relate them to one another through direct observation, inference, and deduction, we gradually construct a multi-dimensional armature of nodes, a node-to-node map of the whole. We hang more and more information on this multi-dimensional map, and unpack it with stories. Eventually, the exploration process culminates in transformation.

**Transformation Point**

Remember the two-dimensional connect-the-dot puzzles we played with as children? At some point we connected enough dots to recognize the image in front of us. There was a change in state from "not knowing" what the image was to "knowing." Imagine a multi-dimensional node-to-node puzzle—one that ranges through space, time, and relationship. Eventually, we map enough nodes that the same kind of transformation from "not knowing" to "knowing" occurs, on a much deeper and richer level.

For Tim, this feels like "Ah ha, now I know you." He describes it as being able to hear a chord—the unique essence of that place. It feels like an honor. It's an emotional and humbling moment.

This is quite different from the kind of knowledge that comes from dissecting something with our intellect and feeling that we have mastered (dominated) it. "Knowing" contains the humbling awareness that we can never really know any living thing fully—offset by the confidence engendered of intimacy and respect.

**Design: Aligning with Place**

Permaculture design challenges us to configure our system to align with the energetic patterns of place in a way that both we and the place build to higher levels of organization and complexity. The way that we do this is through patterning—applying pattern understanding to how we array our system. Pattern recognition (assessment) and patterning (design) weave in a continual dialog, a spiraling dance of oscillation between listening and responding. The process of pattern awareness outlined above applies to the realm of response as well as perception. In patterning, we work with building blocks of pattern—guild templates—rather than objects. We scope to determine the appropriate magnitude of our system in relation to the landscape it's embedding into. We investigate our library of guild templates to determine which "fit" the matrix that will hold them. We model these relationships through concept plans and construction documents, and we evaluate the plan, questioning and testing our assumptions. But how do we know when an array "fits?"

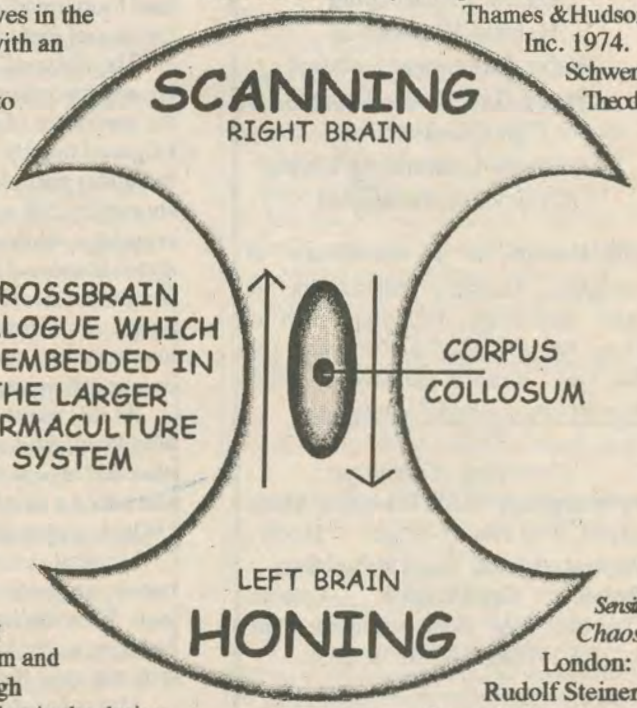
**Resonance: Aligning with and Amplifying the Chord**

The dictionary defines resonance as "the effect produced when the natural vibration frequency of a body is greatly amplified by reinforcing vibration set at the same or nearly the same frequency from another body. In *Living Energies,* Callum Coats defines resonance as "the free transfer of energy or sympathetic vibration between one system and another without loss." Resonance holds systems together, and allows them to self-organize to greater orders of magnitude. We experience resonance in our body. Tim experiences "knowing" the essence of place as a chord. He can "hear" resonance—whether there is alignment or discord between arrays. Vic experiences resonance as a feeling in her body where vibrations seems brighter and more vibrant. The deep brain perceives resonance, and we must trust ourselves and open access to the deep brain to "hear" it. Recognition of resonance is probably a mechanism of intuition.

**Dancing On the Edge**

Where are human systems likely to find resonance? The practice of *aikido* offers insight into the human pattern of resonance with complex dynamic systems. *Aikido* is about being present in the moment, immediately recognizing the initiation of an incoming threat or flow, blending with it, and redirecting its force. Blending creates a relationship to flow that matches its force, direction and extent—in other words, resonates with the force—while locating us just below the leverage point of the flow. The leverage point lies just off the line of the flow, not directly in its path; on the edge of the flow. Aikido practitioners speak of this relationship as the dance with the enemy. It is an assertive, as opposed to aggressive, interaction. The dance expresses personal boundaries in the relationship to a partner who cannot comprehend them. Conversely, the aikido dancer recognizes and respects the limits a partner brings to a relationship, and when avoidance or flight is the prudent course of action.

When we locate ourselves in the landscape, we're dealing with an extremely dynamic and powerful entity. We want to locate our ki-point (the attractor in our system) in close enough proximity to the attractor in the landscape to benefit from the abundance of flow found there, but we need to be aligned with the attractor in such a way that we are not overwhelmed by flow. We do not want the magnitude of flow to destroy our system. Configuring this relationship means finding the "fit" between our system and the larger land-scape through perceiving reson-ance. Filling in the design is a matter of finding the "fit" in nested relationships.




**If It Fits, It Will Build Itself**

Once we find resonance—what permaculture literature calls "right relationship"—we can sit back and watch the natural self-organizing properties of systems do the work. But the dance of relationship doesn't end. It's a way of being in the world that deepens, builds, and continually transforms us and our partners in the dance.

**For further exploration...**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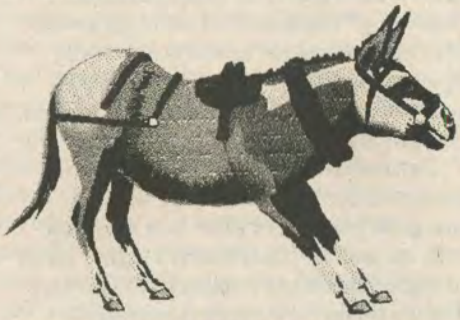
# Thinking Like a Mule

John Beckman



Knowledge can be a powerful tool for both personal growth and social transformation, but just how that knowledge is approached and integrated ultimately determines its utility and social and environmental influence.

I have been working on a project in the North Carolina mountains that requires roads to be built to access farm fields, planned homes and other building sites, and agroforestry and restoration areas.

With topographic maps and design plans for the development in hand, and determined to take a minimum-impact, permaculture approach, I laid out a road plan that covered the shortest distances between major points (minimizing the costs of construction), and avoided stream crossings and wet areas (limiting environmental impacts), using a single-lane loop travel system (thereby reducing the size of disturbance areas).

The old road had run along a creek, crossed two streams, and swung around the perimeter of the field to get to the top. I figured that by shifting the road through the lower part of the old field I could shorten it 25% and avoid the two water crossings, while still accessing the farm areas. It seemed my only trade-off would a somewhat steeper road grade across the length of the lower field. We flagged the new road bed, and congratulated ourselves on our efficiency and savings.

At this point I brought in a local person who knew road construction to review our plan and layout. He studied the situation and asked a single, simple question, "Which way would a mule take?"

I looked at him (from my automobile-based perspective) with a puzzled expression. Then the light bulb slowly began to brighten as the knowledge he was sharing with me sank through my modern notions.

Mules are stubborn, dumb beasts of burden from antiquity, favored by pre-industrial farmers throughout the South because they are stronger than donkeys and tougher than horses. But mules—my friend was gently pointing out—showed more ecological wisdom than modern road designers. For the animals seek out the paths of least resistance. By following the route that requires less intense energy expenditure all along the way, they arrive at the destination capable of going farther rather than collapsing exhausted. For repeated journeys, gentler winding pathways, though longer, win out over shorter, steeper sprints—especially when you have a wagonload of rocks behind you.

Permaculture designers can benefit by applying "mule-logic" to development issues. As Toby Hemenway points out *(PCA #38, p.25)*, modern engineering systems usually depend on the rapid consumption of energy and a high level of inputs and outputs, in contrast to the efficient and economical cycling displayed by nature. Cheap energy has allowed us to construct roads, industrial systems, settlements, and economies based on linear use patterns that ignore landscape and resource limits. These energy-intensive systems have displaced the knowledge of previous generations who were closer to the animals and the earth. Because they had less energy available for traction, pumping, heating, etc., our predecessors developed technologies and patterns of usage that did more with less. Hard-won experience had shown that longer, gentler grades, and other patterns of cooperation with nature increased the chances for success, and for survival. "Mules don't walk fast, they walk long."

Knowledge and roads can be approached and constructed in many ways but it's important to keep in mind that when we reach a destination, we'll want to be able to go further, and not collapse. Both my roads and my knowledge are a little longer and gentler these days.

**Resources**

The American Donkey and Mule Society, 2901 N. Elm St., Denton, TX 76201 <http://www.donkeys.com> or your local muleskinner. Δ

*Johnny "JB" Beckman is a builder and "MuleLogicator" who lives in Raleigh, NC and is building Unahwi Ridge Community in Jackson County, NC.*

# The Permaculture Design Process

Christopher Peck

This analysis of permaculture design process grew out of my work to become a certified educator in holistic management. I was learning how decision-making was structured in holistic management, and the significant benefits that resulted from a clear and easily taught path of knowing. Naturally that study prompted me to reflect on the process of permaculture design. I began to ask the question "how does permaculture design happen?" The answer that emerged from many long nights and insightful conversations with several of my mentors formed the basis of this essay. In no way do I consider this a finished or definitive answer to the question.

**Overview of Design Process**

My understanding of the design process is organized after the general model *(see diagram).* The process consists of five phases: assessment, visioning, conceptual planning, master planning, and evaluation—that are nested inside and based on the core practices of permaculture.

- Natural systems thinking
- Ethical intention
- Thoughtful and protracted observation

As I was trying to formulate a statement of the process I kept stumbling over where to put the principles, ethics, and patterning until I realized that the understanding they represent is foundational to everything we do; every step in the design process reflects, is mediated by, and is based on an understanding of this core material. Principles express the holistic thinking appropriate to natural systems; ethics reflect right intention to care for the whole of nature including humans, while patterning, an interaction of observation and design, is the process of organizing for best flow and function that permeates and underlies each phase.

**Five Phases of the Design Process**

**1. Assessment**

For several years it seemed like everyone in the courses I taught was asking me "what do we do first?" In my consulting work with clients the question presented itself repeatedly as well. Permaculture answers: "Assessment!" We always begin by asking what is the situation we're working in. This results directly from the application of our fundamental principles and ethics, particularly the injunctions to work with nature and make thoughtful and protracted observation. Many folks have developed comprehensive questionnaires to ensure that a complete picture of the site comes forward. Without this step design quickly degenerates into the "cut & paste" mentality that breeds identical development in Albuquerque, Anchorage, and Atlanta. Assessment guides and grounds design so that it is truly reflective of and responsive to place.

**2. Visioning**

The visioning phase traditionally has been undervalued in permaculture work. Visioning asks people to dream a future, state values, and develop a common statement of their work together. In some ways it is the assessment of the people involved in a project. In my mind it is important to distinguish the two, as both the work processes and the products of each phase are distinct. This is less of an issue for smaller properties or groups of people, but for large groups of involved participants this step can be lengthy and significant. A formal approach to consensus building is particularly helpful in this regard.

**3. Conceptual Planning**

In my opinion the conceptual planning phase is also distinct, as it encompasses the need to be creative and to generate a host of wild possibilities for a site, before trying to arrange the elements into a coherent whole. I feel it's necessary to give the creative process a formal phase and time period. Once a vast number of possibilities have been generated they can be winnowed using an ethical and functional sieve. This reduces a possible list of hundreds to a few very good ideas. These elements are then explored in depth to ensure an understanding of proper placement and relationship to other elements.

**4. Master Planning**

## A Test for Permaculture

How do you know if permaculture is being practiced?

1) A careful, thorough assessment forms the foundation of understanding and action.

2) Ethics guide and permeate all decisions and activities. Ethics are evident.

3) The needs of the system are met by the system. There is no waste or "pollution." Yields are optimized.

4) Appropriate tools and strategies are applied, or, creative solutions demonstrate an elegant understanding and application of permaculture principles.

5) The system is moving overwhelmingly towards regenerative investments.

6) The system evolves slowly and organically. Δ



Master planning is where permaculture really shines. We take all of the assembled elements, analyze their relationships to each other and to the whole, and array them, using patterns, guilds, and other design tools, into a functional whole. An important part of this step is to place the elements of the design, not only in the right locations, but in a proper sequence.

**5. Evaluation**

Several years ago Wes Jackson came to Santa Fe and led a discussion about the philosophical underpinnings of sustainable agriculture. After surveying the contributions of Descartes and others he surmised that the science guys had gotten it all wrong. Nature is infinitely more complex than we can know; basing a science on knowing is bad gambling, since the odds are so against us. It would have been a much safer bet to create a science of ignorance. Most folks chuckle at this, but Wes meant it seriously.

A science of ignorance is real and possible and consists of three steps.

- Make small-scale trials.
- Monitor and evaluate extensively.
- Assume that decisions are incorrect.

This is familiar territory for permaculture designers. It is important that we acknowledge the need to monitor and continually evaluate the designs we create, so that we can guide their evolution over time.

**Benefits of the Design Process**

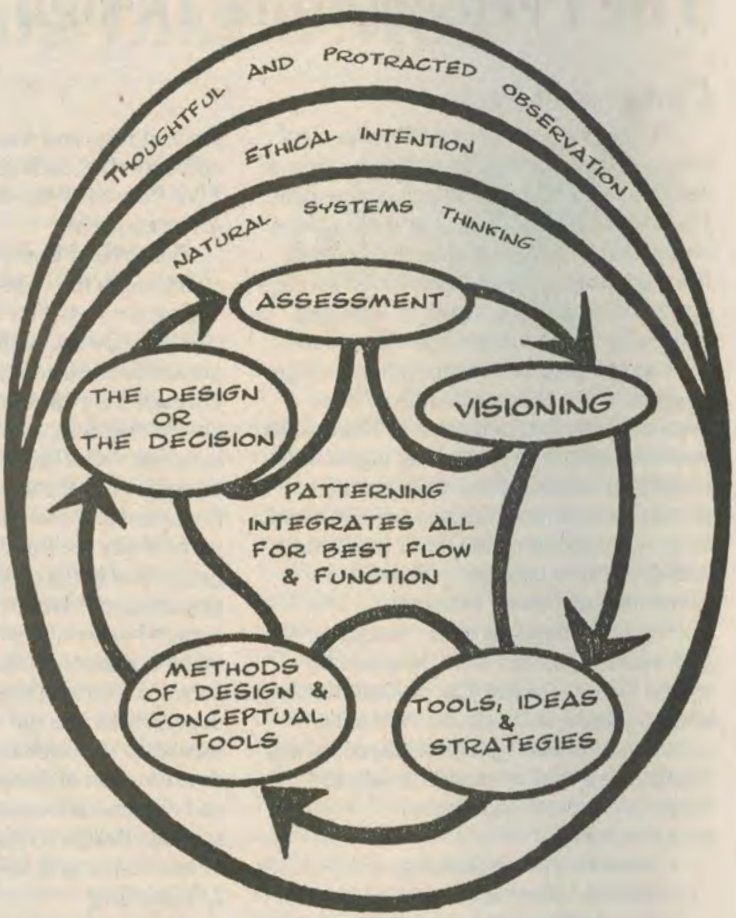
I am deeply concerned with how permaculture is taught and learned, and how both teaching and learning can happen more effectively. Over many years of teaching courses I have observed that students have a difficult time seeing how to engage with permaculture in a way more profound than making simple technical applications. Students see that some of their teachers have really "got it," and they wonder how they can "get it" too.

The key to transcending this dilemma is the word "engage." For design is a practice of complexity. And complexity is a worldview new to the western and modern mind—a science of engagement, a recognition that observer and observed are not separable. Though this is inherently mysterious and ultimately inexpressible, it can be learned by doing: design unfolds from complexity in the natural world by the orderly process I have outlined above. Students who practice design process will come to understand permaculture—they will "get it."

"It," of course, is the profound transformation of self that changes the way a person sees the world, how they think about problems, and how they go about relating to work, the land, and people.

It is no easy task to train students to this level of competency. We acknowledge this difficulty by requiring a two-year commitment to permaculture work before someone can be considered a graduate, but can we accelerate the process? How can we make it more effective? How can we affect more of our students?

I believe that by clarifying exactly what we do and, just as importantly, who we are (the Sinatra loop: do-be-do-be-do), we can teach more effectively, our students will grasp the essence more firmly and faster, and they will reach a deeper level of understanding more readily.




The design process is permaculture. Values and ethics are inherent to it. How to think about problems, how to proceed, what to do first, are all contained within it. Iterative use of design process allows a deeper penetration into its core. If we teach students this process, and they engage with it and use it, they will learn it, and so teach themselves permaculture.

For this process of self-transformation-through-design to work, however, students must be encouraged to reflect on what they are doing and how they are feeling, in order that they become conscious of the process they are using. As self-awareness is engendered, students will develop mastery of it, and can begin to refine and co-evolve it. In my opinion, questions of technique are secondary to developing mastery of this core understanding. If they've "got it," I believe, techniques, solutions, saving the world (!), will follow naturally from their every breath and action.Δ

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# Environmental Analysis for Land Use Planning

Matthew Arnsberger

Identifying, mapping, and analyzing the physical characteristics of a landscape will provide a better understanding of the ongoing natural processes and economic opportunities it has to offer. A careful site analysis will also reveal the development constraints and highlight potential problems, and should be valuable for any landscape, urban or rural, commercial, residential, or community.

A site analysis and planning (design) process will aid in determining the location, form, and appropriateness of roads, buildings, and other uses of the land. Site analysis can enhance social and economic development while working with the physical conditions of natural systems to maintain their environmental quality, natural beauty, and psychological sense of place and well-being. It can guide the patterns and rates of development for optimum productivity and sustainability.

Since designing and creating ethically and environmentally appropriate, productive human landscapes is the basic aim of Permaculture, a comprehensive site analysis is critical to any permaculture design process.

**General Principles**

Social and economic factors, such as population demographics, transportation and commercial ventures, as well as legal constraints (zoning bylaws, wetland regulations, etc.) must be combined with an analysis of the physical characteristics of the site in order to develop a comprehensive plan. I can give here only a broad and general description of what should be included in an analysis of a site's physical characteristics, based on some considerations for the commonly analyzed conditions: topography and slope, soils, hydrology, and vegetation. Formulaic solutions are inappropriate because all landforms and criteria are unique and must be considered on an individual basis. In some cases consultation with experts, or others with specific training, may be needed.

An in-depth analysis of the physical and natural characteristics of a site should include:

- Sun and shadows,
- Climate and microclimate,
- Ecologically sensitive and hazardous areas,
- Valuable natural, historic, and scientific resources,
- Recreational opportunities,
- Noise and views analysis, etc.

**Overlay Mapping Technique**

Developed by Ian McHarg working at the University of Pennsylvania, this selection process for land use suitability represents a gradual narrowing of choices from the area of land under consideration. Social, economic, legal, and physical site characteristics relating to the development aims are identified, evaluated, and mapped. The technique is to display on clear overlays the relative qualifications for a designated development purpose of each section of the landscape by assigning different tones of color: dark, medium, or light, to different degrees of suitability; dark equalling low suitability, light equalling high suitability. Individual analysis maps on transparent mylar or tracing paper are overlaid to create a composite map that identifies the areas most suitable for a particular purpose as those with the lightest color tone. Matrix systems have also been developed from this technique by assigning numeric values for suitability to each criteria.

**Site Inventory and Analysis:**

The natural and physical characteristics of the land dictate the design. Familiarity with these factors should be developed before any design considerations are made. Inventorying and mapping the site's physical characteristics: topography, slope, soils, and drainage will guide the design process, eliminate inappropriate schemes, and reduce the quandary of confusion regarding options for placement and design. State and regional planning agencies may have compiled inventories and data for specific areas (climate, drainage basins, etc.), though owners or designers will want to survey the property for its site-specific resources. In *A Pattern Language*, Christopher Alexander, et al suggest, in a pattern formalized as "Site Repair," that the least attractive areas of the site should be developed, and the most attractive ones be left alone so they can be enjoyed in their natural state.

**Physical Site Considerations**

A. Topography and Slope provide a broad overview of the site conditions: ridges and valleys, slope steepness, the solar aspect of the hillsides, etc. United States Geological Survey (USGS) maps show topographic information, but of a scale and contour interval that is likely to be of little use for individual homesites or communities of less than ten acres. For an accurate assessment, a survey should be done to map specific features, distances, contours, and elevations.

Topographic maps make good base maps onto which other forms of analysis can be graphically represented, identifying areas of the site and the degree of their suitability for the planned use and design.

A topographic analysis will identify such things as surface water drainage; frost pockets; views; areas of direct sunlight; steep, undevelopable land; and other unique and valued landforms. This information will aid in determining the placement of roads and paths, orchards and gardens, housing clusters and other facilities, and areas to be reforested, etc. Guidelines list desirable slopes for various land development purposes.

The slope and topography inventory of the site should identify:

- Elevations - level areas, high elevations (ridges and hilltops), mid-slopes, and low areas.
- Surface water - rivers, streams, ponds, wetlands, etc.
- Slopes - flat (0-3%), gentle (3-8%), moderate (8-15%), steep (15-25%), and severe (>25%).
- Aspect - which direction each hillside faces.

B. Soils are typically classified by their composition, character, and slope. The USDA's Natural Resource Conservation Service (NRCS) provides Soil Survey Reports for each county in the United States. The suitability of each soil type is given for forests and cultivation, road and building foundations, percolation rates for drainage and septic fields, etc. Copies of the soil survey reports are available through local libraries or the local NRCS office. The mapping and classification of these soils is roughly 85% accurate with small, scattered areas of other soils intermixed. The identification of a soil type on a specific site might be critical for certain development plans, such as a septic leach field. Test borings can be made to determine the depth to bedrock or water table, and soil composition.

An inventory of the soils of the site identifies:

- Soil types unsuitable for planned uses; restrictions may include wetland areas, steep slopes, or areas with shallow, poorly draining, or highly erodable soils.
- Rocky areas and outcrops such as stony surfaces and exposed ledges.
- Areas of active soil erosion requiring remedial attention.

C. Hydrology describes the movement and availability of water on a site. Clean water is a critical life-supporting element. Surface water is an asset for its visual beauty and recreational opportunities, as well as its importance to wildlife. Therefore, wetlands are crucial and sensitive environments. Acting as sponges, wetlands hold and purify water, trapping sediments, removing nutrients, and recharging underground aquifers. Wetland regulate flooding, prevent storm damage and pollution, and support wildlife habitat and fisheries. Wetlands and their buffer zones need to be protected. Disruptions to wetlands or surface water drainage patterns may result in erosion and siltation, damaging the natural environment and personal property. All land development for human use will increase the amount of surface water run-off because of the creation of impermeable surfaces such as buildings, roads, and parking. Planning must take this into account. The retention and augmentation of natural wetlands is a primary strategy to mitigate flooding and water pollution.

An inventory of the hydrology of the site will identify:

- Annual rates of precipitation.
- Depth to groundwater.
- Location of wells, springs, and septic systems.
- Surface water drainage patterns (amount, direction).
- Surface water (lakes, ponds, streams, swamps, etc.).

D. Vegetation types and natural plant communities vary due to numerous factors including geology, climate, elevation, soils, moisture, succession and disturbance, slope direction (solar aspect), and seed availability. Each plant community will be unique, having adapted to distinct conditions, based on the interactions of a myriad of organisms. We, as human beings, have only a beginning knowledge of their importance and interrelationships. In every area, native flora needs to be enhanced and protected in design and development schemes. The use of invasive exotic plant species should be avoided where have no control over their spread and their impact on native plant communities might be severe. Numerous sources including the U.S. Fish and Wildlife Service's Natural Heritage Program and various native plant societies provide lists of invasive exotic plants to avoid.

Fields, forests, and wetlands provide innumerable important functions including wildlife habitat, harvestable and economic resources, protection of the watershed, improving water absorption and retention erosion control, enhanced recreation and aesthetics, shade and climate modification, protection from wind, snowdrifts and excessive sun, etc.

The vegetation inventory of the site will identify:

- Mature forests
- Younger forests (thin trunks, dense stands)
- Cut-over areas
- Open areas (fields, etc.).
- Unusual or unique specimen trees.
- Areas with no vegetation (dunes, ledges, rock outcrops)
- Distinct plant communities
- Invasive exotic plants

## Conclusion

Natural and physical resources combined with social and economic factors serve as the basis for a permaculture design plan. When possible, analysis data should be inventoried on same-scale maps. Using tracing paper, or mylar film, the overlay process can be applied to reveal areas with severe limitations, and areas with relatively few limitations. The analysis and design criteria will guide the process, and the design will function well with the environmental character of the land.

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# Teaching Permaculture: A Personal View

Jude Hobbs

Where does it start, this yen for bringing elements together to create a whole? What generates this yearning to keep the whole landscape in view, yet at the same time to see each plant, even to project one's awareness down to tiny mites and spores? For me, it goes back to my childhood days in The Sycamore Tree. The low and regular branching pattern of the widespread limbs made for an easy climb. Perched in the sycamore's canopy, I spent many a sultry summer afternoon scanning the horizon as the neighboring farmland slowly filled with roads and houses. Taking a closer look, I could see all that was happening next door or in my own yard, or zooming in closer still, view the irregular patterns of the bark as it flaked off under my fingers and bugs scurried away in search of new cover. But alas, my mom always found me in my secret world, and would call out, "That's no place for a young lady!" America in the fifties had its own notions of order.

Fresh out of college in the early 70s, and turning away from that constant bid to do what was expected, I hit the road to find my calling. After a few years of roaming and a wide variety of jobs I settled down in southern Oregon and started a landscape maintenance business. The **pattern** that emerged from that choice—of repetitious work, digging, bending, and mowing—showed me that my back would not tolerate a lifetime, let alone another year, of such intense physical labor. So I decided to gain more **knowledge**, and went back to school. I found that in the world of academic horticulture, I was one of the lone voices for "environmentally sane" methods. Despite the limits of a conventional education, I learned enough to hang out my shingle in the early 80s, and so set up Cascadia Landscape Design in Eugene.

The market for environmental landscape design in the 80s was a make-your-own situation. Few people really knew what it was and even fewer were seeking it out. I chose to work with "mainstream" clients, folks for whom planting edible, native, or bird-attracting plants was a new idea. My goal was to guide them to plant less lawn than they ever thought possible, to create yards that were beautiful and bountiful.

**A Permaculture summons**

In 1985 I found Permaculture, or should I say, "it found me," when I was invited to Whidbey Island, near Seattle, for an event that changed my life. Introduced to the powerful concepts of Permaculture design, I began to understand the wondrous processes of ecological systems, made visible in natural patterns, and how they can teach us to restore the broken cycles around us. This connection to the natural world continues to provide me with a model of design for human-made systems of self-reliance.

Since I had already been teaching a variety of garden-related topics in conjunction with my business, it was natural to introduce the elements of Permaculture to my work.

In permaculture we read the land, and when working with people we need to read the individual, as well. This is how we can share knowledge effectively. As an instructor/facilitator, I have learned that cogent teaching comes from understanding and tailoring presentations to the way people learn.

Researchers have found there are three main learning styles. Visual learners, who make up around 65% of the population, relate best to written information, notes, diagrams, and pictures.


*Jude with her favorite peach tree*

Auditory learners prefer the spoken word, learning best by listening to a lecture and taking notes. They make up about 30% of the population. Kinesthetic learners, the remaining 5%, use touch and movement and space. Imitation and practice works best for them. Most people learn well from a blend of these three styles, so a teaching curriculum needs to employ all of them.

No matter who I am working with, student or client, I find it best to facilitate in a way that encourages ownership of the topics covered. Sometimes I ask questions, trying to elicit answers people never thought they knew. I will often offer exercises that incorporate multiple senses: sight, smell, touch, taste (as in doing a soil analysis). When I teach at the local community college, I present ideas that people can try out immediately at home. The next week they come back with their stories and questions. Once these techniques are in their repertoire, the beneficial connections happen easily and projects unfold with delight.

In 1983, Entwistle & Ramsden identified a "deep" or holistic approach and a "surface" or atomistic approach (only examining parts) to learning. In permaculture we take into consideration the big picture, so we must guide all to integrate the whole, as in the "deep" approach. This delicate balance between the parts and the whole challenges us to listen carefully, without assumptions, both to our clients' and our students' needs, and to how they best learn.

Varying styles of instruction can enhance learning and retention, and through repetition knowledge is imprinted. Two important resources I have drawn on to develop my own style of teaching include: Peter Renner's *The Art of Teaching Adults* and Robin Clayfield and Skye's *Teaching Permaculture Creatively.* The authors present evidence of how people learn and offer useful collections of techniques, all of which come down to one thing: empowering people, guiding others to see with their own eyes.

The Permaculture curriculum is exquisite in its breadth and depth. Yet learning styles are greatly influenced by an individual's age, gender, socioeconomic level, ethnic, and cultural background. So we should consider how we can adapt the curriculum to the audience for whom it is offered.

Why are there fewer women than men in permaculture courses? Gender issues enter into permaculture in various ways. In women's workshops, there seems to be less of an edge—people quickly relax, not feeling a sense of competition or fear of asking "dumb" questions. Maybe a lot of us got pulled down from that sycamore tree and we must become more brave.

**Creating Quality of Life**

Permaculture design is a framework for improving the quality of people's lives. My approach is to observe, discuss, and design continuously on the same project. I endeavor to take one step at a time, proceeding slowly and following through with the ripple effect of that one step. As an example, if I see the need for a swale on a site, we locate the swale, design a pond near it, plant the swale and pond, then stand back and watch as the directed water brings new life to the area. I note to my client that by doing this one step, creating a swale, we can prevent water from flooding the house. The pond will attract wildlife, and there is now a place for interesting plants, as well as a quiet area for reflection.

After focusing primarily on landscape design for many years, I was ready to branch out. With four others, I co-evolved a small business, Agro-Ecology Northwest. We consult and do research with small-scale farmers to develop integrated farm plans. With complementary professional and personal strengths, the team can provide environmentally sound solutions for a wide range of management problems.

In 1995 we received a small grant to prepare a bulletin and resource library on hedgerows for Oregon State University Extension Service. This brought me into a new area of design and research. I am now seeking funds to follow up the initial work with in-depth observation, design, implementation, and documentation of multifunctional hedgerows in the Northwest.

This project brings me close to the debate about natives versus exotics. On this subject I tend to share Bill Mollison's view. In his Autobiography, *Travels In Dreams,* he writes, "We should all be busy replanting native forest, but had better also be very busy growing any sort of food plant we can find...We must stop criminalizing plants, and see why they are there, and how to use them...rebuild diversity with plants *indigenous to earth.*" (Mollison, '96)

**Bringing it Home**

The design for my life seems to be incorporating diversity in both my work and homelife. The pattern of stacking functions and multi-layering is in constant evidence.

When my partner Jerome and I settled in Eugene, we purchased a third of an acre in a quasi-rural part of town. We have supportive neighbors who share our interests. We grow food on the property using the enormous amount of biomass that is locally available and aim to employ recycled materials in the structures wherever possible. As elements of the design for our house and garden we have included: rabbits, small seasonal ponds and water barrels for catchment, cold frames, composting systems, wildlife attracting and native plants, a children's structure with wood storage beneath and grapes growing on it, and wattle fencing, with lots of layering along all the vertical spaces. Our challenge is a shady site where we continually experiment to see what fruits and vegetables will thrive.

Jerome is a naturopath and acupuncturist, and we share an office in town. The building we occupy is a Craftsman Style house built in 1910 that was in desperate need of repair when we took it over. Through this major remodeling, we weatherized, changed the heating system, chose all materials, whether recycled or new, consciously (based on where they were made and from what), removed the front lawn to the back, and composted it! Now we grow food in the sunny back yard, and have bird-attracting and other edible plants in the front. We included an old oak wine barrel for a water catchment. The space is often used for meetings and workshops. Our plan is to grow, tincture and market herbs. We are demonstrating how to create an attractive and functional office.

Gabrielle, our 13-year old daughter, has brought me into the world of teaching gardening with young people. I use most of the same teaching techniques with youngsters that I use with adults, but add a large dose of patience.

As a community activist I support the local credit union and merchants, do guerrilla planting, am proactive with food security issues, and am involved with the Eugene Permaculture Guild.

My goal is to enjoy life, letting my enthusiasm and example be a spark for change, and along the way, I hope, guiding others to design their lives for a more permanent culture. Δ

*Jude Hobbs teaches workshops throughout the Northwest. She will be part of the team presenting permaculture design courses at Opal Creek, Oregon August 17-29, and at Lost Valley Educational Center in Dexter, OR November 30-December 12 (see pgs. 58-59). Contact her at Cascadia Landscape Design, 1161 Lincoln St., Eugene, OR 97401-3417.*

# Teaching Permaculture—As If People Mattered

Skye

When designing a property, we carefully observe patterns and processes (geography, geology, climate, hydrology, natural succession...). In our designs we consider such concepts as using multi-functional elements, diversity, the right location for each element, the use of biological resources, energy-efficient planning layout, and the creation of tight energy cycles. Our approach is holistic, aiming at maximizing yield. We carefully analyze the needs, functions, and outputs of all the elements.

One of the "landscapes" that especially interests me, is the classroom, and how we apply Permaculture concepts to the situation of teaching.

**Meet People's Needs**

I believe it is important that we recognize the full range of people's needs. In the famous "Parable of the Chicken," a clever story originally told by Bill Mollison *(Best of Permaculture,* 1986) and oft repeated by permaculture teachers and writers everywhere, the needs, characteristics, functions, and outputs of a chicken are carefully analyzed. With this information, we can design appropriate systems for raising chickens. I find it interesting that after having made such an in-depth analysis for chickens, most Permaculture books seem to assume the only needs of people are food, shelter, energy, and fiber. Although some books do consider economic strategies—which are primarily mechanisms for obtaining and exchanging food, materials, or shelter, etc.—there is little mention of social needs, let alone spiritual or other higher satisfactions.

So, we should ask, are these material goods the only needs of people? Manfred Max-Neef suggests there are many more satisfiers—such as protection, affection, understanding, participation, idleness, creation, identity, and freedom. I believe that any (teaching) system that fails to address these issues is falling seriously short of meeting Permaculture's Care-of-People ethic.

**Invite Participation**

In the classroom, participation, identity, and understanding are not satisfied by an atmosphere of authoritarian control, nor even by the usual approach of, "I'll tell you how it is, and you can ask questions at the end...if you are too dumb to understand," (the latter phrase an addendum not spoken but understood). We need to create an atmosphere where interaction, interjections, and questions are welcome, and obviously, valued at any time. This attitude can be especially important in non-Western cultures.

For the teacher this can be quite challenging, as too many questions can easily sidetrack the class from the lesson at hand. The skilled teacher will directly and honestly respond to questions, deal with them as fully and openly as time permits, and then bring the subject back into focus.

By adopting this approach, we use the most valuable "biological resource" available, the participants. The sum total of information and experience in any group is much greater than that of even the most experienced teacher. Use it wisely and well.

**Follow the Cultural Context**

And, we might also ask, what are the basic characteristics of the culture we are working with. My experiences in Mexico have helped me value the differences in cultural attitude and temperament of different people. The Western approach of "speak-only-in-turn, one-at-a-time" politeness is contrary to the way Latino culture works. To impose our concept of orderly discourse in a classroom not only smacks of intellectual colonialism, but is simply not effective. In this situation it is better to present key concepts, or challenging questions, rather than long discourses, and then use small group or whole panel discussion. To the Western mind the resulting tangle of voices may appear chaotic and undisciplined, but my experience is that the participants will develop a deeper understanding of the issues and concepts, and will come back with either a summary of amazing clarity, or some searching questions that enable and encourage me to take the topic deeper. I believe the lesson here is to stop trying to maintain total control, to allow the chaos, and celebrate the evolution and development of the ideas that can result from an atmosphere of free inquiry.

***"If the participants are not enjoying themselves, then they cannot be learning. And if we are not enjoying ourselves, then they cannot be learning."***

**Teach in Multiple and Memorable Ways**

If a function of the classroom landscape is to be learning, then the modes through which learning happens will be key elements of the design. A spoken presentation with some diagrams satisfies the needs of students who learn by visual and audial modes, but ignores a third way—the kinesthetic mode. Through the use of modeling, physical activities (role-play), or simply expressive body language, the kinesthetic mode is also accessed. This is simply good multi-element (redundant) design. This reinforcement through multiple channels also maximizes the yield of information retained by participants over the long term.

For example, when describing a small tree, I will physically crouch a little, or will stand tall on tip-toes when describing a tall tree. The kinesthetic people will be able to "feel" the sense of compactness, or height, and it is that feeling, supported by the words and the data, that is memorable. Or again, when describing mycorrhizal networks, I often use people to act out being trees, while I use masking tape to create webs on the floor from their roots (feet) to other trees, other nutrients. Many students may not later remember how to spell "mycorrhizae," but they will remember standing in front of the class, with masking tape pinning their feet to the floor and linking them everywhere. They will remember the connection between species and the importance of minimizing damage to these webs by limiting soil disturbance.

It is important to be clear on the aim for the class—in this example about mycorrhizae. Is it so everyone can learn to spell the word, or is it so they can develop a feeling for the beauty and sophistication of soil life, and with that a sense of respect for the life in the soil? Soil science examiners may test for the spelling, but I am more interested in transferring my sense of awe and love for the soil as a living organism.

**Observe and Use Patterns**

If we observe carefully, what patterns can we find in a classroom, and how can we use them? I look for the social patterns. Early in a course I will use simulation and co-operative problem-solving games as a learning experience, but also so I can

learn the patterns in the group. Who are the natural leaders, who can later be used to focus small group work? Who are the shy, quiet people who need support and encouragement to offer their information? Who are the strong, comic, or charismatic people who will help weave a strong sense of group identity and purpose?

**Honor Every Voice**

Everyone has their role, their value. I remember one course, where a very shy man never spoke or contributed at all for three days. But when I started talking about soils, I saw his eyes light up. He wanted to say something, but didn't have the courage to speak out. I gave him the opportunity by simply stopping and looking directly at him—we both knew I was waiting for him—giving him an opening. His comment floored me with its depth of understanding and inquiry. As it turned out, he was a brilliant research scientist/philosopher who had done impressive work on the production of maize. By being sensitive to his needs, by being open to his nature, the whole class (including me) got the opportunity to learn a great deal about the most important crop in Mexico. For the rest of the course, his contributions were always deep and searching, and inspiring to all of us.

**Have Fun**

When Robin Clayfield and I first rejected the lecture style of teaching, we had little information upon which to base our ideas. We relied heavily on our intuition (especially Robin's), and also adopted an important motto which we have since seen verified again and again. "If the participants are not enjoying themselves, then they cannot be learning. And if we are not enjoying ourselves, then they cannot be learning." Schools teach us that learning is hard and difficult, but this is not true. People are experts at learning—they do it best without "teachers." Learning—especially learning about permaculture—is a joyous celebration of life. Don't take yourself too seriously. Look for the in-house jokes and themes that every group soon develops. Allow time for the musicians to add to the celebration. Find ways to use dance. For example, after doing a large-scale design in chalk on the floor, a few minutes of up-beat music and barefooted dance will not only clean the floor, but will energize the group, and can be a suitable break between different topics or processes.

**Map the Territory**

The ideas, themes, and information of a course flow through a natural succession of their own. By using paper and markers a record of this development can be made visible. Each piece of information can be pinned to the walls of the classroom, in sequence, so the workroom itself becomes a record of the succession of the course, of the concept of Permaculture unfolding. This strategy also relieves pressure on those who need to take extensive notes (as they know the information will still be available later). It enables people to concentrate on understanding the concepts, rather than simply recording information.

And finally, for me, one of the key elements to artful teaching is the willingness to be real—to have access to one's own feelings and thoughts, and to be willing to share all of oneself with the whole class. Pretending to be "in control" is both very Western and unreal. If Permaculture is a holistic approach, then we need to be whole people, and treat our participants as whole people. They are not empty minds waiting to be filled with our wisdom, they are intelligent, emotional, sensitive beings who know what they want and what information they need. Teaching is not about a one-way dialogue, but about creating a meaningful, multi-dimensional communication. And who knows, you may learn something!

**A Short Philosophy of Education**

Last year I was asked by the U.K. Permaculture Group to write a short piece on "being a teacher" for inclusion in a planned Teacher's Handbook. This is part of what I wrote. It summarizes how I feel about teaching:

- I sit as a member of a circle, and join in the exciting experience of learning.
- I do not teach. I simply join with other people to experience a common journey into new ideas, new information, new insights—into the world, into Nature, into people, and into myself. To be permitted to sit under a tree with a group of *campesinos* and share a small part of our lives is humbling experience. I feel honored to be permitted such an opportunity.
- I do not teach, I listen. And if the time is right, I may be given my turn to share some of what is important to me, my hopes, my dreams, my love for Nature, my love and respect and compassion for people, my fascination for interesting technologies (that are less damaging to the environment), my desire to eat healthy, tasty food, my hope to live with other people in harmony and peace, my need to be loved and appreciated and my anger at the injustice in the world.
- I have nothing to teach others. I can only share who I am. That is all I can offer. I hope that others may wish to hear my story, just as I wish to hear theirs.
- Don't teach. Listen to your own story. Tell it. And listen very carefully to the stories of others. My desire is to always be the student, never the teacher.
- Teaching is an honor. Don't abuse the privilege. People are wonderful, intelligent, creative, caring, and at times perplexing beings. Enjoy the experience! Δ

*An escapee from Crystal Waters Permaculture Village, Skye is an Australian Permaculture teacher now working and living in Mexico. He is co-author (with Robin Clayfield) of the "Manual for Teaching Permaculture Creatively." Together they will be touring Cuba, U.K., Germany, Kenya, and South Africa to conduct teacher training courses later this year. Skye invites comments and contacts, particularly from others working in the arid and semi-arid tropics and in other Spanish-speaking countries. He may be contacted at Apdo 391, Patzcuaro, Michoacan, Mexico, 61600, or by e-mail: <skye@tortuga.com>*

# "Vietnam was Ready for Permaculture"

Rosemary Morrow

When I went to Vietnam in 1989 I realized that there is a moral issue behind implementing permaculture in such a country: do not make promises to people and then not deliver.

By that time I had been steadily growing my own food for years. So I had the experience, and had designed and set up many permaculture systems. I knew gardeners and farmers could not get good pest control in less than three years because it takes that long to develop the habitat for the predators. I knew not to make claims that villagers would have all their food in the first year because I know that things fail while people are learning. You do not want it so that if a project fails they will never believe anything again, and will be further demoralized.

**Permaculture and Vietnam**

In Vietnam people settled the delta more than two thousand years ago, and thus there are no blocks of indigenous vegetation. As a result they do not have any sense of restoration or putting back. Planners and farmers want to terrace mountains, and grow fruit trees on them, not revegetate the tropical rainforest, unless to harvest timber for cash.

You can ask people what is their native place, and they can tell you about the village, and the fruit tree, and the special character of where they were born. Their family is still there, and their ancestors are buried there, and they have a sense of belonging.

During the "American" war, there was collectivization, which meant that people were taken out of their villages and compelled to live collectively. They hated it, but it probably won the war for them for it freed the women up from going to the market, child care, child-raising, and kitchen work, to be able to grow the rice to feed the soldiers. Women were also soldiers.

Today farmers have been through collectivization, the Chinese and American wars, and, before that, occupation by the French, who took 80% of the land, and the Japanese, who sent most of the rice back to Japan, and let the farmers starve by the millions. So, there has been a long period when Vietnamese farmers have not had autonomy to grow their own food. During the period of collectivization they were mainly growing rice, while the fish ponds, fruit trees, and vegetables were largely neglected. About the time I arrived in Vietnam land was being given back to the farmers, which has resulted in one of the fairest land distribution systems in the world. This means that Vietnam has a high chance of achieving a satisfied rural population with a reasonable standard of living if they can get permaculture systems going in big numbers.

Vietnam was ready for permaculture. They had the land. The old people still had some knowledge. They knew what to do from the past. The old people were contacted and their knowledge recorded. They wrote it up in journals and shared it with each other. When I arrived, this had just started. I just watched it blossom.

**The Change Created by Permaculture**

Originally, families were living in tiny little bamboo huts. They all lived inside and did not know what to do next. The land was bare, just dirt, and families would sit on their steps not knowing what to do—you could see the hunger. As the permaculture project developed, the family would flourish, both in food and in confidence, and in the end they would build a house of cement that would not be flattened in the cyclones. They would be surrounded by a clean, prolific, diverse garden with fishpond, chickens, and pigs.

**The Importance of the Right People:**

When I first come to any project, I start by finding the right people. I go around and talk, and I do a feasibility study—finding out about the agriculture, whether people grow food, what sort of food, who does it, what are the seasons, has anyone tried to work with people to grow more food differently, how do people learn. I spend a lot of time on this level, and then I try to find the right people; because if you find the wrong people—those who simply want project money or status—you will lose the whole thing.

When you find the right people, who really want to do it, the results will always be amazing. Seeking out such people, finding them and working closely with them are probably the most important things that can be done for the project.

I work with people in implementing their own projects. I do a huge amount of detailed monitoring in the villages. I spend a lot of time on the move. Generally, aid workers go and live in the villages and teach the villagers. I believe that this is not sustainable in the long term. I prefer to find local people who have reasonable knowledge in the first place and who want to know more, then offer them all I can in terms of knowledge and skills, and then free them to deliver it to their people. In Vietnam, trainers promise to give every Sunday for two years working with the village people. In fact they do more because it catches their excitement. They love it and the village people think they are wonderful. They get praise, and they respond to it.

I first tell trainers that we must identify people who are poor, and by that I mean the poor hungry, not the poor sick nor the poor landless. The group we focus on are the poor and hungry. I think it is the epitome of economic and social injustice not to have enough food to eat. At least if people have enough food they can make

## Hero Mothers

Hero mothers are those that lost many sons and daughters in the wars. In countries with ancestor worship, that means there is no child to look after the parent's spirits when they die, and that is terribly sad.

In one community we found that due to land mines and Agent Orange *(Ed.: a chemical defoliant sprayed massively by U.S. forces during the war, and still in use as a commercial herbicide in this country),* not only was it a desperately poor community, there were also many limbless people and few young ones. The only two things they were growing were jackfruit and bamboo. There had been so much Agent Orange used on the land, nothing else would grow.

We asked the villagers to identify a project. They made the suggestion that the high school children grow the gardens because there are so many hungry, disabled, isolated people and hero mothers. Δ

other choices. Growing their own food is the first step to building confidence for farmers who are locked into a poverty cycle.

Next we establish places where people obtain the garden supplies they need. This is usually a demonstration center, where they can get a watering can, a bucket, pruners, and a reasonable variety of plants. In the very poorest villages we give the poorest families a big machete, a bucket for watering, and bamboo to build a fence. We, and they, start small. There are huge spinoffs in doing it this way. The Vietnamese want to know. You tell them something, and that afternoon they go and try it. There is a great desire to have these sorts of projects.

If we start with 15% of the village, after two years 60% of the farmers will be well and truly practicing the new gardening, permaculture. This is an effective and very real economy of scale. Δ

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# A Long, Slow Conversation with the Trees

## Toby Hemenway

Our culture doesn't encourage taking the long view. A thirty-second attention span and quarter-to-quarter planning seem to be the norm. But sometimes events conspire to stretch our perspective to span decades and even centuries. On a farm south of Portland, Oregon, one man has been listening to the trees, and they've taught him to think and act for the long term.

Howard Grund-Clampit lives on the same farmland that was tilled by his wife's grandfather. Howard's father-in-law was born in their house. From over a mile away, the home stands out on the flat, sod-farm land of the Willamette Valley because of two huge Douglas firs with 4-foot diameter trunks that tower over the house. A 1920 photo shows these trees as seedlings with a boy, Howard's father-in-law, standing in front of them. For Howard, this multi-generational heritage has opened his eyes to the long view. And the big Douglas firs, and countless other trees he is growing have given him the patience and the inspiration for a larger vision of the role plants can play in our lives. On several acres near this farmhouse, trees are growing into playhouses of willow, benches and chairs of maple, and swingsets, chapels, greenhouses, and teepees of poplar.

On a drizzly spring day Howard and I went tramping in rubber boots through wet grass to tour his creations. The oldest, most mature of these living structures is "Adam's willow house," a 20-foot diameter circle of weeping willow trees that Howard began for his son in 1995. The 20 or more trunks are now about four inches around, and the upper branches have been tied together to create a yurt shape

We walked inside the tree circle. "I had always wanted to grow trees," explained Howard, a bearded man with glasses and gentle eyes. "Someone told me that cuttings from weeping willow trees grow easily, so I took a lot of cuttings from one nearby. Soon I had hundreds of trees in one-gallon pots. For a while, everyone who visited got a willow tree."

When only a few trees remained, Howard decided to plant a circle of willows for his young son to play in. The trees grew quickly in the fertile valley soil, and Howard began to tangle the pliable shoots together to keep the center of the circle open. To his surprise, where the young branches touched they grafted together. "When I saw that, I got real excited," Howard said, "I imagined pushing the branches into different shapes and holding them there."

He began training the trees in the circle to create a wall and roof. At first he tied the branches into place with nylon line, but found that as the branches waved in the wind, the rope girdled and killed them. Duct tape was the solution (isn't it always?). The tape held the wood in place long enough for the graft to take, and then rotted away. Howard also found that to keep branches growing they needed light, and the growing tip must be pointed upward. As he held a floppy young shoot of this year's growth, Howard told me, "If I tried grafting little spaghetti noodles like this, they might not survive—they're just too tender. Instead I'll wait till they've toughened a bit in their second year to tie them together, and then they'll do really well. I'm learning a lot about what not to do.

photos by the author

*The wall of Adam's willow house has been braided and trained into a wild tangle.*

"Every year the trees give up another secret or two," Howard continued.

"For example, if you graft a small branch to a bigger one, the upper part of the little branch, above the graft, will die. That's because the sap flows much more easily through the big branch." After grafting, the sap channels in the small branch are abandoned. The section of the smaller shoot below the graft will continue to grow, but for survival of both pieces above the graft, it's best to join two branches of similar size. Howard pointed to a piece of Romex cable emerging from one of the trunks. The tree had formed a living conduit, engulfing the wire. "A tree grows as a liquid," Howard explained. "If it encounters an obstacle, the cambium layer just flows outward and tries to reconnect on the other side." For example, when a tree grows against a wire fence, the tree won't push the wire out of line, but will flow around it. If you sight down the fence line, you'll see that the wire runs straight. It's been gently swallowed. "You could put a pipe against a young tree," Howard noted, "and once it grows enough to enclose the pipe, you could have a fountain coming out of the tree. "

Adam's willow house was the first of Howard's tree projects, and is the least "controlled." He calls it his wild tangle, because he's simply snarled branches together to form a rough yurt shape. On each succeeding project, Howard has imposed more order.

He next showed me a bench made from young Japanese maple seedlings. Here he has planted trees about six inches apart to form a half-circle roughly twenty feet in diameter. A second semi-circle grows two feet behind the first. Howard has bent over the inner row of seedlings at about fifteen inches high, and braided them together in a basket-weave to graft into a seat. The horizontal trunks sprout hundreds of lateral buds, which Howard meticulously weaves back into the seat. The seat-seedlings then join the rear row of trees where they are allowed to grow vertically once more. Small boards act as a form to guide and control the bench's growth. When the seat has fully grafted together, some cushions tossed onto the webwork will create a comfortable, shady place to sit.

Although the maple bench is well formed, it's still a pretty tangled collection of branches and shoots. Howard showed me the next level in his evolution toward more-ordered living structures: a set of chairs grown from silver maples. Howard began each chair by planting a dozen or more young maples in a row about three feet long. Then he bent the seedlings into a chair-shaped frame, using two on each end to form graceful, curvilinear arms. He wove the seat into a diamond pattern, and bound each branch-crossing in place with the ubiquitous duct-tape. At the rear of the seat he's trained the trees upright to form the back.

He's planted one of these live maple chairs opposite the Japanese maple bench, but several more are in enormous peat-pots, ready for transport or sale when they are mature.

Howard then guided me out to the fields to view his larger structures. All of these, however, are only a year or two old and thus are just getting started.

Howard has planted hybrid poplars to create future buildings. Year-old seedlings stand in a rectangle that's at least 40 feet long, the site of a future greenhouse. Howard plans to weave the trunks of the explosively-growing hybrids into a diamond pattern, then insert mitered window-frames into the openings. When the walls pass eight feet tall, he'll arch the trees toward the center to fuse and return to vertical growth. Outside the rectangle he's planted support trees that he'll tie to the tops of the walls to form living flying buttresses.

He's also begun a teepee of hybrid poplars that are trained to follow a frame of twine and pipe. Near this, laid out on the ground are young seedlings to form a chapel and a house. This last is very ambitious: a circular central room about 45 feet across, flanked by four bedrooms, a kitchen, and a tower-to-be. Howard plans to weave the seedlings into a pattern tight enough to fuse into solid walls and roof. Right now these projects are little more than ranks of two-foot tall seedlings, but I plan to return over the years to see how they progress.

As his love and understanding of tree-sculpture grew, Howard

*A living chair from silver maple trees, still in training*

contacted others who shared his interests. The past master of tree-trunk topiary was Axel Erlandson, who planted a famous Tree Circus in Scotts Valley, California. Here, dozens of trees have been woven into hearts, spirals, cubes, and other shapes. Erlandson made little effort to pass on his knowledge, and many of his specimens perished from neglect after his death. His trees, however, have inspired others to follow his work, including Richard Reames, who has written a book on the history and creation of useful and whimsical shapes from trees *(How to Grow a Chair—The Art of Tree Trunk Topiary,* $16 from Arborsmith Studios, 1607 Cave Camp Rd., Williams, OR 97544. <arborstu@magick.net>

The long tenure of a single family on this Oregon farm and the inspiration of the giant firs have coaxed Howard toward a larger view of time. He hopes his grandchildren will dwell in the living tree-house that today is just a pattern of young sprouts. The trees have taught him much, and he gladly shares his knowledge with others. Howard may have learned to be patient, but I, frankly, can't wait to see what comes of his conversation with the trees. Δ

# It Takes Villages...To Sustain the City

Ondine Wilhelm

America's cities are full of bad news. Crime, pollution, traffic, noise, and poverty vie for a place in the headlines. Washington, DC, the nation's capital, where I live, is no exception. Saddled with a crumbling, leaderless local government, it shows glaring signs of institutional breakdown: educational cutbacks have shut down schools; the recycling system was canceled over a year ago. With these kinds of systemic problems, one wonders where and how to begin the daunting process of rebuilding, restructuring, and revitalizing. Awash in government failures, Washington is nevertheless a treasure trove of cultural resources, attracting many of the nation's best trained and highly motivated professionals, artists, scientists, and engineers. If there is irony in this contrast, there is also promise, if the right connections can be made.

In Permaculture we follow the principle to start small; in city terms that means working in the neighborhoods. Already immersed in ecovillage and ecocity thinking, and living nearby, I got involved in an effort to revitalize one District neighborhood using the tools of grassroots landscape design, principles that resonate with permaculture thinking.

**A Prominent Place**

Washington's Shaw neighborhood is centrally located in the city. An historically prosperous black neighborhood, Shaw was famous during the 30's, 40's, and 50's as an entertainment district: musicians such as Duke Ellington played regularly in the area's clubs. In 1968, during the race riots following the assassination of Dr. Martin Luther King, Jr., Shaw was decimated. In the following years, Shaw experienced a classic cycle of urban decline as middle class blacks moved out to the suburbs. Today gang and drug activity is painfully evident, and most young people personally know a victim of violent crime. The community is deeply concerned over the plight of its youth and identify meeting their needs as a priority.

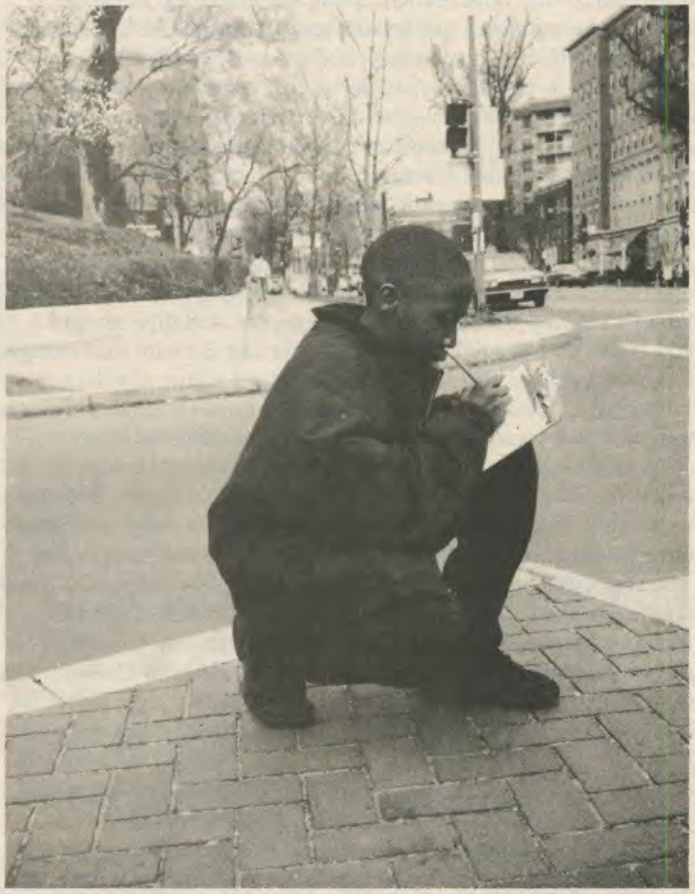
An effort to empower those youth with the skills of community design sprang up recently from a collaboration of neighborhood groups and the National Building Museum, a unit of the Smithsonian Institution that houses collections and brings together resources on construction, architecture, and planning.

**Teaching Design to Youth**

Since 1993, the National Building Museum has taught Washington middle school students problem-solving through design, in a program called CityVision. For 14 weeks, they work a day each week in teams to survey their neighborhoods, identify problems, and design solutions to them. This highly successful project has sparked enthusiasm among students as well as participating community members and design professionals.

The Shaw EcoVillage Project takes CityVision a step further by working with high school-age students in a more intensive program that introduces concepts of sustainability. Students will research and develop design solutions specifically for this neighborhood, meet local leaders, and work on community projects.

Elizabeth Leigh was a volunteer teacher with CityVision who co-founded and now directs the Ecovillage Project. Her vision for it emerged when she realized the CityVision students were ready to go to another level. "The emphasis," she says, "will be on learning how we, in the city, can maximize our own resources, enhance our existing environment, and lessen our detrimental impact; this is an important concept to get across to youth."



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*Washington, DC youth will assess and plan their neighborhoods*

**Neighborhood Renewal**

There has been a resurgence of energy in Shaw recently. In January, 1995 residents participated in a community visioning process through the Entrepreneurial Neighborhood Program (ENP) facilitated by the Heartland Center for Leadership Development. Various coalitions formed out of this workshop to bring more cohesiveness to the community. Since then, groups throughout the neighborhood have been working to revitalize urban spaces and rejuvenate community spirit. For instance, an organization called Friends of Kennedy Playground reclaimed a park from prostitutes and drug dealers. The park has been re-landscaped and now houses an active community center.

The Shaw community recognizes that in order to affect long-term change, neighborhood youth need to be actively involved in the renewal process. Since the ENP workshop, the community has consistently cited youth education as a top priority.

Sonia Roach, a sixteen-year-old student who will participate in the Shaw EcoVillage Project this summer, agrees that youth are a vital part of community, "There are dozens of children running around in the streets. I care about their well being and part of that is making sure they have a clean and safe place to play. I remember when I was younger, I had a clean environment in which to play. I want that for those who are younger than me. We need to come together as a community instead of just a neighborhood. Meetings need to be held on a regular basis, open to people of all ages. The children are our future and if we don't hear what they have to say, we lose something."

The Shaw EcoVillage Project was jointly developed by members of Ecocity Builders of Oakland, California, and Manna Community Development Corporation, a local Shaw community association, with educational consultation from the National Building Museum. Ten high school students will receive $750 each for six weeks of work in the community. Some of these students are under severe financial stress, and need both a summer income and a good job experience.

**Tools for Transformation**

The program follows the spirit of the Chinese proverb "Tell me, I forget. Show me, I remember. Involve me, I understand. Each week explores a different issue of sustainable urban development such as local economies, urban agriculture, waste management, and recycling building materials. The students meet leaders in each field and explore their own neighborhood through sketches, diagrams, photographs, interviews, and mapping. The focus is on listening, questioning, experiencing, gathering data, brainstorming design ideas, and then teaching the community what they've learned. Each topic is woven into the last in order to preserve continuity. For instance, urban agriculture not only provides better locally produced foods, but supports local economies, generating surpluses which can be invested back into the community. Similarly, waste management as a topic integrates concepts of recycling and recycled products that can be traded, bought, or sold within the community.

Integral to all the subjects covered is the concept of design and its effectiveness in creating a sustainable community. Washington, DC is a planned city and one which is beautiful in many respects. Located at the convergence of the Potomac and the Anacostia Rivers, Washington has tree-lined streets, stately brick houses throughout the city, and extensive natural parks that are home to herons and bald eagles. Yet the city's design has failed to evolve with the changing social, environmental, and economic demands placed upon it. The Shaw EcoVillage Project brings these failings to light, not to brood upon them, but to use them as stepping stones to a brighter future. Students not only learn why vacant lots become "brownfields," but how they can be transformed into "resources" as community gardens, shady parks, or sites for future community organizations to build upon.

**Taking Inventory**

The Shaw EcoVillage Project will teach valuable skills to the students, but will also give something back to the community. The program's Community Asset Map, will visually highlight the cultural, ecological, and economic assets of the neighborhood. Students will begin by taking an historical look at the area. Next, they will construct a map showing present conditions, including features such as urban parks, recycling centers, day care centers, and local business districts. From there, they will design future visions for the neighborhood. They may spot locations for new cooperative businesses, plot out the route for a new bus line, sketch the expansion of an existing park, or call for the restoration of an historic commercial building. The final product will be not only an inventory of community assets, but a representation of key locations for focusing renewal efforts, and a guide to the neighborhood for both residents and visitors. The map becomes the language for teaching, sharing, learning, and celebrating the richness that exists within Shaw. Students will present the final map to community members as well as to professionals in the fields of planning, design, and development.

**Planting a Seed**

The Shaw EcoVillage Project is not an endeavor to build a physical ecovillage...at least not yet. Rather, our mission is to catalyze youth involvement in sustainable community development in Washington, DC. We will teach core concepts of ecovillage design in an urban context, and show how youth can inspire positive change within their own neighborhood. Our goal is to make neighborhood youth the foundation for building a strong and secure future for the community and the surrounding city. By building a confident and active youth network that invests in its neighborhood, we can better ensure their commitment to a vital future for the city as a whole.

Living in a city that is home to some of the most powerful people in the world, it is reassuring to remember that the best solutions often come from young people. Student Jamal Woods likens caring for children to "planting a flower with soil, water, and sun so that the plant will grow and stand out among the others. Without soil, water, and sun the flowers will never bloom." The Shaw EcoVillage Project is about bringing nature and people back into balance with one another; it's about making sure every child will have his or her chance to bloom.

**Resources**

Ecocity Builders, 5427 Telegraph Ave., W2, Oakland, CA 94609. 510-649-1817. <ecocity@igc.org>

Heartland Center for Leadership Development, 941 "O" Street, Ste. 920, Lincoln, NE 68508. 402-474-7667 (Vicki Luther), vluther@unlinfo.unl.edu; www.42.com/heartland/ Δ

*Ondine Wilhelm has studied ecovillages since she wrote her thesis on Ecovillage at Ithaca in 1992. A participant at international conferences on habitat at Findhorn, Scotland (1995), Yoff, Senegal (1996), and Istanbul, Turkey (1997), she has worked for several years in community development projects in Washington, DC and is dedicated to teaching youth about urban design issues. The summer of 1998 will be the first summer for the Shaw EcoVillage Project. For more information on the project, contact the author at 614 "S" Street, NW, Washington, DC 20001, 202-588-9224, <shawecovillage@erols.com>*

*Students learn drawing and planning skills through CityVision.*

# REVIEWS

## A Place to Begin
**Review by Keith Johnson**

**ROSS MARS**
***The Basics of Permaculture Design***
Candlelight Trust
100 Falls Rd., Hovea
Western Australia 6071
170 pages, paper, $25.

So, you want to be a Permaculture designer, eh? Fresh out of a design course and eager to act, you want to do good with all the "aha's" and clarity of vision you now possess.

But...you have a botanical vocabulary of 10 plants, no experience in building, no practice in working with clients, and you live in a city where you wait tables.

Step One: Stop! A little knowledge (even two weeks of brilliant, inspired, transformative, in-depth consideration) can be a dangerous thing.

Step Two: In addition to Mollison's *Designer's Manual*, get a copy of Ross Mars' book, and study your buns off.

Step Three: Gather a collection of books on everything from Apples to Zebras and **READ** them and keep them as reference.

Mollison will ground you in systems theory and reasons for design while Mars provides an accessible, easy-to-read outline of the design process that even a poorly informed client would understand. In fact, this book is probably the ideal one to share with clients to help them see the focus you will be bringing to their designs.

Although condensed, this "designer's manual in a nutshell," nevertheless includes most of the basic strategies that all good designers should know, supported by graphic depictions (illustrations by Martin Ducker) of fundamental Permaculture principles and practices. A useful feature of the text is the listing of applications of pattern and practice across various scales from urban apartment to large rural properties. The emphasis throughout is on practical application. The author includes sections on field and drawing tools for the designer, choosing a property, and a brief but helpful survey of appropriate technologies for cooking, pumping water, and electric power generation. A chapter on permaculture design for schools not only addresses the basics of teaching children by example (useful for adults too) but offers helpful models for working with those peculiar and ubiquitous modern institutions: places where nobody lives.

Mars states, "The ultimate design, if there is such a thing, is the marriage of what is best for the land and what is best for the people who live there. A "design" is really only a pictorial representation of the implied inter-relationships between objects, structures, plants, animals, and humans. The drawing only gives information about placement and types of species and **nothing** about their interaction..." and goes on to add, "Nothing beats first-hand knowledge and acquired skills from gardening, designing, and building your own systems."

Thus, armed with a few good books, subscriptions to pertinent magazines (hint, hint) and a commitment to two or three years of focused observation and interaction on a place, owned or not, you will find *The Basics of Pc Design* to be a dependable checklist of design essentials to guide your unfolding practice. Δ

## You Are What You Eat
**Review by Peter Bane**

**MARVIN HARRIS**
***Cannibals and Kings***
New York: Random House
Vintage Books, 1991
351 pages, paper, $11.

This is a brilliant book, at once satisfying—for the author's reinterpretation of human culture as everywhere and always a response to changing ecological conditions accords with Permaculture's central thesis—and deeply disturbing—for as a species we have failed consistently, to this date, to deal with our own reproductive success and the devastation its demands place on the environment.

Harris is a contemporary of Bill Mollison, born in 1927, and was Chairman of the Anthropology Department at Columbia University in New York before the age of 40. His other books include such provocative titles as *Cows, Pigs, Wars, and Witches; Death, Sex, and Fertility;* and *Food & Evolution. Cannibals & Kings* builds on Harris' life work in creating a general theory of evolution of cultural forms. This book examines the origins of agriculture and war, infanticide, and male supremacy. It is not for the faint of heart.

In a chapter that lends its subject to the title, Harris brings to light the well-established but little noted interpretation of Aztec human sacrifice as part of a system of war, ritual slaughter, and cannibalism that redistributed meat (in this case the human flesh of captives) at critical times of food shortage to key strata of the society—the warriors, nobles, and priests—in order to bolster political control by the imperial dynasty. Appalling as this may be to our modern sensibilities, Harris is not interested in shocking only, but in drawing parallels across cultures and eras. The redistribution of food is a common theme that links the "big-men" of pre-state societies who worked hard to put on competitive feasts to gain glory among their fellows—with the ever-normal granaries of the Egyptian pharaohs, and the bloody temples of Tenochtitlan.

Agriculture, Harris argues, arose not as a great leap forward in our relationship to plants (Meso-americans had been gardening and cultivating plants for thousands of years before they settled into villages.) or as the fruit of superior social organization (Middle Eastern hunter-gatherers had lived in villages for millennia before they began to plant crops.) but as a response to the overharvesting of wild foods, both plant and animal, in the regions where farming developed. The nutritional evidence (as reflected in skeletal and health records of Neolithic and Industrial peoples) is stunning. Not until the second half of the 20th century—my lifetime—did the average height (a measure of nutritional sufficiency) of modern Europeans and Americans reach the levels enjoyed by their ancestors 12,000 years earlier (5'11" for men, 5'6" for women). Things took a serious turn for the worse when we learned to hunt so well that we drove the mega-fauna of the Paleolithic era to extinction. Mollison's argument that agriculture was a mistake may distort the point slightly; but that we had to adopt it was certainly bad news!

Much of the rest of the story is about the shifting balance between technological advance (whether of social control or industrial production) and the increase of population that followed inexorably on each newly won surplus in food and energy. In fact, Harris demonstrates convincingly, until the exhaustion of fuelwood and the deterioration of road transport under the increasingly intense demands of industry led to the widespread adoption of coal and the building of railroads in the 1830s, most of modern European history (from the great technical flowering of the Renaissance about 1500) was a story of dismal failure to advance general living standards. That we have since enjoyed a near universal rise of living standards (in the industrial countries) accompanied by rapid increases in population is an historical anomaly of ominous portent, for it appears entirely dependent not on the marvels of human creativity, but upon the increasing availability and harnessing of fossil fuels (and now nuclear energies) that must soon reverse, whether from shortage of supply, excess of environmental toxins, or voluntary restraint to avoid the specter of these disasters and the totalitarian control of civil populations.

Racing along beside every advance in knowledge and technical capacity of humans has been our heretofore unchecked ability to procreate. Only the advent of relatively painless methods of contraception and, Harris argues, a cold sober look at our grim history, offer hope of turning the tale in a different direction.

On the way to this bracing conclusion we are treated to a masterly survey of a vast range of human cultural practices: bride-price, irrigation, and vegetarianism among them. When did the Israelites stop eating the pig? When its natural forest habitat became scarce in the Levant and its dietary requirements placed it squarely in competition with humans

for precious grain. Why did the Indian cow become sacred instead of taboo when there was no longer pasture or surplus grain for its upkeep? Because (unlike the pig) its services as a draft animal (which could also yield a bit of milk by scavenging on village waste) made it too valuable to do away with.

We see how belief systems and religions fell into step behind ecological requirements, as when the Romans (with a population surging beyond the limits of their Mediterranean granaries) adopted the new Christian religion: its theology of abundance after death and its etherealized rituals of consumption (wine and wafers are symbolic food only) freed up the imperial government from the duty to feed its subjects. Kosher sanction of food and the obsidian blades of Montezuma's priests arose from an earlier stratum of human culture: both serve to control the distribution of meat to the faithful.

This book is not new and should be in every public library in the country. It will therefore be widely available. It is full of the things that you cannot learn by first-hand experience, even if you are a first-rate anthropologist. Not only do psychology and custom work to hide the picture from you, but deciphering such a complex pattern requires a global survey of human experience. As such, *Cannibals and Kings* is truly fruit of our modern tree of knowledge, and a validation of Science as one of the seminal streams forming the Permaculture worldview (along with Indigenous Knowledge and Direct Observation).

Permaculture teachers would do well to read this book and read it again. It not only helps to make sense of invisible systems, it harnesses that slippery animal, human culture, squarely to the discipline of ecology. And we should be grateful for any tools that can help us put humans back in the landscape of Nature. Δ

## Help! I've fallen for the American Dream and I can't wake up!

**Review by Keith Johnson**

### KEN NORWOOD AND KATHLEEN SMITH

***Rebuilding Community in America: Housing for Ecological Living, Personal Empowerment, and the New Extended Family***

Shared Living Resource Center
2375 Shattuck Ave., Berkeley, CA 94704
$27.50, paper, 406 pages.

To permaculturists, it will come as no surprise to learn that the breakdown of family and community, social alienation and violence, environmental pollution and collapsing ecosystems, global economic oppression and injustice, car dependency and urban sprawl all flow from interconnected root causes. Architect and planner Ken Norwood and ecological designer/writer Kathleen Smith support that recognition in this encouraging book collaboration.

Their theme, that sustainability of a society, or family, or group of people, is directly related to the layout and design of the daily living environment, is of utmost relevance to the application of permaculture design. The authors present it thoughtfully and convincingly.

"It may seem a big jump to be talking of global conflicts in the same breath as how we design our homes, but the two are intimately linked through our consumption patterns—and it is only by changing our own lives and homes that we can begin to save the environment," says David Pearson in the margins of this courageous and clear-sighted book. Just above that quote is another by Malcolm X, who noted, "I don't see an American Dream, I see an American Nightmare."

Waking up from scary dreams to scary realities is doubly terrifying if we feel isolated and powerless to make a positive change. Fellow Permaculture teacher Larry Santoyo is fond of exhorting his students, "Get help!" And he really means it. We can't manifest the necessary and urgent changes alone, and that truth, of course, is at the heart of this book.

Norwood and Smith see community as "the only socially, economically, and environmentally responsible direction to go if we are to avoid collapse of democracy and the irreparable ruination of the ecosystem." With boldness and passion, the authors identify practical solutions to the madness that batters our waking attention. The social solutions are as old as humankind—the extended family, the village, and people cooperatively sharing resources—but they have to be reinvented for the modern world.

For our present environment, institutions, and patterns of living are **designed** to reduce cooperation and increase consumption. Cooperators consume less and this realization is a threat to the exploitation-as-usual institution of economics which ignores the costs of its actions. The "bliss" of ignorance has been profitable for a select few, but for the rest of us it is no longer an option as these authors firmly remind us. You will find yourself cheering in agreement as they soundly condemn our auto-dependent land use and housing patterns and the absence of rail systems as some of the principal causes of many of our difficulties.

The social revolution we need now—toward richer levels of cooperation—needs a new set of technologies and infrastructures if it is to unfold. This book provides a broad look at the new technologies and structures that will support humane living in the 21st century.

No problem is too big for the authors as they take us on a tour of some the best examples of creative housing and community design. They reveal the qualities needed for ordinary people to start their own communities even in the midst of urban craziness. They show us how village clusters and cohousing are restoring the deeper sense of family that is unavailable to the nuclear family. Rural communities, too, are targeted as places needing a refreshed look at design for conviviality, a quality offered by cluster housing strategies, and dovetailing uniquely well with the burgeoning Community Supported Agriculture movement in the U.S. Opportunities abound for the reinhabitation and resurrection of depressed and isolated rural farms and towns not as places for commuters and urban escapees, but as sustainable, co-independent cultural centers.

Norwood and Smith also devote a chapter to the creation of group living spaces designed to balance public and private needs, suggesting that we can all live in mansions by sharing. Another chapter details the importance of cooking and dining facilities as essential elements of a stable community. Appropriate technology and alternative methods of ownership are also dealt with in the Tools and Techniques section. Overall, I get a great sense of hopefulness from this book.

As Ernest Callenbach observes in the introduction, "...we can do this—we can, in fact, rebuild America as a decent habitat for its citizens. The process involved is not architecture, not planning, not social organizing, not individual soul-searching, but a holistic combination of all these. We all begin where we are. What is important is to get going, and this thoughtful book offers you the tools you need." I couldn't agree more. Δ

## Soil Analysis by Nature's Laboratory

**Review by Keith Johnson**

### JOHN BEEBY

***Test Your Soil With Plants***

Ecology Action Self Teaching Mini-Series
Booklet #29, 1997
5798 Ridgewood Road
Willits, CA 95490-9730
$12.50, paper, 91 pages.

Farmers have been "testing" soils for thousands of years by observing the growth patterns of the wild and cultivated plants in their fields. Long-term attention to details and a tradition of passing such information on to following generations created a wealth of data which has mostly been lost in the last 100 years. Until Rodale Press's release of Ehrenfried Pfeiffer's *Weeds and What They Tell* in 1945, very little was available in print to the public to help them "read" the botanical feedback from their farms and gardens. In 1950, Devin-Adair Co published Joseph Cocannouer's *Weeds: Guardians of the Soil* and expanded the "vocabulary of interpretation" for those who sought to relearn and reclaim the lost knowledge of our

ancestors. Since then, many other dedicated nature watchers have added their discoveries to the steadily accumulating database.

Now, with the publication of Beeby's comprehensive and well-researched *Test Your Soil With Plants*, a void has been filled. He has performed a great service by refining and condensing large stacks of hard-to-find publications into an easy-to-use compendium of excellent tables, charts, and guidelines that enable us to begin responding to the signals of deficiency or excess communicated by our gardens.

Beeby calls his book an "English/Plant Dictionary," a book which, along with a few plant keys, and our own powers of observation, will help us to comprehend and take specific steps to improve our soils. As we enlarge our *perception* of the thousands of bits of information being communicated by plants, we can rediscover our own ability to predict the value of land and chart the history of the soils therein.

A lab analysis reflects the soil's condition at only one point in time—when the sample was taken. Since the presence and availability of nutrients changes, sometimes dramatically, with time, many tests are required to inform farmers of the changes in crop needs. For some of us, soil tests are often too expensive or not easily available. Plants overcome these disadvantages by describing, with up-to-the-minute reports, the soil and climate they are experiencing every moment that they are alive.

With a detailed bibliography, materials supply lists, and guides to nutrient resources, John Beeby's work provides a very necessary and valuable text to help us understand our living world and responsibly magnify it's basic wealth of healthy living soil. Δ

## Why is This Happening?

**Review by Eric Storm**

### JERRY MANDER & EDWARD GOLDSMITH, ed. The Case Against the Global Economy: and For a Turn Toward the Local

San Francisco: Sierra Club Books, 1996
ISBN 0-87156-865-9

I found this book very readable and informative, not because the idea that the global economy is detrimental to society is new, but because the text is filled with specific information about what the global economy is doing to the world and why it is happening. All of that is a touch on the "gloom and doom" side, but the last section of the book is about solutions (i.e. moving toward local economies). It offers a lot of facts and figures that can be sprinkled into conversations, courses, and writings to support the conclusion that Permaculture, sustainability, local economy, bioregionalism, etc. are the ways to go.

The list of contributing writers is impressive and says a lot about the editors being well-connected. A partial roster of contributors includes Wendell Berry, Vandana Shiva, Ralph Nader, William Grieder, Jeremy Rifkin, Helena Norberg-Hodge, David Korten, Kirkpatrick Sale, Herman E. Daly, Richard Barnet, John Cavanagh, Maude Barlow, Andrew Kimbrell, and, of course, Jerry Mander and Edward Goldsmith. (+31 others!).

This seems like a book Permaculture teachers will want to be familiar with, and it should be on Pc Design Course book lists. (I believe ALL Permaculture Design Courses should hand out book/resource lists to students.)

Reading it has prompted me to get on the Internet and find out what these trans-national corporations are up to. I've already begun to collect a long list of common brand names and companies owned by those few large corporations. Scarey. It might be just the thing to persuade some people that we are headed the wrong way. (Leads appreciated.) Don't get me wrong; I'm all for the positivism that Permaculture represents, but some people need an answer to the question, "What's wrong with the way things are (i.e. the way I do things)?

I'm also going to spend more time promoting our local economy. Δ

# ...from the Regions

## *Permaculture Magazine* Moves to Sustainability Centre

On top of the South Downs in Hampshire, England, a former naval base is being converted to an exciting new use. The Sustainability Centre, already home to Permanent Publications, will become a centre of training and education for sustainable lifestyles.

The main building on the site, which once served as the medical block for H.M.S. Mercury, now houses offices, library, seminar room, and a restaurant and bar, with a computer suite planned for the future. The building incorporates rainwater flushed toilets, a passive solar-heated water system, and heating provided by the burning of wood grown within the 20-hectare (50 acre) site and other waste. This building celebrated its opening on the 24th October 1997. Other buildings within the Centre are now being tranformed into an accommodation block, artists workshops, an "Eco-lodge," stables, and a cycle workshop. The latter three businesses hope to serve users of the South Downs Way long-distance footpath which forms the northern boundary of the site.

The woodland, which for the most part, consists of neglected plantation of little ecological or financial value, is being replaced over the next ten years with a coppice of native hardwoods, with ash predominant, to supply the fuel needs of the centre. Another woodland compartment serves as a memorial to the late Chris Hoppe. Further displays will feature at the Centre and a demonstration garden. In the future there will be a walk through compost exhibition with the stages of breakdown and the inhabitants portrayed larger than life. Also within the site will be a nursery growing locally provenanced seed, a walled garden, an outdoor performance area, rainwater ponds, a straw-baled classroom and two cordwood study rooms. There will be opportunities to participate in the construction of much of this. Δ

## Sixth Annual Pacific Northwest Permaculture Gathering Hosts Public Fair

Rick Valley

The weekend of June 20 saw the sixth annual Permaculture reunion, held this year for the first time at Wild Thyme farm near Oakville, WA. Originally built by pioneering Finnish dairy farmers, the 90-acre site includes flood plain of the Chehalis River, and extends to a forested ridge top. The Chehalis ("Shifting Sands") once carried glacial outwash from the Puget lowlands to the coast which is now 60 miles away.

Saturday was advertised as "The Sustainable Living Fair," to attract wider attendance by the public. We saw no greater numbers than in previous years, but the commercial presence of vendors offering art, publications, and plants marked a ripening in the evolution of our local permaculture community.

Participants at the event ranged from those who taught me to students of my students, a generational spread that was inspiring and fun to see. Indications are that this event will increase in importance in the years to come. Δ

## Bay Area Permaculture Guild Goes Virtual

Publication of BAPG's newsletter ceased as of March this year but the group continues to provide regional Permaculture news plus calendars of classes and events at their web site: http://www.nbn.com/bapg. You can also request an email subscription by writing to: <bapg@slip.net>.

If you would like to list a Pc event on the site, email them or send a note to BAPG, PO Box 9606, San Rafael, CA 94912. Δ

# A Look at Livestock in Hawai'i

Donald E. Bixby, DVM

Who could turn down an invitation to travel to Hawai'i in January? I was delighted to be asked to teach a portion of a permaculture design workshop focusing on integrated livestock systems at La'akea Permaculture Gardens. The site is a seven-year-old, 25-acre demonstration farm located on an ancient lava flow in the Puna District of the Island of Hawai'i, 30 minutes from Hilo, 15 minutes from Kehena Beach, and ten miles from where the world's most active volcano meets the Pacific Ocean.

The livestock workshop session began with discussion of the products and service contributions of the various species with an emphasis on systems that integrate animals with crop production. Most people think of farm animals in terms of end products such as meat, milk, and eggs, but in integrated systems they can provide great additional value in nutrient recycling, pest management, vegetation control, salvage of waste produce, and other services.

**Animals for Orchard Management**

We discussed the possible use of sheep and poultry to manage grass, forbs, and woody invaders, control insect pests, and salvage damaged fruit in orchards. At La'akea the orchards include a mix of limes, jackfruit, pomelos, oranges, papaya, banana, and breadfruit inter-planted with Calliandra, a shrubby legume, which is coppiced to provide mulch and fix nitrogen. If poultry or sheep were introduced to this system, the Calliandra trees could provide nutritious forage for them. Goats, on the other hand, would be poor candidates for the same job. Since they prefer browsing on woody plants, and will stand on their rear legs and even climb trees to get at their tender shoots, they could devastate the orchard.

St. Croix hair sheep had been tried there in this capacity in the past. They did a good job of eating the grass under a stand of jackfruit, but developed a taste for the jackfruit leaves. Before anyone knew what was happening, all of the trees had been pruned up to sheep height. This was not a failure of the sheep, but came about from incomplete understanding of their inherent characteristics, and thus of the management needed to control them. The sheep may have needed fresh pasture, and so switched to jackfruit leaves, or perhaps they simply preferred the taste of the leaves. In any system, newly introduced animals need to be closely observed to see if they are behaving as expected. If they are not, adjustments must be made promptly.

If sheep were to be used again, Electro-net or other temporary fencing might be worth installing to protect especially tasty species. If sheep proved too difficult to manage, a flock of geese on rotational grazing in the orchards would be an option.

**Poultry at La'akea**

Geese, like sheep, are short grazers. They prefer grass, and they nibble it close to the ground. Geese can be easily managed with movable fencing. They would cause less damage to the trees than sheep, and should not be bothered by mongoose predation. While there are some geese on the farm, their expert grazing ability is not being used. In any case, more geese would be needed than are now on the farm.

photos by the author

*Taro cultivation in Waipio Valley is supported by ducks preying on snails and pests.*

This presents other opportunities to stack functions into the design. The *nene* is an indigenous, and endangered Hawaiian flightless goose, and a flock of them grazing the La'akea orchards would double as an attractive conservation project. Other domestic breeds are readily available if *nene* could not be obtained for this purpose.

A sizable collection of poultry, which includes several dozen chickens, ducks and geese of various breeds, is housed in a large pen with trees that provide night time roosts. In addition to producing eggs, the birds process about 300 gallons of kitchen waste per week from a nearby (vegetarian) resort as well as the scraps from the farm kitchen plus surplus garden produce and trimmings. All of this material is picked over by the birds and mixed with their droppings.

From time to time this organic matter is scooped up and added to the composting system. Though compost is valuable, the work is onerous, and the environment for the birds is not in keeping with the vision for the farm. Since no one there is happy with how the birds are kept and managed, we spent some time designing a more productive and appropriate solution.

Weeding the pineapple beds presented a real challenge because of the painfully spiny leaves. While movable chicken tractors had been used on the grassed paths between the beds, they couldn't be physically moved onto the crop itself. We suggested using electro-netting around individual pineapple beds to allow ducks and chickens access to both bed and paths, while keeping out the mongoose who is always looking for a chicken dinner. Once weeding was completed, another bed could be fenced and the poultry moved to a new work site. This frees the tractors for use in the orchards or on vegetable gardens where closer confinement of the birds is necessary to protect the crops.

Lots of lettuce and other greens—laid out in keyhole beds to minimize the space taken up by access paths—are grown in three greenhouses. The greenhouses have open sides, so I suggested putting netting around the sides and using poultry to maintain a pest free zone around the periphery. Heavy buffer plantings of comfrey around the greenhouses already provide shelter for slugs and snails, making this area an ideal duck feeding station. Also, using poultry in the greenhouses that were not in production seemed like a great opportunity to clean up weeds, insects, snails, and slugs.

**Other Local Examples**

Three dozen students and staff members left the farm early one morning for a field trip to Waipio Valley on the northeast coast of the island where we were to be guests at a farm raising organic taro for market. More than 10,000 Hawaiians lived and farmed in this valley before contact with Europeans. A

complex of *lo'i* (taro fields) and fish ponds supported this population and some of these structures are still in use by about 50 people who now live there. The green tops of taro—one of the staple crops of the Pacific islands—are cooked and eaten, but the root is used to make *poi*, a starchy paste that is the basis of most meals.

One of the major production problems today is the infestation of the taro by African snails. These snails lay clusters of bright pink eggs on the taro stalks. While these could be removed by hand picking, in Waipio they use ducks to clean up both the egg masses and the snails, thus avoiding laborious hand work. The ducks also help to control the succulent and invasive *honohono* weed, converting it to fertilizer for the ponds.

**Feral Pigs, Problem or Solution?**

Feral goats and pigs have become a challenge in the Hawaiian Islands, and though environmentalists would wish them exterminated, they are considered game animals by the native people. Since the "wild" pigs are in demand for traditional *luaus*, there seemed to be a place on the farm for a few "reclaimed" feral pigs to eat kitchen and garden waste, and to clear additional land for planting. Though there is a ready market for the pigs, they could more profitably be used for on-farm *luaus*. We were unable to identify a useful role on the farm for feral goats, given their preference for browsing and the challenge of keeping them confined.

Besides all the talking, I did some shovel work, too, planting avocado, jackfruit, and other trees with some nitrogen-fixing companions. The most common species used for this latter purpose are the attractive pink-flowered Calliandra, a non-flowering and less invasive Albizzia, and a variety of Gliricidia. I also learned how to separate and transplant banana babies, how to weave pandanus leaves, and how to play a really cool drum I made from Hawaiian wood. Learning and understanding more about Hawaiian culture and history underscored the value of the wisdom and folklore of indigenous cultures from around the world. To see permaculture applied in a very different environment was a great learning experience that helped me to appreciate its power and usefulness.

For further information contact, Don May at La'akea Permaculture Gardens, PO Box 1221, Pahoa, HI 96778, E-mail <programs@permaculture-hawaii.com>or visit the La'akea Gardens web site at http://209.41.57.106/perma.htm Δ

*Donald E. Bixby, DVM is author of* Taking Stock: North American Livestock Census *(1994) and* Rare Breeds Album *(1997). He is also Executive Director of the American Livestock Breeds Conservancy, an organization dedicated to the conservation and promotion of endangered breeds of livestock. ALBC, PO Box 477 Pittsboro, NC 27312, (919) 542-5704. <albc@mindspring.com>*

*Chicken tractors (rear) are used to weed between pineapple beds.*

# Self-Help Finance Surfaces in New Mexico

## Carole Tashel

I meet each month with a group of imaginative, spirited people in Santa Fe, New Mexico. We share a clearly defined commitment to each other: to take concrete actions, large and small, to live more lightly on the earth (i.e., to use fewer resources and to pollute less). And we are using some innovative tools to achieve our goals.

The group, which formed in 1996, now numbers 26 people. It grew slowly and organically out of a series of much smaller meetings dating back to 1991. Various combinations of friends wondered, with some urgency, what to do about the state of the planet. The news seemed to be getting steadily worse: global warming, pollution, acid rain, degraded natural systems, and on and on. Unflinchingly, we looked at the part we played in the pattern of over-consumption (so common in rich countries) that feeds these problems.

We called ourselves "Sustainable Presence," set our upper limit at 30 members, and defined our vision:

- To take personal responsibility to make changes in our private lives which benefit the environment and conserve resources, ultimately enriching the Santa Fe area.
- To create a presence in the community which might inspire others to launch their own experiments in sustainable living.
- Within our group, to share knowledge and resources, to learn new skills, and to nurture trust and effective communication.
- To form our own cooperative loan fund to facilitate major purchases that could make a real difference in each individual's energy and resource use.
- To have a helluva good time doing all of the above.

Most but not all Sustainable Presence members are participating. Each person who joins the co-op deposits either a full share ($70) or a half share ($35) into a group account each month. Whenever the account balance grows to $3,000, we throw names into a hat of those who are ready to put the money to use. (A full share award is $3,000, a half-share $1,500.) Members are awarded a loan only once. Over roughly three and a half years, every member will get back either $1,500 or $3,000—exactly what he or she put into the fund.

Here are some examples from our list of acceptable items on which to spend the loan money:

- Insulation for walls or roof to reduce winter energy use.
- Rainwater storage systems (from 1,000 to 12,000 gallons).
- Native plants, shrubs, and grasses for landscaping.
- Resource-saving appliances such as energy-efficient refrigerators, washing machines, and compact fluorescent light bulbs.
- Solar panels.
- Composting and low-flush toilets.
- Modification of autos and trucks to accept propane fuel (less polluting than gasoline).
- Electric auto-conversion kit for small cars. (Imagine using no gasoline!)

Loan recipients become borrowers from the Sustainable Presence community. They make their purchase within three months, spend the

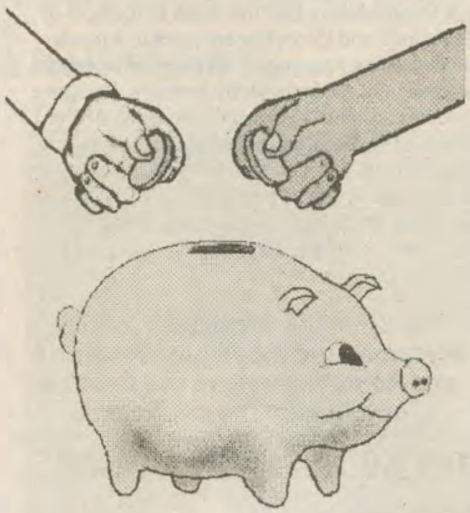
entire loan on sustainables (which may include labor for installation) and give an accounting to the group of how the money was spent. The borrower simply continues to make payments each month, as before, with no interest. As one member put it, "I had a budget for everything else but purchases to make my home more efficient and sustainable. Now it's so easy and fun to save with the group."

Receiving an interest-free loan of $1,500 or $3,000 from one's friends is thrilling, and results in serious bonding. Since we meet at different homes each month, we can admire tanks full of rainwater, peer into energy-saving, state-of-the-art refrigerators that shear megabucks off the electric bill, and see what it's really like to live with compact fluorescent bulbs. As more members receive their loans, we hope to ride in an electric vehicle and to make deposits into our friends' composting toilets.

I was the first to receive a Sustainable Presence loan. With the $1,500 I installed a low-tech roofwater harvesting system. But make no mistake: consumptive habits die hard, and we admit we're far from being successful at accomplishing perfect "sustainability," whatever that is. At least we're going in the right direction.

Besides sharing financial resources, the group gets together once a season, at the home of whomever needs help and pitches in to repair or enhance the landscape. Most of us live in semi-rural settings, isolated from neighbors, and this worknetting is both fun and extremely satisfying. Projects may be planting native grass seed or tree seedlings, mulching, preparing soil for a vegetable garden, or erosion control on slopes. People learn valuable skills that can be applied on their own land or taught to others.

Possible future group projects include training in mediation, and starting a skill, tool and resource bank (to increase the interconnections among members that make us stronger).



In between our potluck meetings, we support each other in many ways - providing dinners for a week to parents of a new baby, attending a member's art opening, pitching in to help someone move, and so on. Being there for each other breaks down the sense of isolation so pervasive in our individualistic society.

So what does all this add up to? In the face of enormous social and environmental problems, Sustainable Presence offers a hopeful and powerful antidote to frustration and despair. Even if you're an urban renter, you could craft a similar plan for creating sustainability and mutual support in your community. Don't be surprised, though, if you find yourself swept up in the momentum of grassroots movement toward the goals we all long for. Δ

*Carole Tashel writes Crosswinds' Natural Garden column (where this article originally appeared in January/February '97) and admits this whole experience has turned her into an optimist. We spotted the article when it was reprinted in the Winter 1997 issue of* Permaculture Drylands Journal. *Carole graciously permitted us to make it available here in the hopes of turning more of us into optimists. Many thanks to both her and* PDJ.

# An Agroforestry Model for Semi-Arid Regions

## Marsha Hanzi

We are working in the Brazilian semi-arid regions (12"-25" rain annually 300-650mm) with a planting model which has proven successful in its first field trials for the establishment of annual and permanent crops in erratic rainfall situations:

**The Design**

1. Plant Opuntia ficus indicus at spacings of one meter on contour.
2. In every other row of this edible (and forage) cactus, plant also local leguminous or forage trees for organic material and nitrogen-fixation.
3. Plant corn and pigeon-pea together between the rows of cacti.
4. Plant castor-bean (a commercial crop here, but also excellent for biomass) every two meters.
5. Fill the remaining space with cowpea *(Vigna)*, which is resistant to drought.
6. Plant a line of native fruit and timber trees every 10 meters. Besides guaranteeing one more product from the system, their deep roots help bring minerals up from lower soil levels and recycle them to the other plants.

**Management**

Plant the cactus before the rains come. With the arrival of the rains, plant the rest. Next year, prune everything that can be pruned (the leguminous trees, pigeon pea, castor, etc.) before the rains come (Prune the cactus too, if it has grown a lot—cut into small pieces, otherwise it will sprout!), and plant the annuals in the resulting mulch, spearing it with the point of the machete to open small holes. All the above crops grow well through mulch. One could also try millet, sorghum, and sesame.

Besides conserving humidity, and creating wind and evaporation protection, this system guarantees at least forage production (from the cactus and the native forage trees) in the worst years, and can also produce hay or silage. But be careful! Anything taken away from the system in the form of forage must be brought back in the form of manure.

We must be careful not to "rob" the system.

If the forage trees are pruned back to 30cm (12") from the ground the first year, they will branch out profusely, making live fences. In following years they can be pruned about 50 cm (20") above the ground.

**Lessons**

We are still testing and perfecting the system, and every region will have its own version. But we have seen that the fields remain green over the dry season (pigeon pea, castor, etc.), even in regions of 300-400 mm rainfall. We are working in tropical drylands here but I am sure that this model can be adapted for other dryland climates, using these principles:

1. A cactus for sun and wind protection and to guarantee forage even in the worst years.
2. Local leguminous and fodder trees for mulch and biomass.
3. Lines of larger trees for root penetration and fruit production.
4. Dense plantings throughout.
5. Mulching with the prunings of everything at least once a year. Δ

*Marsha Hänzi directs the Instituto de Permacultura da Bahia, Condominio Aguas Finas QE L4, Lauro de Freitas, Bahia 42700, Brazil. She can be contacted at <hanzibra@svn.com.br>*

# Movement Musings

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Says Bill, "My wife Lisa and I will relocate the Permaculture Institute back to its roots in Tasmania and direct our energies to a much-scaled-down scenario of all types of domestic, animal, and cool temperate systems. Bringing to completion the Permaculture Book of Cold, Book of Patterns, and a second edition of Ferment and Human Nutrition—among other titles—are my most pressing book production projects. With these endeavours, along with time out for fishing expeditons, I will sail off to the fishing grounds." Δ

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And lo and behold! You've done it again! It's Marsha's turn this time. *(Editor's note: see issue #38, "The Brazilian Book Saga")* Are there any more people burned out this way?

Any way, since it's the time to tell you all this, I must say that the first time I saw the video *Global Gardener*, I was shocked that you didn't take the opportunity to present to the world the student whose thesis has made you famous. And by the way, are you sharing the surplus with David (Holmgren)?

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## Valley Burns, Fire Smoldering from California to Oregon

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I was flamed. At least one friend told me so, and I hear that other friends have been a bit puzzled over the letter appearing under my name in *The Activist* #37- the "Bill...go home and garden!" letter. Judging from the letters responding in the following issue, that line is the memorable one. That line is not my writing, but was added to a draft I wrote to stimulate a group letter. In a conversation prior to publication, I requested of Peter Bane that those parts of the edited letter that were not mine be taken out, or other signatures be added. So I was set up, and in the process, as Peter so clearly says in *PCA* #38, the most important points were lost to most who responded.

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As an example (of the poor quality of large design courses, specifically HMB), I am

working with a convener—who attended the Half Moon Bay course—to set up a design course (for this summer—at Opal Creek, OR). He felt he missed needed bioregional specific information (there). But he also thought that since the proposed design site (in Oregon) is "pretty flat"—although with a stream running through it, and difficult to walk around due to brush—a single visit by course participants would be sufficient to produce a design that could be used for implementation by a client!

As much as I love Bill, as much as meeting him and his work has meant to me, I have often been knocked back by the vehement opinions of him held by others, some of whom I know and respect. Among people doing work that can be considered as fitting in the net of permaculture, appreciation of Mollison is hardly universal.

Certainly I wrote in the spirit of fulfilling Bill's characterization of his followers as a "mutinous rabble." A Kiwi once told me that "if an Aussie doesn't have something nice to say, he'll bloody well say it anyway," and so I figured Bill could hear me. I hope Bill is able to return to the U.S. to lecture, teach, and tell ancient jokes again. I'll certainly try to be there. And I most definitely will endeavor to stay in touch. Δ

*Ed. note: Parenthetical inclusions to the above letter were made by the editors for the sake of clarity. The letter published over Rick Valley's name in* PCA *#37 was sent by him to others in the U.S. permaculture community. It reached us from Jerome Osentowski. I can attest that it reflected Jerome's views and my own in addition to Rick's. Other contributors who may have influenced it remain anonymous. -PB*

# I Was There...I Stayed...at Half Moon Bay...

## Rosalind Baker

From the time I arrived I saw Permaculture principles demonstrated everywhere. There was an open air kitchen and dining room (where we were served gourmet organic foods for two weeks...what a treat!) complete with a strawbale walk-in fridge. There was a strawbale amphitheater classroom, constructed among the apple trees in a bowl between two hills. The toilets were plywood boxes with toilet seats, over a trench within a maze of strawbale walls. The showers, too, were strawbales with pallet floors and an on-demand natural gas water heater. The absence of roofs made living outdoors a glorious experience.

The construction was all supervised by Bob Theiss, who also managed the construction of two strawbale bunk houses.

When the Big Confrontation came down (between Bill Mollison, Scott Pittman, Dave Blume, and Gary Sanders), a student stepped forward saying that he was a professional mediator and would volunteer his services, but he then left with the disgruntled individuals. Another student filled the time with a fascinating and useful lecture on economics. He even offered his consultation services to us and told us how to influence local politics. Yes, some folks eventually left, and I myself saw some unhappiness, but no unpleasant conflicts. The attitude I most observed was one of I-came-here-to-learn-and-let's-get-on-with-it. This whole thing demonstrates pitfalls of "mono-teacherism." Students adapted, nevertheless, each choosing his or her own way.

photos by Rosalind Baker

I had a terrific time, the substitute teachers were all exciting and experienced in Permaculture. I came away inspired to the max and with a new focus for my life. The only regret is that I couldn't get to know more of the students, as each had gems of wisdom to share.

As for all the "Bad Boys," let us not choose sides, blame, or argue. We need ALL of our teacher/leaders. Instead, let us give them our emotional support and acceptance, and encourage them in working this out. Remember, compassion and cooperation, not competition and criticism.

Build soil. Δ

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# California Course Convenor Smoked Out

David Blume

I have been reluctant to write and add fuel to the fire that has been burning since Scott Pittman aired aspects of his lawsuit against me and the International Institute for Ecological Agriculture throughout the Permaculture community. Sometimes I think this airing is not good for us as a movement, and other times I think it's just the birthing pains of a new level in the movement.

I must give a belated thank you to the *Activist* staff for doing a good job trying to offer a balanced reporting of the issue. I don't agree with many of the things that have been said, but I respect the sincerity with which they have been written. In the Permaculture Nation that Bill speaks of, we don't want censors, especially when it comes to examining our leaders.

The only substantial correction I would offer to Peter's initial reporting of the controversy was that Margaret and I were at the Santa Rosa Think Tank in May, 1997. *(Ed.: Dave and Margaret arrived mid-way through the first day's session. Our apologies.)*

I must preface my following remarks by saying I have nothing but the utmost respect for the work Bill Mollison has done in the creation of the framework of permaculture and the *tour de force* that *The Designers' Manual* embodies. If I have any problems with Bill Mollison it's with him as another human being. Though I believe most of the problems I am now encountering are not of Bill's doing but originated from his handlers.

Scott Pittman and Manuel Abascal have been making serious allegations about myself and the IIEA for some months now. Because I haven't spoken out about them, many people have begun to assume they are true. Even now I am prohibited, by the lawyers my insurance company has provided for my defense, from discussing the case. What I can say is that the rumors are not true and that when the lawsuit is completed, and I have been vindicated, I will put the details on my Web page for anyone who still is interested.

I would, however, like to make a few comments on what I've seen in the last two issues of *The Activist* that relates to me. Scott, in *PCA #38* accuses me of colluding with the people who wrote letters in the previous issue to smear him and Bill. He even implies that Peter Bane is conspiring with me. For the record, I don't know any of the people who wrote the letters, but I must say, in the dark hour I was experiencing following the courses, those letters were definitely encouraging. I don't know Peter that well, but I just can't picture him conspiring with anyone. I think of Peter as a paradox, a community-oriented anarchist.

Among those who commented in the the last issue, Zeb Fitch did not disclose that he is Bill and Lisa Mollison's employee, while Nancy Brown's letter was not written from personal knowledge of what happened after she left Half Moon Bay, but is simply a way that Scott was able to get the gist of his own letter—which Peter would not print in the previous issue—into the magazine. I find Penny Livingston acting as Bill's apologist to be humorous, since, in a stroke of marketing genius and excellent design, she ran an anti-Bill, local-teacher-oriented, women-only course within a month of ours. I understand she did quite well. Bravo. *(Ed.: Blume probably refers to the May 9-23 course at Sandy Bar Ranch, featuring Starhawk as a co-teacher. Though that successful course was was made up predominantly of women registrants and teachers, one male teacher and eight male students participated, out of 32 persons.)*

There are some things I do agree with Scott about, however. The complaints about Bill sucking up all the Pc students in America are without merit. Scott is right in saying that we need to teach more people than we have been. If teaching is to be personally sustainable (for teachers), enrollments must top 30 people per class, and there must be a reasonable surplus to keep collateral activities such as Permaculture institutes and Pc sites active and growing. After all, Bill didn't draw more than 25 people at each of his Rodale Institute (PA) and Fossil Rim (TX) courses in 1996.

Advertising courses solely within the Pc movement periodicals will rarely draw a big enough class to cover expenses. We also need to reach out beyond our own circle if we really want to make a difference.
I think a class starts to be financially and energetically sustainable at 50-60 people.

When it comes to invisible structures, everyone needs to learn better business skills, including effective self-promotion. If there is interest, I would be happy to teach a course in these aspects of business. There are thousands of people out there ripe to learn permaculture. Don't doubt it for a minute.

There are some great benefits to large courses. The real life synergy between our participants has resulted in a powerful new permaculture guild forming in southern California, while many participants have joined together to do projects. We are hoping to do a "year later" report on what people have been doing since the course—it already appears to be a lot. We'll publish it on our web page.

Most of the news about the course has been centered on the lawsuit but some amazing things happened at the courses. We built a comfortable amphitheater at the Northern Course using a bulldozer to terrace a natural bowl and a thousand straw bales to make seats with backs for everyone. No one was more than about 40 feet from the stage! We also built a 25' by 90' vaulted strawbale dormitory which was designed by permaculture architect Bob Theiss: the largest strawbale structure of it's kind in the world. Our outhouses were made of strawbales in a maze pattern which made those daily duties a pleasure. We used a similar strawbale maze to have outdoor showers using two continuous water heaters. These were wonderful, too, since they came up high enough for privacy but you could talk to your neighbors in the adjoining stalls. At the Southern course we built a thermosiphon water heater for dishwashing and an active earth cooling tube and fan to cool the teaching tent. You gotta walk your talk!

Having done a large course, my opinion is that the top end ought to be about 150 people to maximize the synergy. When we had 220 or so at the Northern course, I agree that the size changed the energy significantly. Well, live and learn. We also noted a consistent comment in our class evaluations; that having a panel of teachers is more exciting and interesting than listening to one or two teachers do it all. We ended up with 10 teachers at the Northern course and people were thrilled.

People were also amazed at the high quality of food we served. We grew a lot of the produce used; other organic farmers donated food too. The Southern course was about 70% organic and the Northern course was 100% organic. With a large enrollment we were able to hire top-flight caterers at the Northern course who were able to produce both vegetarian and vegan options at each meal, and every couple of days a meat option too. We could do this because of the scale of the course. We couldn't have afforded Feel Good Foods of Santa Cruz for 30 people.

The caliber of participants was very exciting too. We had quite a number of university professors (even some from agriculture schools!), a good number of farmers, some staff of various government agencies. At the 1996 West Coast Permaculture Convergence I promised that I would make great efforts to include people of color in the 1997 courses. We were able to raise thousands of dollars from individuals, foundations, and corporate donations for this purpose. I know our courses were significantly enhanced by the diversity of the participants.

I am looking forward to the time when I can be through with this lawsuit. It has set me back a year in the work I want to be doing, but I'm not letting that stop me. Remember cooperation not competition is the most productive relationship. Scott's lawsuit is a reminder to all of us of what we don't want to exemplify in our practices as permaculturists. Δ

*Dave Blume heads the Intl. Institute for Ecological Agriculture at 834 California Way, Woodside, CA 94062. IIEA sponsored two courses in Permaculture Design in California in the summer of 1997 taught by Bill Mollison and Scott Pittman. The second course, at Half Moon Bay, broke up into two separate courses following a dispute between the convenors and the teachers that led to a subsequent lawsuit, still in the courts. The author can be contacted at <dblume@permaculture-institute.org>, web page www.permaculture-institute.org.*

# EPTA-Eastern Permaculture Teachers Assn. Update


## David Saunders

The Eastern Permaculture Teacher's Association (EPTA) is a loosely organized group of individuals from the keys of Florida to Canada's north who are interested in permaculture education, or are actively teaching Pc. If you would like to become involved, you can contact the EPTA secretary c/o Heathcote Community, 21300 Heathcote Rd., Freeland, MD 21053. (410) 343-3478. <heathcote@jhu.edu>

After a successful meeting of the EPTA at the Heathcote community in Maryland in March, 1998, the members present decided to nest the EPTA newsletter within *Permaculture Activist* We did this to make best use of our limited resources, reach a wider audience, and also to provide a regular forum for EPTA news, events, and discussion.

EPTA is struggling to define what the role of the Association will be, but to date we have made several noteworthy accomplishments.

• EPTA has compiled a resource packet for design course graduates which is available from the secretary for $7. Revisions are underway. Please contact Peter Bane, PO Box 1209, Black Mountain, NC 28711. <pcactivist@mindspring.com>

• EPTA has organized annual fall convergences of graduates (1994-96), teacher training events, and has supported professional development at its spring gatherings through materials exchanges, workshops, and peer reviews.

• EPTA has sponsored regional public expositions of permaculture in conjunction with its fall convergences.

• Association members are compiling a directory of designers (John Irwin); writing a pilgrim's guide to permaculture sites in North America for travelers (Chuck Marsh); developing Pc demonstration sites (Harvey Harman, Darrell Frey, and others); and have created an EPTA homepage (Arthur Rodriguez)<http://home.ptd.net/~artrod/eptahmp.html>.

Other planned or pending tasks include:

• Developing a teacher's slide show. (Contact Tonya Boston-Sagar, RR 4, Box 322, Benton, PA 17814.

• Enhancing post-course support for certificate holders via mentoring networks and other means. (Contact Rebekah Hicks, RR 2, Box 678, Shamokin, PA 17872. <artrod@ptd.net>

• Initiating a children's permaculture program. (Contact Dawn Shiner, 121 Turtle Rock Dr., SE, Floyd, VA 24091. <shinerhyldahl@lycosmail.com>

The EPTA has reached a critical junction in its growth. It faces challenges from the decentralized and economically marginal nature of its membership and from the difficulties of maintaining continuity between annual or semi-annual meetings. With a history of rotating regional gatherings, Eastern permaculturists have met in Ohio, Ontario, Virginia, Pennsylvania, Tennessee, and Maryland over the past 12 years. Members present at the March Heathcote meeting agreed to target future EPTA meetings in a narrow region roughly from Washington, DC to Cincinnati in order to distribute the burden of travel more equitably between Northerners and Southerners.

Fortunately a concentration of willing members in the mid-Atlantic region near Heathcote (on the Pennsylvania-Maryland border) is prepared not only to host future gatherings but to support central office functions.

We hope that the regular appearance of an EPTA column in *The Permaculture Activist* along with the new web page will foster continuity between meetings and better communications among widespread members.

Among those who attended the Spring gathering there was a positive sense that it is possible to move forward to become a vital association that will continue to provide the type of benefits listed above.

This requires a choice, and action reflecting that choice, by all of us, doing our part to create a mutually supportive network.

The next EPTA meeting is scheduled for October 10-11 at Heathcote Community. The spring gathering will be held from March 13-14, 1999. Contact the association's secretary for registration.

I have offered to edit this column for the next year so please send your provocative questions, saucy comments, brilliant reports, urgent announcements, and hot tips to:

David Saunders, c/o Ephram House, 187 London street, Peterborough, ON, CANADA K9H 2Y8. (705) 742-7621.

E-mail: davidsaun@hotmail.com

telepathy: not yet fully reliable.

Thanks, and I hope you're all having a wonderful growing season! Δ

# The Permaculture Pit
## & Other Post-Design Course Dilemmas

*Reprinted from* Permaculture Magazine (U.K.) *#17, by permission of the publishers.*

*We hear a lot about how permaculture design courses "change" peoples' lives, but what about the confusion, doubt, uncertainty, and even guilt that can creep in afterwards? Seeing the world through sustainably-tinted spectacles, John Walker feels it's easy to fall into what he calls the permaculture "pit." In this slight deviation from our usual "Of Course" slot, he explores why a course can have such impact, and what we can do to stop ourselves falling over the edge...*

**Saving the World?**

The last thing you would expect to get out of a permaculture design course is to wake up thinking "I need therapy." But hang on a minute, aren't we supposed to feel "better" after a design course, all charged up and ready to save the world? We hear and read all the time about the "life changing" experiences of design course graduates, and there's no doubt that ultimately the design course leads to enlightened change on both a thinking and doing level. I've found the post-course fallout period an unsettling time that's left me both dazed and confused, and I know I can't be alone!

**Less is More**

Being hit head-on with intense sessions exploring everything from ethical living to composting toilets, and the benefits of hugging is serious stuff—in fact more concepts, ideas, philosophies, and emotional and spiritual awakening than is really healthy in just two weeks! I came to permaculture slowly, having been gradually drawn by the common sense that permaculture is. I'm now spinning after the "full on" permaculture experience, and acutely aware that I live in a world where complexity is God and simplicity is frowned upon. By waking up to the idea that less really can be more, my mind's awash with a mass of question marks bobbing on a sea of uncertainty.

It's the beginning of an irreversible process that alters our perspectives on every facet of life. It can be scary stuff.

**People Power**

A few days before my course I started to have serious doubts about even being able to do it. "So you're off with the hippies then" still echoes in my ears. Would I cope with all that long hair, the daisy chains, and sandals? I did quite well in the end, there wasn't much long hair, no daisies in flower, and we all went barefoot anyway. But there was one thing I hadn't banked on, and that was the warmth, openness, and tolerance of the like-minded people I met. We valued each other's views, skills, and experiences. We acknowledged our diversity.

After years spent swinging perilously on the career ladder, for me this was a most gentle experience of "people power," and it was very uplifting. I was quietly frustrated by discussions on how to "do" permaculture—I just wanted to know how people felt about it, and why! Emotional honesty can be as scary as it can be liberating, and it comes as quite a shock finally to discover it part way through your adult life. Sadly it's the stuff we just don't get to experience in most schools, colleges, or universities, during our traditional learning years.

**Slipping Back**

For me the real post-course crunch came over not wanting just to slip back into everyday life. I've put everything, from how I currently earn my living to how often I visit the supermarket (or even whether I should) under the microscope since those two weeks, and although my brain's been buzzing, I'm glad I did it. Although done reluctantly, I'm certain that for me to "slip back" was exactly the right move. Get back in the swing, don't give yourself a hard time, and use a familiar environment to regroup your jumbled thoughts, values and goals—use those permaculture principles to help redesign the way you think—they're not just for gardens you know! Have a holiday from permaculture if you need it, but get that foot off the pedal and slow down—guilt-guzzling's a bad habit, moral burnout's no good for anybody, and both are a real waste of energy!

**First Contact**

Actually taking a design course can be the easy bit. What we need to do back home is make contact with other people, people we've never met, but people who share our concerns and uncertainties. Join (or start!) your local permaculture group. Meet others and get some support. For most it's a struggle, and pretty nerve-wracking if you're not used to it, but it will make you feel better, and get you back on the road to sustainability! Don't be put off by bewildered looks from friends when you explain what it's all about, but do think of a better way of explaining it next time around. Take it slow, observe, and build. It takes energy to clamber up out of the permaculture pit, energy we can better use for positive, gentle and gradual changes in our lives. Don't fall in. Δ

# Expanding the Permaculture Teaching Curriculum

Michael G. Smith

I am a strong believer in the power of permaculture and its potential to help create a healthy future. The pioneering work of Bill Mollison and others has created a coherent set of ethics and principles for ecological design and, through the Design Course, a vehicle for sharing that system, which by now has reached thousands of people in almost every country. I by no means wish to minimize that contribution —it has created a vital international movement. But I believe that the structure of Permaculture education as it stands is hindering our collective ability to take the next step forward—to appeal to wider audiences and reach with concrete strategies into every aspect of their lives.

Although the Permaculture Design Course is a comprehensive survey which generally leaves graduates stimulated and enthusiastic, it has serious shortcomings. Since I took my first PDC in 1993, I've heard the same set of complaints over and over again. From students: that the course packs too much material into too short a time; that there's too much theory and not enough hands-on; that teachers end up regurgitating Mollison (which students could get just as easily by reading his books) rather than sharing more of their own work and experience. From teachers: that they are in competition with an increasing number of other teachers for the same students; that courses aren't financially successful. From both: that the structure of the course constrains teachers from focusing sufficiently on their own fields of interest, or from adapting the curriculum to meet local conditions or the specific needs of the group.

Collectively, permaculture teachers are in the same position as a university department that offers a single class, a broad general overview called, for example, "Philosophy" or "Biology." The number of teachers who can support themselves in this way is obviously limited. Few students wish to repeat an introductory class, and others are discouraged by the lack of options for pursuing the subject in greater depth.

But we as permaculture teachers have much more to offer than that. Permaculture is such a broad field that none of us can claim expertise in its entire scope, but each of us has a lifetime of experience with specific pieces of the puzzle. Teaching Natural Building over the last four years, I have discovered that there is enormous (and apparently growing) demand for hands-on education that actually delivers tools people can use to solve real problems. To keep the permaculture movement vital and growing, and to be able to support ourselves as teachers, we need to create more specific permaculture courses which highlight practical solutions based on our own experience.

There may be many ways to achieve this—what follows are only my preliminary ideas. I'm not suggesting eliminating the PDC; the new courses could be offered either as supplements or alternatives to the basic Design Course.

First, we should develop a standardized "Introduction to Permaculture" curriculum for a short course (say, two or three days) which would cover the fundamental principles and ethics. I know that some people are already teaching a course like this—it would be wonderful to hear about their experiences. This introductory course (or the PDC) would be a prerequisite for longer, topical courses, which would be designed to build on the basic principles, adding more analysis as well as specific strategies and techniques. Some standardization of the Intro course would be necessary so that teachers of topical courses wouldn't need to spend time bringing students up to speed on permaculture fundamentals.

The topical courses would both deepen students' understanding of permaculture as a system and provide practical training in a specific sub-field. Some possible criteria are

1. That the course offer specific strategies for solving real problems;
2. That at least 50% of classes be hands-on;
3. That discussion and lecture time be used to relate the topic to the broader permaculture system, ethics, and principles.

From experience, I would say that a full week is probably the minimum time necessary to provide students with a useful skill which they can actually take home and apply. Some things require much longer, but it might be convenient to break these down into a series of week-long segments. A few possible course topics/titles which occur to me are:

- Permaculture Landscaping (by bioregion, of course)
- Market Gardening—A Pc Approach
- Introduction to Natural Building (and more specific courses focused on cob, straw bales, biotecture, or whatever)
- Wildcrafting & Processing Medicinal Plants
- Design and Build a Solar Greenhouse
- Forest Management
- Land Restoration and Erosion Control
- Aquaculture
- Ponds, Irrigation, and Water Collection
- Forest Gardening, etc.

The possibilities are limited only by the experience of the teachers and the interest of the students.

This all raises some interesting questions: What about quality control? How do we keep just anybody from teaching anything they want and calling it Permaculture? How do we keep each other informed of what courses are being offered, where, and when? Will the public be overwhelmed by the number of choices? How do we help them find the most appropriate course? How would these courses fit into the existing certification system? Does anybody really care about certification anyway?

I have some ideas about each of these things, but wish to hear from others. I would be happy to continue this discussion via email, paper mail, or telephone. Thanks for your consideration.

*Michael G. Smith is the author of* The Cobber's Companion. *Contact him at Occidental Arts and Ecology Center, 15290 Coleman Valley Rd., Occidental, CA 95465.*
*<kristeng@efn.org>*

# SPECIAL SECTION

## The Permaculture Movement and Education:
# Searching for Ways Forward

David Holmgren

I would like to address a number of issues concerning permaculture education, design, and practice, and how these relate to formal accreditation systems in the wider society. I would like to expand on some of the ideas relevant to the future organizational structure of the movement which I only briefly touched on in "Development of the Permaculture Concept" *(Permaculture Intl. Journal* No. 44). Hopefully these ideas will also be of more general interest to people involved in permaculture at all levels.

In the process, as the co-originator of the permaculture concept, I will cover some of the story of my involvement with the permaculture movement, a subject which I am inclined to avoid, but that may help others clarify their own involvement and position on the issues confronting the movement.

There has been a lot of talk about permaculture as a discipline (as in academic), a profession, trade, business, and even as an industry. I have great difficulty with these constructions of permaculture for many reasons.

**Radical Origins**

Permaculture arose from interaction between myself and Bill Mollison in the mid-1970s. We were two (very different) social radicals on the fringes of (different) education institutions at the global fringes of western industrial society in Tasmania.

Bill Mollison as bushman-turned-senior tutor, in the Psychology Dept. of the Tasmanian University, attracted large student audiences to hear his radical and original (pre-permaculture) ideas while outraging the academic establishment.

I was a student in the Environmental Design School, a revolutionary "experiment" in tertiary education at the Tasmanian College of Advanced Education. This design school ran for ten years under the inspired leadership of Barry McNeill, a Hobart architect and education theorist. Visiting and local professionals accounted for a substantial part of the staff budget. There was no fixed curriculum but a strong emphasis on decision-making processes and problem solving. Self-assessment, democratic organization, and many other elements which radicals within tertiary institutions only dream about were reality within the school.

Even within the intellectual freedom and stimulation of Environmental Design, I was on the fringes with my all-consuming permaculture work and my student-mentor relationship with Bill Mollison. My work was largely ignored within E.D., although Barry McNeill has since acknowledged it was probably the most important concept to emerge from the school. I never went on to do the post-graduate degree which would have led to a professional qualification (in Landscape Architecture) because of my disgust with the design professions and my strong desire to build my practical skills and to practice what I preached.

Growing up in a family of radical political activists, I found that ecological principles reinforced the political notion that radical change is always a bottom-up process. Marx suggested that happened by an uprising of the oppressed masses. But in modern industrial society, the environmental dilemma highlighted the material addictions of the comfortable masses as the seed of their (our) own destruction. The problem lay with ourselves rather than simply with exploiting multi-nationals, etc.

***...I found that ecological principles reinforced the political notion that radical change is always a bottom-up process.***

The old spiritual notion of changing the world by changing oneself was a powerful idea for this atheist. This meant starting with the individual and the family or household within which we live. In the outward extending ripples of change it becomes easier for succeeding people to see the need for change from consuming resources to conserving and creating permacultural abundance.

In addition, I do not believe it is necessary for a majority to undergo a radical change for a flip to occur in society. Chaos theory and especially the concept of punctuated equilibrium, confirmed by observation in all the natural sciences, suggest gradual evolution is the exception rather than the rule. In society, long periods of stability dominated by tradition, law, and institutional forms are punctuated by rapid and apparently chaotic change where individuals and small groups create new cultural forms. (1) These cycles occur on large time scales through history. However, they also repeat themselves within the lives of individuals, communities, and organizations, not as a series of closed loops but as open-ended and intertwined spirals.

We can see many examples of the fragility and collapse of established systems and whole societies with the Soviet Union being the most dramatic. Perhaps an even more pertinent example might be the faith that binds the financial value systems of global industrial society.

The whole global economic edifice which is rapidly consuming the planet and its people is in fact a very fragile monster, dependent on the faith and complicity of relatively small populations of middle class people in affluent countries and particularly the continued faith of that parochial clan of McCluhan's global village, the money and commodity market people. Ronald Reagan (as the most powerful man on earth) after the '87 stock market crash, said with unconscious truth, that the system would not collapse so long as people continued to have faith. Has there ever been an emperor, king, or president to admit to his people that they had the power to bring the whole system down? My point here is not to dwell too much on apocalyptic scenarios but to refute the concept that it is necessary to get "every man and his dog" to change before society will change.

One of the problems of personal and social change is that the old patterns die hard and as we reach for the solution we keep reinventing the problem in a new form. This is quite natural and can be observed in nature where deeply embedded proven systems keep reasserting themselves (Nature is conservative).

In the early promotion of permaculture the tools of mass media were effectively used to spread the word quickly and widely but the efficiency of these tools at producing effective change is very low. So often, fertile social ground was (and still is) plowed, seeds sown, but only a few germinated: some producing a bitter harvest. Frequently as enthusiasm wanes in one locality, city, region, or country, new ground is plowed in a shifting cultivation. This may be a particularly dismal image (which is hardly the whole picture) but my point is that modern mass media can be very effectively used to stimulate people beyond the capacity of a movement to follow up with the painstaking local, personal efforts needed to assist and facilitate productive action. We are in fact dealing with very dangerous tools in mass media which carry with them many of the inherently destructive characteristics of the defunct paradigms. Jerry Mander (2) has outlined the problems inherent in television. To some extent these problems even apply to books.

The use of mass media, including books, has been a major factor in the spread of the permaculture concept and, although I would be the last to say these approaches should be totally rejected, they must be acknowledged as classic top-down methods of change, the same tools used by governments and corporations to mold society. To believe these are value-free tools which can easily be used for good or ill is very naive.

The Biodynamic movement began from very small beginnings in this country (Australia), largely under the leadership of Alex Podolinsky. It has been remarkably effective in changing land use on large areas of farmland and building the numbers of competent home food gardeners in this country. This was done initially by avoiding all mass media and working directly in small self-help groups. It was only with an established network of solid practitioners that Podolinsky finally agreed to let ABC Countrywide do the program on BD which produced more inquiries from farmers than any other issue.

***...modern mass media can be very effectively used to stimulate people beyond the capacity of a movement to follow up with the painstaking local, personal efforts needed to assist and facilitate productive action. ...To some extent these problems even apply to books.***

The permaculture movement has a lot to learn in this regard. On the other hand, the BD Movement has some similarities with Permaculture, perhaps the most striking being the role of the charismatic genius of its leader. Elsewhere (3) I have referred to Yeomans, Podolinsky, and Mollison as men with much in common in leading the fight against the agricultural establishment. The role of these men in bringing about change is a complex and very pertinent subject to the future of the permaculture movement, but is not something I wish to enlarge upon here.

**Personal Credibility**

Much of the focus for promotion of permaculture has been around the idea that we can grow much of our own food where we live and that this is one of the most powerful actions we can take in bringing about societal change. There is nothing wrong with this simple idea and large numbers of people have been influenced and assisted by permaculture in doing this. Although in any sustainable society we can "design," it is not necessary for everyone to grow their own fresh food, it is undisputed (in permaculture) that we need an explosion of competent food gardeners in this country. Why is it then that the majority of people who have recast their work and careers around permaculture do not grow food either as a living or even for themselves and their families to any significant degree? Largely because they are too busy organizing and designing and teaching and selling.

The way we earn our living is obviously a major part of practicing permaculture and in the current economic climate few of us have the resources and skills necessary to make a living producing food in a sustainable manner. The realization of this fact should engender sympathy and respect for farmers. Instead we are just as likely to hear arrogant prejudice about farmers destroying the land from permaculturists as from the other food consumers. I believe many permaculturists don't produce their own food because they have tried and found it difficult and not particularly exciting. This is especially true for the generations raised on the instant gratification of television and modern education.

When "Mrs. Jones" buys Thai tuna or California oranges just because they are cheap, I find it hard to be outraged if she is only claiming to be following short-term financial self-interest. However I am disappointed, to say the least, when those in the forefront of permaculture promotion privately suggest it's cheaper or easier to buy good quality food, ignoring the huge compromises which even organic growers make with sustainability principles to survive commercially. Proverbs about throwing stones and glass houses come to mind. My natural inclination is to turn my disappointment back on myself and consider the ethical contradictions in my own behavior. Despite its bad reputation by association with the Chinese cultural revolution, I believe self-criticism is essential so long as it is balanced by affirmation and recognition of self-worth.

**Permaculture is not a Profession**

We can take a permaculture approach in any (reasonable) job or profession, but to jump to the conclusion that permaculture IS a job, career, or profession is false. There is nothing wrong with people using permaculture design as a shorthand way of saying they are garden or farm designers who use permaculture principles in their work. But when people suggest we need to make permaculture a design profession which can sit alongside other design professions and so achieve credibility in the wider society they are making several mistakes:

1. The search for credibility by belonging to some group is illusory in today's society where we see the progressive breakdown of all forms of established credibility. New secure structures of credibility cannot be established in this social environment.

2. To effectively operate the organizational structures necessary to make a profession able to function at a national level requires financial and other resources which drain off limited activist and practitioner resources. This has been a recurring mistake in the permaculture movement where structures appropriate to large organizations are created in the hope that growth of the movement will generate the resources necessary to support these systems. Permaculture principles suggest we should network and organize at the smallest, most local level for each particular function and only move to larger levels when the local ones are effectively generating surplus resources adequate to support these inherently more expensive but less essential systems.

3. Permaculture is only one of thousands of groups from nurses to sellers of travel packages seeking the hallowed status of being a profession. When the mob is running in one

direction, quietly walk off in the opposite is my motto, which I learnt from my parents, but was clarified for me by Bill Mollison.

4. There is a problem of logic when we define permaculture as a separate design profession because it implies there is a particular set of skills or competences distinct from those of other professionals. In fact as Bill Mollison said in *In Grave Danger of Falling Food,* "permaculture always did lie between the disciplines." It is a wholistic system which can integrate and recast the work of the existing design professions. If it is to become its own profession then it foregoes the valid concern with what all design professionals do. And as more and more sustainable approaches are taken up by trades and professions a separate permaculture profession would be left with a baggage of idiosyncratic ideas which didn't quite work.

A generalist permaculture designer may be a good person to advise on general aspects of house siting and design, but an architect or a builder with a permaculture perspective is the person to help with the details. If someone is setting up a commercial orchard, a generalist permaculture designer such as myself may be able to help a little, but what is really needed is a competent tree crop horticulturist with a permaculture perspective. These people will continue to call themselves architects, builders, or horticulturists. They have the training, accreditation, and industry networks which provide most of the benefits (and problems) which some people hope to set up for permaculture. We should use these systems, parasitically if necessary, working around the restrictions they may involve.

***The trouble with the improvement in PDC's is the knowledge and experience of course participants are improving even faster.***

However, there is clearly an important role for independent permaculture generalists to fill in the gaps in established systems: self-taught and informally apprenticed, constantly innovating and experimenting with their own systems and passing on the hard won lessons, gaining credibility by the results of their work.

This is a tough role, and a professional structure will not help those who are not up to it do anything more than paper over their inadequacies. This brings me to the issue of permaculture education.

**Permaculture Education**

The "72-hour" permaculture design course has been the basis of permaculture education since the first courses run by Bill Mollison at Stanley in the early 1980s. From the very beginning I was critical of many of the assumptions behind the PDC. Despite, and maybe partly because of, those criticisms, the PDC has evolved into an effective method for extending the ideas which I believe the movement should focus on consolidating rather than venturing into the minefield of TAFE (Technical and Further Education) or any other accreditation. But while acknowledging the positives, it may be useful to outline my original criticisms.

For me, coming from the radical, process-based education of Environmental Design, the concept of a fixed curriculum of subject material which was based on the particular (admittedly very broad) knowledge of Bill Mollison was a mistake. It has led to permaculture teachers with little knowledge of Keyline, for example, teaching a group of mostly ex-urban small property holders in the wrong climate zone about broadacre irrigation for pastoral farming.

The early courses by Bill Mollison appeared to rely on his encyclopedic knowledge, incredible storytelling skills, and challenging charismatic ability to hold the attention of a group of students through a series of lectures with few educational aids or relief. Other teachers attempted to do the same with less than satisfactory results. Some consider that I have an encyclopedic grasp of technical issues and "gift of the gab" but I still will not teach more than 50% of a course, and I make extensive use of slides, charts, provided notes, and other materials. I also tend to work with teachers who use more interactive and participatory teaching methods than I do.

***Much of the value in the PDC comes from the generally residential format which gives the opportunity to design a course environment that will challenge and influence people's personal living and (most importantly) eating habits so central to permaculture.***

The third and greatest problem with the original PDC's was the explicit notion that the two-week intensive residential course was a training program for design consultants who would operate as anarchistic generalists in the way I mentioned before. I and many others found this a ridiculous proposition and said so (diplomatically) at the first convergence in 1984. To my (and other's) amazement Bill Mollison immediately outlined a structure of two years' practical work following the certificate which was necessary to obtain the diploma and become a graduate member of the Institute. Further he suggested that work could be in one or more areas including architecture, site development, media, etc. This passed into history as a decision of the convergence (4) and represented a substantial improvement in the situation. I was issued with an honorary diploma which I graciously accepted but continued to pursue my own path consulting and doing some teaching via lectures, seminars, and workshops, many of them without the label permaculture.

In fact, the *laissez faire* system initiated by Mollison has not resulted in huge numbers of charlatans doing incompetent design for unsuspecting clients. Although many enthusiasts rushed off from PDC's to consult, most ethically selected themselves out because they recognized they didn't have the skills, or proceeded with an on-going self-training process where they were notionally in business but really were subsidizing their own training with very low charges, the dole, or other income.

This accounts for the limited number of people earning any part of a living as consultants who do not also have other design training and accreditation. When I set up Holmgren Design Services in 1983, I had already been going through this process (unconsciously) virtually since 1976. I have never had an income (since College) which was not permaculture-related but 92/93 was the first year that I have paid tax. The constraints of practicing what you preach, on-going self-training and research and the limits of the market place didn't allow the generation of income much above the poverty line, which I find more than adequate to live on.

**Existing Institute Accreditation of Graduates**

The system for issuing of diplomas has never really worked in Australia for a number of reasons:

1. Failure of teachers to give to students consistent information about the requirement for "professional" use of permaculture, and a lack of commitment to the system.

2. Few apprenticeship opportunities for trainees.

3. Poor bioregional networking between teachers and virtually no opportunities for peer review or working together. Vries Gravenstein's organization of a design exercise for participants at the 1990 (Australian National) convergence was the best effort I know of in this regard.

4. Perceived low value of the diploma in obtaining work compared with institutional qualifications.

**Rapid Growth of Permaculture Teaching**

There was a rapid expansion of the movement and PDC's in the late 1980's on the back of a new wave of environmental consciousness, the TV release of *In Grave Danger of Falling Food,* and the publication of *The Designers Manual.* (The publication of *Permaculture One* and *Two* coincided with a previous wave.)

In Victoria, numbers of PDC's remained low until 1992. Increasingly I was approached by teachers and others soliciting more active involvement. In 1991 I co-taught my first design course with Hugh Gravenstein and Andrew Sheridan on the Far South Coast of NSW, and in the following year a second with Colin Endean and Ric Allen in Adelaide and a third with Lea Harrison at Kangaroo Valley in NSW. After this I felt in a position to design my own courses which incorporated some of my own material which I saw as central to permaculture as well as addressing the

problems outlined above.

Elsewhere, especially overseas, experienced and knowledgeable teachers were also developing the course content and methods into quite divergent directions but perhaps without the intellectual confidence and freedom which I feel in dealing with the subject.

Over those ten years two things had happened. Some of the inspired brilliance of Mollison's original teachings has become lost in translation and reduced to sets of prescriptions and fixed examples. On the other hand, teachers had become more experienced in teaching methods and accessed more materials while people with established design, horticulture, and other skills were becoming teachers. The *laissez-faire* system challenged serious permaculture teachers to work out their own explanations of permaculture rather than simply relying on Bill Mollison for all the answers.

***I think it is essential that the details of any peer review and regulation of persons admitted as graduates (and therefore independent teachers) be done at the bioregional level.***

The trouble with the improvement in PDC's is the knowledge and experience of course participants are improving even faster. One of the great strengths of the PDC has been the open entry requirements and the mix of persons from school leavers to practicing professionals, from farmers to grandmothers who come together for two weeks to learn from the teachers and each other.

However, the lack of follow-on structured learning situations for permaculture has led to some teachers developing advanced design courses which mostly appear to be either teacher- or consultant-training focused, or specialist courses (eg. architecture, horticulture, village design, etc.) with very little advance in the depth of treatment of general principles, issues, and methods.

It was suggested to me (by Ric Allen and others) that the material I was teaching would be more appropriately given in an advanced design course but I have decided against that move because it automatically restricts the courses to people who have completed a PDC. Instead I have worked at improving my teaching methods to make the material more digestible. I have also aimed at getting more experienced practitioners in a range of fields into courses so they are in a position immediately to apply the permaculture framework to their own work, a far faster way of getting effective and competent action than advanced courses.

At the same time I don't want to set up courses for professionals which can so easily bypass the personal and domestic change at the heart of permaculture. A mix of people, including younger ones with little experience but the energy and enthusiasm of youth, and older sometimes not highly educated people with experience, act as a foil and balance to the high-powered professionals wrapped up in their work. In this way the PDC has the potential to span the spectrum of education from high school to post-graduate and experience from the kitchen sink to the back paddock.

Much of the value in the PDC comes from the generally residential format which gives the opportunity to design a course environment that will challenge and influence people's personal living and (most importantly) eating habits so central to permaculture. Cynics would describe it as "brainwashing" and certainly many course participants find the experience very personally challenging. If you put 20 fairly environmentally and socially aware, but very different, adults together in a new and isolated environment, they will generate some interesting interactions themselves. Consequently I have a strong commitment to the residential format, although I recognize the difficulties for many people in allocating two weeks to the course.

**PDC and Movement Accreditation**

I have indicated that much has been achieved through the *laissez-faire* approach to permaculture education but there is a need to make some of the systems and structures we already have work better.

We need to improve the quality of courses to do justice to the quality and experience of course participants. Ongoing training workshops in teaching methods are one way but these should be for people with demonstrable skill and knowledge with natural systems who need help in communicating their knowledge. As we draw more people into teaching permaculture who already have teaching skills, what will become more important are informal residential programs, work experience, and apprenticeships under experienced practitioners so that teachers are talking about things they do understand. In this regard I believe the WWOOFing network has been one of the most successful ways at providing people with more day-to-day experience of living and working in more sustainable ways. We need to look at how we might build on and support that network rather than replicating it.

We need better documentation of good working systems, a job which innovative practitioners frequently neither have the time nor skills to do. Trainee teachers could use their documentation skills (plans, photographs, notes, etc.) to record these projects during WWOOFing or other work experience visits, to develop their own portfolios of teaching materials. Practitioners should always have the opportunity to vet materials and be provided with copies for their own use and retain copyright control over the use of their work.

Copying of notes, slides, and other materials from teachers should only occur through an apprenticeship process where the trainee has a very good grasp of the subject.

Teachers should avoid taking offers to teach courses outside their bioregional experience unless there are very good complementary local resources and expertise involved. This may slow the expansion of the movement but ensure that more of the sown seeds germinate. Teaching permaculture to a higher standard requires a rooted connection to local venues, resources, and practitioners, a demand which makes globally mobile teaching an extremely difficult job, one which will never produce the quality of courses possible once a network of local expertise and resources is established.

Recently, my own criteria for agreeing to teach a course in Israel included that it would be given in a similar bioregion (not arid where I have limited expertise), that I would be co-teaching with permaculture activists with some teaching experience, knowledge of my approach, and long-term commitment to the region, and that I would have time (weeks) to familiarize myself with the local situation, people, and resources. I don't want to criticize the valuable pioneering work which many Australian teachers have done overseas and do not wish to address the complex issue of permaculture education as overseas aid. I am simply pointing out the criteria I have used as I venture into a new area of practice.

We do need a national body as a central register of graduates and some general guidelines like those set up following the '84 convergence. I would like to see any implication of the PDC as being a training system for consultant designers or teachers completely removed. (I do not use the Institute certificates because they refer to "Permaculture Design Consultants Course"). I would also like to see the categories revised and preferably reduced in number.

***I think we need to get away from the idea that courses should be run at rock bottom prices so everyone can have access to courses.***

I think it is essential that the details of any peer review and regulation of persons admitted as graduates (and therefore independent teachers) be done at the bioregional level. If there are not the networking and resources to do so at this level, then any attempt at a national level is likely to fail. We should accept that different bioregional networks may apply the rules differently but that can reflect real differences in needs and capacities to regulate. (This already happens at an international level.)

There has been much angst about the proliferation of courses, cutthroat competition, and poor standards. A severe analysis could liken permaculture education to a form of pyramid selling where the main economic outcome of courses is more courses. These issues have certainly troubled me but we need to keep several things in mind:

1. Natural systems undergoing rapid growth based on available energy tend to be characterized by a lot of competition, crude systems, and poor development of symbiotic or networked structures. As available resources restrict growth, selection pressures result in a culling of poorer systems and models while development of co-operation and networks increase. With permaculture courses at the moment it is very much a case of buyer beware and to a fair degree you get what you pay for.

2. On the issue of cost, I think we need to get away from the idea that courses should be run at rock bottom prices so everyone can have access to courses. My considerations on cost include:

Firstly, in our society, for better or worse, the vast majority of people do not value what they do not pay for. Improving the quality of courses is pointless if participants come along because someone else paid for it or the course represented a cheap holiday. Commercially driven residential courses in other fields comparable with our $800 Hepburn Design course (limited to 20 people) would cost $2000.

Cross subsidization is a better way to provide access for lower-income persons (we provide four places at $600) while government- or business-funded participation is a two-edged sword which should be handled carefully. For subsidized participants we vet people and require payment of deposits by the individual. And we restrict numbers of funded participants.

I think that the private enterprise context of permaculture education has been one of its strengths and we should avoid the traps of the social welfare mentality that it is everybody's right to be able to do a PDC without sacrifices. Learning by doing, WWOOFing, subsidized introductory courses, and institutional courses which will progressively include permaculture material are open to everyone, and increasingly training programs specifically set up for disadvantaged groups can include permaculture material.

3. I think it is important that experienced teachers do get some remuneration commensurate with the enormous effort required to present a well-organized and taught course. However, I think there are also substantial dangers in establishing a career structure for teachers which rewards them for just teaching. Having to do other things to stay sane, earn income, maintain humility and connection to the earth, and continually to learn are essential. "Professional teachers" who do not garden or in other ways face the enlightening and frustrating realities of living and working with nature are in grave danger of reinventing all the problems we seek to overturn.

Barry McNeill said that no one should teach design in an institution for more than seven years without going back to professional practice. In permaculture we need to be much stricter in our guidelines if we are to retain the integrated perspective which the wider society is constantly subverting with its rewards for specialization and chopping our lives up into separate compartments.

**Permaculture Academy**

The announcement of the creation of a Permaculture Academy by Bill Mollison (5) in 1993 has further complicated an already unclear situation regarding permaculture movement accreditation. Although many of the intentions behind the academy are commendable and in fact reflect some of the perspectives discussed above, I see grave problems with a new structure when the foundation on which it is based (the PDC and Institute accreditation of graduates) is so much in need of consolidation.

Unless students are already in close working contact with supervisors it is very hard to assess the real practical value of any work and there will be a tendency to fall back into the academic mold totally dependent on documentation within a particular discipline. Surely we should be trying to achieve effective interdisciplinary assessment of the permaculture trainees for becoming graduates of the Institute before setting up higher level assessment processes requiring greater skill and commitment.

Clearly, the academy will not provide any resources to assist struggling practitioners and researchers. The main value which will accrue is an academic qualification which may provide some credibility within mainstream systems for worthy permacultural practitioners. However, we need to consider the status, or lack thereof, conferred by being a graduate of the Institute before we escalate the stakes by investing effort into higher academic structures.

A mature sustainable community or society can easily deal with its most capable members having the responsibility and privilege to specialize, but for us in the vortex of the paradigm shifts, we need to work a lot harder at developing the wholistic, generalist base from which specialization is possible. After all, we are talking about overcoming a four-hundred-year cultural heritage of increasing specialization to the point of collective and individual schizophrenia. Study of natural and human systems teaches us that the types of changes needed come about through a radical reintegration at the bottom within the life of each individual, not through some moderation of excesses back to some supposed balance.

**Relativism and Dogma**

Through my constant reference to the need for a radical approach, it is essential that this not be interpreted as an adherence to a set of rigid principles which could very quickly become dogma. To the degree to which permaculture might be seen as a "faith" it is a highly relativistic one, there being few if any absolutes. Everything is context dependent.

For example, some might say that use of herbicides is unacceptable in any situation and regard such rules as reflecting a radical approach. I see the one-time use of an herbicide (depending on which one) for the establishment of direct-seeded or planted trees in their thousands essential to the stabilization of broadacre cropping and pastoral lands. This is very different from the annual spraying of roadsides by councils or annual spraying under orchard trees. Energy analysis and other forms of accounting suggest a great difference between these two.

Where we are uncertain about when and how to compromise on a particular rule or principle we should test the rule ourselves to see if we can achieve the ideal and then carefully suggest criteria others might consider in making their own decisions.

***We walk on a knife edge between the seduction of a defunct cultural heritage and the stifling bonds of dogma and even fascism. Constant self-critical appraisal and the grounding of work with nature are the only ways I know to maintain the internal balance.***

There is a paradox behind many of the ideas and challenges presented in this article. I have been suggesting that permaculturists need to go further in applying permaculture principles and be more aware of how we fall back on conventional, more deeply embedded learning. This old learning makes us susceptible to the subtle reward systems within society. It is these rewards which result in the solutions being recast as new forms of old problems.

On the other hand we should never forget that in nature things are relative and context dependent, so we have to forego the certainty of a neat set of absolute rules. My greatest fears about the movement are the development of dogma and sacred cows. Some might say I am obsessed with attacking sacred cows (no offense to my Hare friends), especially those born of my own work.

We walk on a knife edge between the seduction of a defunct cultural heritage and the stifling bonds of dogma and even fascism. Constant self-critical appraisal and the grounding of work with nature are the only ways I know to maintain the internal balance.

**References**


1. Thompson, W. I., in *Journal of the New Alchemy Institute*. Stephen Green Press.
2. Mander, J. *Four Arguments for the Elimination of Television*. Quill, 1977.
3. Holmgren, D. *Creating a History of the Search for Sustainable Land Use in Australia*. unpublished paper, 1993.
4. "Permaculture Institute News," in *Permaculture International Journal*, #19, Feb. '85.
5. "The Creation of a Permaculture Academy," in *PIJ*, No. 47, June '93. Δ


*David Holmgren, co-originator of the permaculture concept, circulated a paper to some permaculture teachers and activists in 1994 for comment and to stimulate discussion, of which the text published here is a slight abridgement. We have omitted a section on permaculture teaching in institutions of higher learning.*

# EVENTS

## Permaculture Design Course
### Central Willamette Valley

**Dates:** August 17-29
**Location:** Opal Creek Wilderness, OR
**Description:** Opal Creek Education Center at the historic Jawbone Flats mining camp in the heart of 35,000 acres of wilderness known for its biologically diverse forest, clear cascading streams, and crystalline emerald colored aqua pools.
**Instructors:** Tom Ward, Jude Hobbs, Rick Valley
**Cost:** $800
**Contact:** Friends of Opal Creek
PO Box 318
Mill City, OR 97360
503-897-2921

## Permaculture Design Course
### Sonoma County, California

**Dates:** September 4-18
**Location:** Occidental, California
**Description:** Residential intensive course leading to Pc Design Certificate. Guest cabins and 25-year old organic gardens with extraordinary diversity make this venue popular.
**Instructors:** Penny Livingston, Brock Dolman, and guests
**Contact:** Occidental Arts and Ecology Center
15290 Coleman Valley Rd.
Occidental, CA 95465
707-874-1557, fx/-1558.
<www.oaec.org>

## Permaculture Design Course
### Northern California Wine Country

**Dates:** Nov. 30-December 13
**Location:** Harbin Hot Springs, CA
**Description:** Permaculture Designer Trainee Course at one of California's premier resorts in the wine country. Learn practical skills for designing and constructing your own home ecosystem, and for creating a more sustainable community. Included are in-depth introduction to Permaculture, hands-on garden design, herbs, ponds, water systems, natural building, erosion control, fire protection, restoration techniques, and much more.
**Instructors:** Larry Santoyo
**Contact:** Larry Santoyo & Assoc.
309 Cedar St. #85
Santa Cruz, CA 95060
e-mail dotcalm@got.net
phone 800-469-5857
web: www.permaearth.org

## Sustainable Living Apprenticeship
### Orcas Island, Washington

**Dates:** July 13-August 9
**Location:** Orcas Island, WA
**Instructors:** Douglas, Joseph & Samuel Bullock
Mike Lockman
**Description:** A practical training in Nursery Skills, Wetland Restoration, Orcharding, and Greenhouse Operation incorporated into the structure of the Permaculture Certificate course. The residential intensive will take advantage of the Bullock Brothers Farm's many well-established plant and animal systems to demonstrate implementation of small-scale sustainable human habitat. The program includes observation and mapping, water systems, garden preparation and fencing, solar electric and home design.
**Cost:** $1500 includes meals, tent space, and materials.
**Contact:** WE-Design
PO Box 45472
Seattle, WA 98145
206-323-6567

## Intermountain Permaculture Course
### Eastern Washington

**Dates:** September 3-16
**Locations:** Goldendale, WA
**Instructors:** Michael Pilarski, Michael G. Smith, Christ Coffman, Ray Mitchell
**Description:** A two-week residential emphasizing techniques and strategies for the cold-temperate and semi-arid regions of Montana, Idaho, eastern Washington and Oregon, and interior British Columbia. Plus natural building, sustainable forestry and agroforestry, livestock, medicinal herbs, and native plants.
**Cost:** $850
**Contact:** Friends of the Trees Society
PO Box 4469
Bellingham, WA 98227
360-738-4972,
fax 671-9668
www.geocities.com/rainforest/4663

## Permaculture & Self-Awareness Apprenticeship
### Lost Valley Center, Oregon

**Dates:** September 7-October 23
**Location:** Dexter, OR
**Description:** Emphasizing emotional and spiritual well-being through the practices of Naka-Ima and Peer Counselling, this program will provide certificate instruction in Permaculture Design using individual and group design exercises, hands-on projects, and various classroom approaches. The Lost Valley Permaculture Reunion will occur during the Apprenticeship, and participants will assist in presenting this event, which offers a great opportunity to meet and learn from graduates of the permaculture design course.
**Instructors:** Rick Valley, Jude Hobbs
**Cost:** $1800 includes tuition, food, and indoor lodging.
**Contact:** LVEC
81868 Lost Valley Lane
Dexter, OR 97431
541-937-3351
lvec@aol.com
www.efn.org/~lvec

*Permaculture West Presents:*

## Permaculture Design Course
### South Puget Sound, WA

**Dates:** Sept. 5-7, 19-20, Oct. 3-4, & Oct. 16-18th
**Location:** Oakville, WA
**Description:** Four-weekends Permaculture Design Course at Wild Thyme Farm, a private arboretum and natural resource facility, 35 minutes south of Olympia.
**Instructors:** Michael Lockman and Ted Butchart with guests Simon Henderson, Michael Pilarski, and others
**Cost:** $600, ($550 before 15 July) includes tenting, tuition, and meals. Limited indoor sleeping space: $15/night extra.
**Contact:** WE-Design
PO Box 45472,
Seattle, WA 98145
206-323-6567
permawest@olywa.net

## Permaculture Design Courses

### Northern California

**Dates:** August 31-September 13
**Location:** Santa Cruz Mts.
**Description:** International Institute of Ecological Agriculture (IIEA) presents Permaculture Design Course.

### Northern Arizona

**Dates:** October 18-November 1
**Location:** Cortes Junction, AZ
**Description:** "Ecological Summer Camp for Adults," International Institute of Ecological Agriculture (IIEA) presents a Permaculture Design Course featuring a design for the agriculture at the historic Arcosanti community, 1 1/2 hours north of Phoenix.

**Instructors:** Dave Blume and others
**Cost:** $950 includes organic meals, evening entertainment; $125 discount for early registration. (AZ course: camping on site $75; indoor accommodations $150)
**Contact:** 1-888-PERMACULTURE, web page www.permaculture-institute.org

*12th Annual*

## Permaculture Design Course

**Central Colorado**

**Dates:** August 24-September 5
**Location:** Basalt, CO
**Description:** Certificate training in Permaculture philosophy and design, local self-reliance, appropriate technologies, marketing strategies, medicinal herbs, Integrated Pest Management, greenhouse technology, forest gardening, and much more...Join our expert instructors from around the country for this incredible opportunity.

**Instructors:** Jerome Osentowski, Director CRMPI; Francis Harwood, Anthropologist, Rio Grande Bioregional Project; John Cruickshank, Appropriate Technology Expert and designer of the Sunny John moldering toilet at Sunrise Ranch; Dan Howell, Water-Use Expert and Desert Homesteader; Ruth Chalfont, Permaculture Gardener and Landscape Designer; Dennis Stensen, Biodynamic CSA Farmer, Ken Kuhns, Local CSA Farmer; Diana Christian, Editor *Communities Magazine* and community living consultant; Michael Smith, Cob and Straw Bale Expert, Cob Cottage Company, Sub-Tropical Agriculture, Teaching in Third-World Countries; Hilary McCurry and Jodi Halsey, Certified Clinical Herbalists

**Cost:** $800 til July 24, $850 after. Includes all meal, housing or tenting sites, tuition, and some materials. If you are interested in attending, please contact CRMPI for more information or send a deposit of $100 to reserve a place. The courses fill quickly!

**Contact:** Box 631, Basalt CO, 81621
ph/fx: 970 927-4158
E-mail: permacul@rof.net

## Fundamentals of Permaculture & Village Design Practicum

**Black Mountain, North Carolina**

**Dates:** September 18-26, 1998 (Fundamentals); Sept. 28-Oct. 6 (Practicum)
**Location:** Earthaven Village, near Black Mountain, NC
**Description:** Fundamentals of Permaculture covers cultural transformation, permaculture ethics and principles, ecosystems, pattern, forests, soils, water, microclimate, earthworks, home systems, building design, animals, plants, aquaculture, waste treatment, tools, gardening, mapping, and permaculture for cities and villages, and financial systems. Village Design Practicum covers design process, broadscale agriculture, pattern languages for human settlement, wildlife and landscape restoration, mapmaking and presentation skills, ecoforestry, natural building methodology, economic and social design. The Village Design course also covers organizational, educational, and governance aspects of community, enriched by the ongoing experience of village building at Earthaven. The courses may be taken separately, although the Fundamentals course or a background in sustainable systems design is recommended as preparation for anyone interested in Village Design who does not already have Permaculture training. Participants completing both sections will receive the permaculture design certificate.

**Instructors:** Peter Bane, Chuck Marsh, Patricia Allison, Andrew Goodheart Brown, Paul Caron, Arjuna da Silva, Keith Johnson, and guests

**Cost:** $800-550 for each course includes tuition, camping, curriculum materials, and a subscription to *The Permaculture Activist*. $50 off for registering by August 15, 1998. $100 discount if taking both courses. Other lodging options available by arrangement.

**Contact:** Culture's Edge, 1025 Camp Elliott Rd., Black Mountain, NC 28711.
828-298-2399.culturesedge@mindspring.com

## Eastern Pc Teachers Association Fall Gathering

**Dates:** October 10-12
**Location:** Freeland, MD
**Description:** A weekend of organizing, networking, and skills sharing for Permaculture teachers in the eastern U.S. and Canada.

**Contact:** Linda Felch, EPTA
21300 Heathcote Rd.
Freeland, MD 21053
410-343-DIRT
lfelch@jhu.edu

## 8th Annual Permaculture Design Course

**Lost Valley Center, Oregon**

**Date:** November 29-December 12
**Location:** Dexter, OR
**Description:** This two-week course will cover permaculture philosophy and method-ology in depth, and will explore and integrate such topics as appropriate technology and housing, energy conservation, low maintenance organic gardening, edible landscaping, tree crops, perennial edibles and medicinals, water and soil management, community economics, and more. Lost Valley is an intentional community, a non-profit educational center, and a developing permaculture site located on 87 acres near Eugene.

**Instructors:** Rick Valley is owner and operator of Northern Groves Bamboo nursery in Corvallis, OR. He is particularly knowledgeable about wetlands restoration, under-utilized plants, seed gathering, culinary herbs, and fiber plants. Jude Hobbs is owner of Cascadia Landscape Design and an associate with Agro-Ecology Northwest, a business that does research and consultations with small scale farmers. Jude helps create edible, bird-attracting, and native landscapes while integrating permaculture principles, with a special interest in hedgerow development. Tom Ward is a wildcrafting expert and herbologist. He has published *Greenward Ho! An Ecological Approach to Sustainable Health*, and has developed and taught a permaculture curriculum at D-Q University, a Native American/Chicano college in Davis, CA. Toby Hemenway is contributing editor of *The Permaculture Activist*, at work on a book about permaculture sites in North America.

**Cost:** $750-$950, sliding scale, includes tuition, organic vegetarian meals, lodging, field trips, curriculum materials, and a subscription to *The Permaculture Activist*. Limited work exchange available.

**Contact:** LVEC, 81868 Lost Valley Lane
Dexter, OR 97431 ph: 541-937-3351; www.efn.org/~lvec

## Ontario Permaculture Community Action Worknet

**1998 Workshop Calendar**

**July 10-12Gilmour, north of Belleville**
Earthhomes: Building with tires, Edible landscaping on the roof; Passive solar design, Creating herb spirals

**Sept 18-20 Delta, NE of Kingston**
Wild Orcharding: cultivating and harvesting the wild; Cider pressing; Strawbale construction; Sustainable community economics

**Description:** Each workshop runs from Friday evening to Sunday afternoon, the first half consisting of an "Introduction to Permaculture," facilitated by PCAW instructors. After lunch on Saturday, we will focus on the site itself. The hosts will help us to explore the assets and attributes of their dwelling place. We will then practice our new design skills by examining the successes and failures of the site and any future plans. There may be a practical, "hands-on" project, depending on the wishes of the hosts.

**Cost:** Cdn$125.00 - $200.00, sliding scale, includes all food, tuition and materials. Bring your own tent. Discounts will be considered if attending subsequent workshops. Some scholarships may be awarded. Menus are generally vegetarian but we will be as flexible as possible. Please tell us of dietary restrictions when you register. Early registration is recommended. A $50.00 non-refundable deposit is required, payable to PCAW. Contact us if you need child care.

**Contact:** PCAW
104 Bridlewood Blvd.
Agincourt, ON
M1T 1R1 Canada
416-497-5746
mulchman@web.net

# EVENTS

## Permaculture Design Practicum
### Pennsylvania Dutch Country

**Dates:** October 17-24
**Location:** Mt. Nebo, Lancaster County, PA
**Description:** Join us in designing a Permaculture Education & Demonstration Center. This one-week Design Practicum will introduce Permaculture and focus on Design, including landuse planning; water catchment, cleaning, and reuse; sustainable building technologies; alternative energy sources; organic food production; and community economics.
This course, following a PC Fundamentals Course, will qualify participants for a Permaculture Design Apprentice Certificate. If you have no previous Permaculture experience, we will provide a list of required readings.
**Instructors:** Monica Kuhn, Darrell Frey, John Irwin, and guests
**Costs:** $490 includes meals, tuition, camping on site. Indoor accommodations by arrangement.
**Contact:** John Irwin
130 Creamery Road,
Pequea PA 17565-9712
(717) 284-6318; fx/-4425
pcdirect@lancnews.infi.net

## Permaculture Design Course
### Northwest Pennsylvania

**Dates:** August 3-16
**Location:** Sandy Lake, PA
**Description:** Intensive certificate training at Three Sisters bioshelter and market garden farm in rural Western Pennsylvania. Students will develop a design to bring the complex site closer to an ideal of sustainability. Focus includes further development of pond and gardens, application of appropriate technologies to the bioshelter, and addition of more perennials to the landscape. A unique opportunity to evaluate and design a working permaculture ten years into its development. Besides the farm and bioshelter, we will study a nearby 10-acre woodland homestead.
**Instructors:** Course leader Darrell Frey is the principal designer of Three Sisters' bioshelter, co-designer of the farm, and a consultant to Harmony Homestead at Slippery Rock University. He has over ten years experience teaching Permaculture. Additional instructors will be announced.
**Contact:** Darrell Frey
134 Obitz Road
Sandy Lake, PA 16145
Tel. 412-376-2797
defrey@toolcity.net

## Permaculture Design Courses
### Crystal Water Village, Australia
**with Max Lindegger & Frances Lang**

**Dates:** August 1-15
October 17-31
**Location:** Near Maleny, Queensland
**Contact:** Global Eco-Village Network (GEN) Oceania
59 Crystal Waters, MS 16,
Maleny Qld 4552
Australia
Tel: +61+7-5494-4741,
Fax/-4578,
lindegger@gen-oceania.org
http://www.gaia.org/gen-oceania/index.html

## Permaculture Design Course
### Freeland, Maryland

**Dates:** July 11-26
**Location:** Heathcote Center, outside Baltimore
**Description:** Annual Permaculture Design Course at Heathcote Community, a 35-acre land trust property held by the School of Living.
**Instructors:** Dawn Shiner, Frank Hyldahl and others
**Contact:** Heathcote Center
21300 Heathcote Rd.
Freeland MD 21053
410-343-DIRT
lfelch@jhu.edu

## Five-week Permaculture Experience in Mexico

Tamu Tariaticha, the Permaculture community in Michoacan , Mexico is offering a five-week Permaculture Internship Training from July 4 to Aug 7, 1998. In addition to a full Permaculture Design Certificate Course (taught by Skye of Earthcare Education) the program will offer hands-on experiences in such areas as earthworks, water storage and treatment systems, organic architecture, alternative building methods, nursery production, beekeeping, biodynamics, natural healing therapies, medicinal plants and their uses, traditional "sweat lodges," introductory Spanish, food harvesting and processing, and environmental education with local indigenous communities. Other renowned teachers will include David Farrelly *(Book of Bamboo)* and Robin Clayfield *(You Can Have Your Permaculture and Eat It Too)*. The course is endorsed and recognized by the Permaculture Institute of Mexico.

US$1,300- includes all accommodations and food. For more details contact: Tamu Tariaticha, Apdo. 391, Patzcuaro, Michoacan, Mexico. Tel. (52) 43-131430, or email skye@tortuga.com or david@tortuga.com or checkwww.tortuga.com/internship/

## Permaculture Fundamentals For Women
### Black Mountain, North Carolina

**Dates:** August 13-21
**Location:** Earthaven Village near Asheville, NC
**Description:** An eight-day intensive covering the principles and practices of permaculture systems with an emphasis on the issues of special concern to women. Camping or limited indoor accommodation by arrangement.
**Instructors:** Patricia Allison, Mollie Curry and guests
**Cost:** $800-550 sliding scale includes tuition, camping, curriculum materials, and subscription to *The Permaculture Activist.*
**Contact:** Culture's Edge
1025 Camp Elliott Rd.
Black Mountain, NC 28711
828-298-2399
culturesedge@mindspring.com

## Permaculture Design Workshop Paraguay

**Dates:** August 10-20
**Location:** nr. Guarambarè, Paraguay
**Description:** The workshop includes sections on ecological design principles, design application of appropriate technologies, and economic, social and ethical considerations in Permaculture design. Themes treated include energy, nutrient cycles, cultivated systems, potential catastrophes, water, buildings, urban Permaculture, alternative economics and bioregionalism. Students will form teams and design the course site, a small farm. The design will integrate human activity with the contour, soil, solar energy, and water flows of the site to provide water, food, shelter, energy, and other patterns supportive of the residents. All lessons and activities will focus on the design process for this site. We are looking for a capable English-Spanish translator who wants to take the workshop.
**Instructors:** Dan and Cynthia Hemenway, editors and publishers of The International Permaculture Solutions Journal.
**Cost:** Limited scholarships are available. Child care can be arranged with advance notice.
**Contact:** Stelvio Ravasio
Correo Guarambarè,
Manuel Dominguez 592
PY-2670 Guarambarè,
PARAGUAY
595+98-444-336 ph/fx
(4pm-6pm EST)
Send International Postal Reply Coupon for a preregistration packet.

# Networks & Resources

## Continental Bioregional Council in Mexico

The Second Bioregional Council of the Americas will take place November 21-28, 1998 in Mazunte, Sanctuary of the Sea Turtle, in the great watershed of the coast of Oaxaca, Mexico. The theme of the event will be "Bioregionalism in Action." Field trips and interaction with local cooperatives involved in organic agriculture (coffee, cacao), micro-enterprises, eco-tourism, sea turtle conservation, ecological restoration, and construction are planned, as well as the workshops, cultural presentations, ceremonies, and other activities characteristic of bioregional celebrations.

The host bioregion extends from Puerto Escondido to Puerto Angel and includes the watersheds of the Copalito, Tonameca, Cozoaltepec and Colotepec Rivers. Topography and ecosystems range from coastal to hills, high jungle, and mountain pine forests, each in varying states of degradation, alteration, conservation, or restoration.

Accommodations will be beach camping or cabins.

For more information contact Turtle Island Office, 4035 Ryan Road, Blue Mounds, WI 53517 (tel. 608-767-3931; fx/-3932; email: cressprin@aol.com).

In Mexico, contact Mauricio D'Acosta (Toluca), tel (72) 32-0139, fax (713) 157-29;

Hector Marcelli (Puerto Escondido), tel (958) 210-26\casa, (958) 210-27 (message), e-mail marcelle@laneta.apc.org;

Ecosolar, Erika Valencia (D.F.), tel (5) 543-7398, fx/-4431, e-mail ecosolar@laneta.apc.org;

Hermilio Lopez Bustamente or Angeles Mendez (Mazunte), fax (message) (958) 405-41 or -49. Δ

## Intern / Apprenticeship Directory

Working as an intern or apprentice is one of the best ways to learn about organic farming. It can be a mutually beneficial arrangement for both farmer and intern, though often they will have different ideas about the amount of work required, time spent on education and training, and issues such as housing and compensation. Coming to a clear agreement at the beginning of the internship will prevent many problems further down the road. Several organizations have written guidelines for farmer/intern agreements, including Northeast Workers on Organic Farms, Maine Organic Farmers and Gardeners Association, Northeastern Organic Farming Assoc. of New York, NOFA Vermont, and Ohio Ecological Food and Farm Assn.

Contacts for all of these and many more are available in an extensive Directory of Organic Farming Apprenticeship Programs compiled by Eric Toensmeier of NOFA-Massachusetts. It includes programs in the Northeast, Southeast, Midwest, and Western US, as well as Canadian and International contacts. You may get a copy of this handy guide by writing to: NOFA-Mass., 411 Sheldon Rd., Barre, MA, USA 01005 or by web surfing to <http://www.nofa.org>. Δ

## Paulownia Timber Supply Sought

Robert Charles Limited, a clothing manufacturer in New Zealand, is seeking a supply of high-quality Paulownia wood for the production of specialty packing boxes for their premium clothing line. The lumber they require is not available in New Zealand, and they are now looking in the United States.

The company needs a relationship with a grower who can produce wood under these requirements:

1. Reliable supply of Paulownia
2. Board dimensions: 500-2000mm x 200-600mm x 20-100mm
3. Lumber from trees at least ten years old.
4. Knot free, and with tight rings
5. Quantities of 50 cubic meters.

Contact Robert Charles Limited by email: robert@robertcharles.co.nzΔ

## The Kansas City Food Circle

Organizers of the Kansas City Food Circle Project educate the public about the environmental and health dangers of industrial scale, petrochemical-dependent agriculture. Their central purpose is to increase dramatically the demand for regionally grown, organic food, and to help small organic family farmers—whom they believe are the best stewards of the land—stay on the land.

"The Food Circle links many diverse elements of the local food system. Small organic vegetable farmers in western Missouri and eastern Kansas are able to supply healthy, vibrant produce conveniently to local consumers through subscription buying programs, through farmers markets, neighborhood drop-off centers, restaurants, grocery stores, and small businesses that provide value-added products."

Kansas City Food Circle brings regionally grown organic produce and free range meat and eggs to the area. Membership is $20/year; families $30, low-income members $10. Contact K.C. Food Circle Project, PO Box 45195, Kansas City, MO 64171. Their telephone hotline, 816-374-5899, provides continuously updated information on subscription buying services, local farmers' markets, and current lists of organic growers and their products. Δ

## City Farm Helps Hungry in Montana

With a conscious grasp on the importance of regionally produced food, the Garden City Harvest Project is linking needs with yields in Missoula, Montana. One in five Missoulans live in poverty and need healthy food; the project will produce and distribute food, and teach self-sufficiency skills at the same time.

Garden production and education take place at a city farm and at five neighborhood gardens. Besides education, the group organize gleanings, sponsor a "Grow-A-Row" Program where people plant extra food in their gardens to donate to the hungry, and sell some of the food through a CSA to those who also want to support local farming.

"When we revive our regional tradition of producing our own food, we will improve our local economy in the process." The Garden City Harvest Project encourages local food production, teaches people valuable skills, demonstrates the often-overlooked productive capacity of our cities, and helps feed those in need.

To find out more, volunteer, donate food or money, or get information on college-level opportunities, contact Missoula Nutrition Resources, 301 West Alder, Missoula, MT 59802; 406-523-FOOD. Δ

## Ethical Investment Fund Supports CSAs

Equity Trust, Inc. has created a revolving-loan fund for CSAs to acquire and develop agricultural land with appropriate conservation easements and/or other tenure arrangements that serve both farmers and communities. Their Fund for Conservation and Community Supported Agriculture allows investors to make unusually safe, flexible financial investments that support progressive social change. Equity Trust also provides technical assistance and advises CSAs on lend tenure issues. Contact: 539 Beach Pond Road, Voluntown, CT 06384. 860-376-6174. Δ

## Lost Valley Now Publishes *Talking Leaves*

Originating nine years ago with the Deep Ecology Education Project, *Talking Leaves: A Global Journal or Spiritual Ecology/Activism* is now being published three times a year by Lost Valley Educational Center in Dexter, OR. Lost Valley is both an intentional community and a learning center for permaculture and sustainable living skills.

The magazine aims to be a "lively, articulate voice for our evolving ecological culture, expressing and inspiring the deep heart connection that precedes any meaningful changes in how we live on the planet."

Each issue brings together practical information, personal stories, global networking resources, insight, and inspiration, while profiling people and projects that are making positive and sustainable differences.

The current issue, focused on "Education for an Ecological Society," features over 20 articles, including contributions by Dolores LaChapelle, Joseph Cornell, Satish Kumar, and Ocean Robbins. Themes for upcoming issues are: "Art and Ecology" (Summer/Fall 1998) and "Visions of an Ecological Society" (Winter 1998). *Talking Leaves* welcomes contributions of articles and artwork from readers.

Subscriptions cost $18/yr ($30/yr international), and are available from *Talking Leaves*, 81868 Lost Valley Lane, Dexter, OR 97431; 541-937-3351; lvec@aol.com; http://www.efn.org/~lvec.

Lost Valley is offering special membership rates that include a free one-year subscription to *Talking Leaves*. Student/senior/low income $20; Regular $35; Family $50; Sustainer $100; and Benefactor $1000. Δ

## Nitrogen-Fixing Tree Seed Available for New Forests

The New Forests Project provides packets of tree seeds, technical information, and training materials free of charge to groups worldwide who are interest in starting reforestation projects with fast-growing, nitrogen-fixing trees. Available for immediate distribution are high quality seeds of *Leuceana leucocephala* (ipil-ipil), *Prosopis juliflora* (mesquite), *Gliricidia sepium (madre de cacao), Cajanus cajan* (pigeon pea), *Acacia nilotica* (Egyptian thorn), *Cassia siamea* (yellow cassia), *Acacia auriculiformis, Acacia mearnsii* (black wattle), *A. tortillis* (umbrella thorn), *Albizia lebbeck* (East Indian walnut), *Dalbergia sissoo (yette), Robinia pseudoacacia* (black locust) and *Gleditsia triacanthos* (honey locust)

For more information or to receive a reforestation packet, write to: Felicia Ruiz, Coordinator, World Seed Program, The New Forests Project, 731 Eighth Street, SE, Washington DC 20003, USA; Phone 202-547-3800, fax 546-4784. Please provide an environmental description of your area, including elevation, average annual rainfall, length of rainy and dry seasons, high and low temperatures, soil characteristics and how you intend to use the trees (fuelwood, lumber, forage, soil conservation, soil enhancement, etc.). Δ

## Apprenticeships at UC-Santa Cruz

The Center for Agroecology and the University of California Extension is offering an intensive six-month training course in organic gardening and small-scale farming entitled the Apprenticeship in Ecological Horticulture. The program will run April 12 - October 15, 1999 at the UC-Santa Cruz Farm and Garden. The course emphasizes hands-on learning with instruction in organic horticultural methods (soil fertility, cultivation, composting, propagation, irrigation, greenhouse management), cultivar requirements (vegetables, herbs, flowers, fruits), pest and disease considerations, and marketing (including a Community Supported Agriculture program). Both garden and field-scale production are included.

Application deadline is November 2, 1998; tuition is $3000. A few whole and partial tuition waivers are available for minorities and economically disadvantaged individuals. Class is limited to 35 students. For further information and to receive an application brochure, contact:

Apprenticeship Information, Center for Agroecology
UC Santa Cruz, 1156 High St.
Santa Cruz, CA 95064
Web site: http://zzyx.ucsc.edu/casfs or call 408-459-2321
Ann Lindsey, Apprenticeship Coordinator

## Apprentices Needed on Long Island Farm

Quail Hill Community Farm, a 150 member, pick-your-own, CSA program grows mixed vegetables, extensive cover crops, raspberries, apples and young peach orchards on 25 certified organic acres, and maintains a small flock of laying hens. The farm also generates income by managing another 80 acres. This involves seeding fields, field mowing, garden design and maintenance, and composting.

Quail Hill is seeking apprentice to assist with planting, cultivation, greenhouse upkeep, harvesting, care of tools and tractors, and the supervision of CSA members, who pick the bulk of their own shares. The work week is 5 1/2 days, including Saturday member harvest day. Only off-farm housing is available. Stipend is $250 per week, which includes a housing allowance.

Quail Hill farm is a project of the Peconic Land Trust, a nonprofit conservation organization which has protected over 2000 acres of land on Eastern Long Island. The farm is located on a 192-acre preserve in Amagansett, NY, minutes from dunes and ocean beaches.

Interested, hard working persons please contact Scott Chaskey: 516-267-8492 or regular mail: PO Box 2088, Southampton, NY 11969. Δ

## NC College Offers Sustainable Farming Program

With the cooperation and encouragement of a group of successful local farmers, Central Carolina Community College in Pittsboro, NC, is offering a Certificate in Farm Stewardship. Instructors for the Sustainable Farming Program include permaculture teacher Harvey Harman, whose family-run Sustenance Farm is both a training site and a demonstration of economically viable permaculture design.

The program is intended to provide students with both the entrepreneurial and technical skills necessary to develop and manage a profitable, environmentally sound, community-based, small agricultural enterprise. Classes are taught hands-on, and include field trips. A five-acre land lab is being developed to offer training and demonstration at the campus.

Core courses include "Overview of Sustainable Agriculture," "Basic Farm Construction," and "Sustainable Farming R.E.A.L." Electives include "Small Livestock," "Greenhouse Management/Construction," "The Art and Science of Composting," "Vegetable Production Lab," "Goat Dairy," and "Making Money With Horses." Internships may also count towards the Certificate. Most classes are $35 and run from 12-15 weeks. Central Carolina Community College, Small Business Assistance Ctr., 919-545-0568; Tony Kleese, 919-968-4300; tkleese@aol.com. Δ

## Terminator Seed Threatens Open-Pollinated Crops

On March 3, 1998, the USDA and the Delta and Pine Land Company, a Mississippi firm and the largest cotton seed company in the world, announced that they had jointly developed and received a patent (US patent #5,723,765) on a new, agricultural biotechnology. Benignly titled, "Control of Plant Gene Expression," the new patent will permit its owners and licensees to create sterile seed by cleverly and selectively programming a plant's DNA to kill its own embryos. The patent applies to plants and seeds of all species.

The result? If saved at harvest for future crops, the seed produced by these plants will not grow. Pea pods, tomatoes, peppers, heads of wheat and ears of corn will essentially become seed morgues. In one broad, brazen stroke of his hand, man will have irretrievably broken the plant-to-seed-to-plant-to-seed cycle, THE cycle that supports most life on the planet. No seed, no food...unless...unless you buy more seed.

This is obviously good for seed companies. As it turns out, it is also good for the USDA. The USDA and Delta & Pine Land Co. have applied for patents on the terminator technology in at least 78 countries! Once the technology is commercialized, the USDA will earn royalties of about 5% of net sales.

The Terminator Technology was created to prevent farmers from saving non-hybrid, open-pollinated or genetically altered seed sold by seed companies. Open-pollinated varieties of crops like wheat and rice—staples for most of the world's population—are typical examples.

*Excerpted and used by permission from a longer piece ©1998 by Geri Guidetti, who writes for The Ark Institute, PO Box 142, Oxford, OH 45064. web site @ http://www.arkinstitute.com*

# Permaculture Books

***Introduction to Permaculture*** **20.00**
Bill Mollison w/Rene Mia Slay. 2d ed. (1994) 216 pp. paper. illus. The basic argument for permanent agriculture: how to feed and house yourself in any climate with least use of land, energy, and repetitive labor. New material on patterns, cold climate. Supercedes *Pc I & II.*

***Permaculture in a Nutshell*** **9.00**
Patrick Whitefield. (2nd ed. 1997) 80 pp. paper. illus. A back pocket gem, this book draws on the best examples in Britain and elsewhere to show how and why permaculture works. Excellent primer for introducing to friends.

***The Permaculture Designers Manual*** **45.00**
Bill Mollison. (1990) 576 pp. cloth. 450 illus. + 130 color photos. Global treatment of cultivated ecosystems. A resource for all landscapes and climates. Lucid illustrations by Andrew Jeeves bring Mollison's concepts to life. Essential, in-depth treatment of earth repair and practical design.

***Earth User's Guide to Permaculture*** **16.00**
Rosemary Morrow (1994) 152 pp. paper. Abundantly and charmingly illus. An informative and practical guide to permaculture, with exercises and real-life examples. Learn how to design a permaculture system on your own land, whether city balcony, suburban garden, or country farm.

***Earth User's Guide to Permaculture*** *New Title!*
***Teacher's Notes*** **17.00**
Rosemary Morrow (1997) 160pp. paper. illus. Peer reviewed and years in development, this essential guide supplies overview, learning objectives, suggested graphics, terms, thorough syllabus content, student activities, resources, and references for 40 subjects from ethics, ecology, climate, and earthworks, through creative problem solving, bioregions, and suburban Pc.

***Restoration Forestry:***
***A Guide to Sustainable Forestry Practices Worldwide*** **27.00**
Michael Pilarski, ed. (1994) 526 pp. paper. illus. A combination resource guide to organizations and collection of essays on all aspects of sustainable forestry. Undoubtedly the most complete collection of material on the subject to date. Indexed by books, periodicals, articles, and general subjects.

☞***Forest Gardening*** SALE! **13.50** ~~18.00~~
Robert A. de J. Hart. 2d ed. (1996) 256 pp. paper. illus. Revised for N. American gardeners, this classic collection of essays on seven-story permaculture by the grand old man of agroforestry presents a gardener's ecology: water, energy, craft, herbs, health. Hart's tales of tree life and forest cultures thrill to the root.

***Plants for a Future***
***Edible and Useful Plants for a Healthier World*** **30.00**
Ken Fern (1997) 300 pp. paper. illus. Based on research conducted in Cornwall, England, and covering useful trees and shrubs, plants for shade, water plants, perennial veggies, ground covers, hedges, and more, this book describes plant characteristics and cultural requirements in depth. A fascinating read with appendices cross-referencing uses and habitat preferences, this is the book to get for temperate climate gardeners.

***How to Make a Forest Garden*** **25.00**
Patrick Whitefield. (1996) 192 pp. paper. illus. + 8 color plates. The most comprehensive guide to the subject: clearly written, well organized, and attractive, with British examples. Whitefield details garden design, pest & weed control, and planting techniques for temperate zones. Descriptions of 125 useful plants.

☞***Living Communities:*** SALE! **9.75**
***A Permaculture Case Study at Sol y Sombra*** ~~13.00~~
Ben Haggard. (1993) 152 pp. paper. illus. Permaculture through the eyes of a master gardener and the design of a particular place, the Miller estate at Santa Fe, NM. Valuable for its insights into the observation process. Haggard's prose is lyrical and his conclusions reach beyond his desert home.

***The Basics of Permaculture Design*** **25.00**
Ross Mars. (1996) 170 pp. paper. illus. A valuable handbook for the practical property designer. Strong on observation, mapping, design process. Explains arcana such as guilds, soil tests. Compares subjects across different scales: suburban yard to whole farm planning. Gracefully illustrated by Martin Ducker.

***The Flywire House:***
***A Case Study in Permaculture Design for Fire*** **10.00**
David Holmgren. (1993) 15 pp. paper. illus. spiral-bound. Succinct and illustrated with professional drawings of both building details and landscape plans, this slim volume covers a much-neglected aspect of property design with grace and clarity. Like good insurance, it's worth more than you pay.

***Our Ecological Footprint:*** **15.00**
***Reducing Human Impact on the Earth***
Mathis Wackernagel & William Rees. (1996) 160 pp. paper. illus. A wealth of information about the ecological impact of many human activities expressed as energy/acreage equivalents. Cuts through the mush about sustainability, suggesting humans are already 30% over the planet's sustainable limit. Invaluable!

***The Cobber's Companion*** New Title! **22.00**
Michael G. Smith. (2nd ed. 1998) 134 pp. paper. illus. A practical and clearly written guide to building with *cob,* or lumps of earth and straw; with charming illustrations and *joie de vivre* throughout. Covers soil composition, sitework, materials, foundations, technique, sculpture, roofing, floors, finishes, tools.

***Chicken Tractor:*** *New Straw-Bale Edition!*
***The Gardener's Guide to Happy Hens and Healthy Soil*** **20.00**
Andy Lee. (2nd ed. 1998) 320 pp. paper. illus. Chicken tractors are mobile coops, a clever way of using domestic poultry (or other animals) for pest control and garden fertility with very little work on your part. Detailed info on breeds, costs & more.

☞***Cornucopia: A Sourcebook of Edible Plants*** ~~40.00~~
Stephen Facciola. (1990) 678 pp. paper. Lists over 3,000 species with all commercially available named cultivars, sources of seed, plants, descriptions, uses, cultural notes, food products; indexed by common name, families and genera. A monumental work useful to every garden designer. SALE! **30.00**

***Seed to Seed:***
***Seed Saving Techniques for the Vegetable Gardener*** **20.00**
Suzanne Ashworth. (1991) 222 pp. paper. illus. The best single-volume guide to saving our vegetable heritage. Discusses techniques and references botanical classification, pollination, crossing and isolation, seed production, harvest, processing, and viability for more than 150 vegetables and herbs.

☞ ***The Permaculture Book of Ferment & Human Nutrition*** SALE! **22.50** ~~30.00~~

Bill Mollison. (1993) 288 pp. paper. illus. 35 color photos. Comprehensive global survey of methods extending the author's life-long concern with core human survival issues. Treats food storage, preservation, cooking, fungi, yeasts, grain, legumes, roots/bulbs, fruits, flowers, nuts, oils, aguamiels, fish, algae, meats, birds, insects, dairy, beer, wine & beverages, condiments, agricultural ferments, hygiene, food toxins, vitamins, enzymes, trace minerals & nutrient sources, & use of earths to enhance food value.

***The Humanure Handbook:***
***A Guide to Composting Human Manure*** **19.00**

Jos. C. Jenkins (1994) 198 pp. paper. illus. Delves deeply into the ever-present subject of human waste. Examines the various systems for disposal and treatment, and recommends thermophilic (hot) composting as the simplest, cheapest, most ecological method. Writing from personal experience and extensive research, Jenkins answers all the questions you never dared ask!

***The Earth Manual:***
***How to Work on Wild Land Without Taming it*** **16.00**

Malcolm Margolin. (1985) 238 pp. paper. illus. A friendly guide to earth repair in the wild, with chapters on wildlife, tree-planting, felling, pruning and repair, mulch, erosion control, seeding, transplanting, trailmaking, ponds, and doing it all with children. Filled with good common sense.

***The Man Who Planted Trees*** **8.00**

Jean Giono. (1985) 56 pp. paper. This timeless and inspiring tale of one man's dedicated efforts to reverse desolation has been beautifully illustrated with 20 woodcuts by Michael McCurdy. A story for all ages. SALE! **15.75**

☞ ***Directory of Intentional Communities*** ~~21.00~~

Newly Revised (1995) 426+ pp. paper. illus. More than 500 North American and 50 international communities, 250 alternative resources, 31 articles on community living. Comprehensive, exciting survey of a maturing movement for cultural transformation.

***Crystal Waters Village:***
***Conceptual Permaculture Report*** **17.00**

Max O. Lindegger & Robert Tap. (1989) 80 pp. pap. illus. Advanced proposal for an agricultural economy at the first permaculture village in Australia. Pioneering work. SALE! **9.75**

☞ ***Reclaiming Our Cities and Towns*** ~~13.00~~

David Engwicht. (1993) 190 pp. paper. illus. Insightful critique of auto traffic: how it destroys the fabric of urban life. An eco-city design primer linking the built environment with social life.

***Urban Permaculture: A Practical Handbook*** **13.00**

David Watkins. (1993) 152 pp. paper. illus. How-to's of growing food and saving energy in the urban household. Domestic waste, green economics, non-toxic cleaners, garden layouts, species lists, breeds of small animals.

☞ ***Village Wisdom / Future Cities*** SALE! **12.00**
***The Third Int'l Ecocity and Ecovillage Conference*** ~~16.00~~

Richard Register and Brady Peeks, eds. (1997) 227 pp. paper. illus. Compiles speakers' offerings on agriculture, housing, wastewater, women's issues, and much more. A good balance of cutting edge theory and living examples from many cultures and perspectives. Expand your concept of what's possible for cities!

***Boundaries of Home:***
***Mapping for Local Empowerment*** **10.00**

Doug Aberley, ed. (1993) 138 pp. paper. illus. Mapping is the first step toward reclaiming the territory. How to envision the landscape of home: 19 passionate essays on bioregional mapping, theory & examples from city and country, USA, Canada, Britain. Info on using GIS, resource assessments, review of cartographic sources, many and varied example maps.

***New Money for Healthy Communities*** **16.00**

Thomas H. Greco, Jr. (1994) 201 pp. paper. illus. Demystifies money and describes how it may be transformed to support local economies. Describes L.E.T.S. and other local trading programs, alternative currencies, barter and labor service systems, with historic examples. A prime resource!

***Interest and Inflation-Free Money*** **15.00**

Margrit Kennedy. (1995) 144 pp. paper. illus. Pinpoints interest and compound interest as the fatally flawed assumption which both drives the global economic system and wrecks the earth. Proposes sweeping tax, land, and monetary reforms.

***Sacred Land, Sacred Sex: Rapture of the Deep*** **25.00**

Dolores LaChapelle. (1988) 386 pp. paper. illus. "How do we begin moving toward a real culture? All we have to do is raise one generation of children right--according to the pattern laid down by hundreds of thousands of years of our mammalian ancestors." A manual of deep ecology, a guide to ritual, an essential history of our species. ***New Title!***

☞ ***Get A Life!*** SPECIAL OFFER! **15.00** ~~20.00~~

***How to make a good buck, dance around the dinosaurs, and save the world while you're at it...***

Wayne Roberts & Susan Brandum. (1995) 344 pp. paper. The subtitle says it all. Witty, inspiring, full of lively examples of people doing well by doing good. A wild walk on the smart, cheap, and funny side of an economy in free fall. Want to get "creative" and "economics" in the same sentence? Read this book.

Prices subject to change
**Add 10% shipping to all orders, minimum $2.**
N. Carolina residents please add sales tax.

**The Permaculture Activist**
**Post Office Box 1209**
**Black Mountain NC 28711 USA**

## Permaculture Videos

Please include $3.00 shipping for one or both films

***The Global Gardener*** **37.50**

120 min. VHS. (1991) Bill Mollison's review of permaculture accomplishments around the world. Made for Australian Broadcasting Corp. and aired to national acclaim. Four half-hour segments highlight subtropical, drylands, temperate, and urban systems with footage from developed sites in India, So. Africa, Australia, the U.S., U.K., and Europe.

***In Grave Danger of Falling Food*** **35.00**

56 min. VHS. (1989) A wacky romp through Mollison's life as an outlaw. Cartoon cutaways and bizarre sound effects seem no stranger than Bill loping along the street in front of Aussie suburban sleaze, guerrilla planting hazelnuts. A campy period piece, this film tells the permaculture story with verve and imagination.

# LETTERS

**Kudos for Taking "The Big View"**

Dear Peter,

Reading the February, 1998 issue of *The Permaculture Activist,* I suddenly realized that you are running the only magazine with what might be called a "whole-of-society" slant, that is permaculture in its widest sense of Permanent Culture. I cannot think of any other magazine with this breadth, others are mostly pushing their "lobby-group" view, some good, some bad, maybe, but not looking at society as a whole. The Bernard Lietaer article *(From the Real Economy...to the Speculative)* was especially thought provoking.

With Kind Regards,
David Noël, Director, Tree Crops Ctr.
PO Box 27,
Subiaco, WA 6008, Australia
treecrop@AOI.com.au

**Inspired by Permaculture**

Permaculture Activist,

For the past two years I have been working towards a bachelor's degree in Environmental Studies at the Naropa Institute. I have felt depressed, hopeless, and angry most of the time learning about all the problems on Planet Earth.

Finally, I enroll in a beginning Permaculture Course taught by Sandy Cruz. I am for the first time encouraged and hopeful. I am reading the February issue of *The Permaculture Activist* and am so excited because everywhere I read, something positive and healing is occurring somewhere in the world.

I am seriously considering taking the 5-week course in Mexico to really dive into what it is all about.

I am enclosing money for a subscription. Thanks for your good work.
Sincerely,
Paulette Julaura
Boulder, CO

**Using Permaculture in Cape Verde**

To whom it may concern,

My name is James Polachy and I'm a Peace Corp. Volunteer in Cape Verde. (a group of islands off the west coast of Africa)

I'm currently working with a farmer group called "Terra Boa" The group is facing many problems: wind, dry soil, lack of good water for irrigation, and insects. The group's one competitive advantage is their eagerness to try new technologies and motivation.

Any information or ideas that you could share with us would be greatly appreciated. Thank for your time. I look forward to talking with you.
James Polachy
CP 132, Espargos, Sal
Cape Verde, West Africa
<jpolachy@hotmail.com>
or through the Peace Corp Office
Peace Corps
CP 373, Praia, Santiago
Republic of Cape Verde
West Africa

**Meeting of the Minds**

Dear Peter,

We had only seen your publication once a few years ago, so were surprised when it arrived in the mail yesterday, and intrigued that this issue focuses on"Economic Transformation." I've been thinking long and hard on that subject during the quiet times this winter. The tone and thought quality presented in the *Activist,* beginning with the editorials on the inside front cover and continuing on, especially Toby Hemenway's pieces, were excellent, and we accordingly decided to subscribe. Subscription enclosed!

It wasn't until later that we discovered your very nice review of our book on page 23. The book has been reviewed many times in publications here and abroad; you are one of just a handful of reviewers who really grasped the magnitude and potential of what we tried to project.

Looking forward to future issues and provocative writing...
Sincerely,
Bob Gregson,
Island Meadow Farm
10301 SW Cemetery Road
Vashon, WA 98070
P.S. Incidentally, we concur that Bill Mollison's contributions are huge but not worthy of cult status. And improvements in the written materials are long overdue as described in the Jacke article.
*Editor's note: The book referred to above is titled* Rebirth of the Small Family Farm: A Handbook for Starting a Successful Organic Farm on the Community Supported Agriculture Concept.

**Compliments from Cork**

Dear Peter,

Many greetings to you from West Cork in Ireland. I want to say how much I enjoy *The Activist,* which I consider by far the best Permaculture magazine currently being produced. It has so much hands-on practical information and "hard" data. I am particularly looking forward to the Natural Building issue. There are clearly some very developed Permaculture thinkers and designers in the US and the magazine reflects their insights and wisdom excellently. It is my hope that here in Ireland we soon reach a similar state of evolution and are able to produce something like *The Activist!* I particularly enjoyed the Eco-Villages issue.
Keep up the good work!
Ron Hopkins



**Activist Openness Applauded**

I want to thank you for your wonderful publication. You should be commended for your openness and honesty in printing all sides of recent controversy. Also thanks to you for including in the Permaculture vision many related subjects: most recent examples are "New Energy Technologies" by Gary Schwartz [#37] and your own review: "Interest at the Root of All Evil." Both are wonderful overviews of the subjects, helping us to direct our attention to these vital subjects.
with grateful thanks,
Martha Shaw
Ashley Falls, MA



**Zone Six?**

Dear Peter,

I'd like to propose a conceptual addition to Permaculture—the addition of a "Zone 6." Noting that Zone 5 is the designation for "unmanaged, or barely managed wild systems," Zone 6 could designate non-contiguous, distant sites.

Special issues affecting Zone 6 would include Permaculture-related legal issues for absentee owners.

I own 200 acres (2.5 mile perimeter) in a place that I don't want to live—Illinois just north of St. Louis, Missouri. I would like to see permaculture practiced there. Surely there must be others in the same situation.

Toby Hemenway's brief article "Top Feeders, Bottom Feeders,...But No Middle Class" was excellent, although a little scary.
Frank Humiston
Santee, CA

**Research Request**

Dear Readers,

To continue my present work, I need the book *Climate: Present, Past, And Future, Vol. III* by Hubert Lamb. Please let me know if you have one to send me. Thanks a lot.
Emilia Hazelip
BP 217
F-11300 Limoux, France
Tel/fax: 33 4 68 31 51 11

Back Issues of

## *The Permaculture Activist*

| | | | |
|---|---|---|---|
| I, | 1 | July '85 | Permaculture In Oz |
| I, | 2 | Nov. '85 | Fruit & Nut Trees |
| II, | 1 | Feb. '86 | Garden Design |
| II, | 2 | May '86 | IPC 2 & PC Design Courses |
| II, | 3 | Aug. '86 | Int'l PC Conference Program |
| II, | 4 | Nov. '86 | Fukuoka; Keyline; Genetic Cons'vn; City Farms; Oceanic PC |
| III, | 1 | Feb. '87 | Networking; Natural Farming; D-Q Univ.; Children's PC |
| III, | 2 | May '87 | PC Restoration of Wild Lands; Design for Sacramento Farm |
| III, | 3 | Aug. '87 | Annual Planting Cycle |
| III, | 4 | Nov. '87 | Trees for Life |
| IV, | 1 | Feb. '88 | Marketing PC Products; Bamboo; Home Wastewater Treatment |
| IV, | 2 | May '88 | **Urban-Rural Links:** Economics & Community Development |
| IV, | 3 | Aug. '88 | Social Forestry; Gabions; Jap. Org. Ag.; Prodc/Cons. Coops |
| IV, | 4 | Nov. '88 | Multi-Story Tree Crops; Greening Dom. Repb; Runoff Gardens |
| 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 | **Water:** Forests &Atmosphere; Catchment; Nepal; Pond Design |
| VI, | 4 | Nov. '90 | **Urban Permaculture:** Ecocity Conf, Soil Detox, Suburbs & PC |
| #23* | | May '91 | **Politics of Diversity;** Greenhouse Mkt Gdn; PC in Nepal |
| #24 | | Oct. '91 | **Creativity in Design:** Examples; **Index Issues #1-23;** |
| #25 | | Dec. '91 | **Design for Community:** CSAs, Restoring Forest; Garden Ecol. |
| #26 | | May '92 | **Soil:** Our Past, Our Future: Fertility, Worms, Cover Crops |
| #27 | | Aug '92 | **Integrating Pc:** Deconstructing Utopia; Grassroots Organizing; Garden Polyculture; Pattern Learning; Living Fences |
| #28* | | Feb. '93 | **Structures:** Comm'ty Dsgn; LETS; Industry; Strawbale/Timber-frame Bldgs. |
| #29-30* | | July '93 | **Networks:** Special Media Rvw; Rural Reconstr'n; Leaf Conc.; Comm'ty Food Initiatives; Pc in Palestine; Do-Nothing Ed'n; *Feng Shui;* Companion Gdng; Nature Spirits; Wilderness; Biogeog.; Network Theory; Pc Acad. |
| #31 | | May '94 | **Forest Gdng:** Energy & Pc; Mushrm Cultn; Robt.Hart's F.G., Spp for N. Cal.; Alders; Agroforestry in Belize, China; Honeylocust; N-fixers |
| #32 | | April '95 | **Animals & Aquaculture:** Rare Breeds; Animal Polyculture; Small-scale Cattle; Goat Dairy; Keyline; Ramial Woodchips; Feral Chickens; Bee Plants; Constructed Wetlands; Reed Bed Sewage Treatment |
| #33 | | Dec. '95 | **Cities & Their Regions:** 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 | **Useful Plants:** Bamboo Polyculture in Vietnam; Medicinal Plants; Pest Control; Root Crops; Oaks; Rob't Hart's Forest Garden; Russian Plants; Autumn Olive; Regional Plant Lists; Seed/Plant Sources |
| #35 | | Nov. '96 | **Village Design:** Pattern Language; Consensus Democracy; Conflict; Amana, IA; Cerro Gordo, OR; Arthurdale, WV; Planning for Tribe; Earthaven, NC; Design for Catastrophe; Youth; Village Economics; EcoForestry; Natural Bldg. Matls.; Spirituality; Homeschooling |
| #36 | | Mar. '97 | **Climate and Microclimate:** Global Climate Change; Microclimate Primer; Weather; Windbreaks; Windicators; Low-Tech Sun Locator; Subtropical Forest Garden; North-facing Slopes; Dryland Strategies; Straw-Clay Construction; Straw/Plaster Beehive; Water Catchment |
| #37† | | Sept. '97 | **Tools and Appropriate Technology:** Dowsing; Workbikes; New Energy Tech.; Scythes; Japanese Saws; Start a Nursery; Paradise Gdns A-Frame & Bunyip Levels; Ram Pump; Greywater; Solar Moldering Toilet; Ferrocement; Log Yoke; Green Woodworking; Cookstoves... |
| #38† | | Feb. '98 | **Economic Transformation:** The Speculative Economy; No Middle Class Pc?; Worker-Owned Coops; WWOOF; Cooperative Comm'ty Econ.; No Money!; What Profits?; Holistic Financial Planning; Trad'l. vs. Modern Land Use; Adopt-A-Hive; Global Warming |

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*#23, #28, & #29-30 (dbl. issue) $7.50 each; †#37, #38 $6.00

## Next *PcA* Issue: #40 - *New Forestry*

## Deadline for submissions: October15th

# Natural Building Calendar

**August 1-6. Telluride CO. Making a Chair From A Tree with Don Weber.** Atlas Arckology, #1 Steeprock Rd., Box 306, Sawpit, CO 81430. 970-728-0186. atlas@rmi.com.

**August 8-9. LaFarge, WI. Stone Masonry Workshop.** Dreamtime Village, Rt. 1, Box 131, LaFarge, WI 54639. 608-625-4619. dtv@mwt.net Web: http://net22.com/dreamtime/index.shtml

**August 9-22. Mayne Island, BC, Canada. A to Zed of Cob, eh?** Cob Cottage Company, PO Box 128, Cottage Grove, OR 97424. ph/fx: 541-942-2005.

**August 14-16. Black Mountain, NC. Strawbale Construction.** Culture's Edge at Earthaven Village, 1025 Camp Elliott Rd., Black Mountain, NC 28711. 828-298-2399. culturesedge@mindspring.com

**August 30-September 12. Western Oregon. Thatching.** Cob Cottage Co.

**September 26-Oct. 2. Garberville, CA. Cob Construction Course.** Mike Smith, Island Mountain Institute, 220 Harmony Ln, Garberville, CA 95542. 707-923-5000.



# More LETTERS...

**Waldee Stick Correction**

Dear Friends,

Just a quick note about *PCA* #37. I made a Waldee Forest Inventory stick. While making it I believe I found an error in table # 1. I think the measurement for a 10" diameter tree should be about 8-3/8" not 9-7/16". ( I extrapolated between the 8" and 12" diameter values to obtain 8 3/8" for 10 inches in diameter.)

Please let me know if I made a mistake.

Permaculturally Yours,
Mark Reeves
Perrysville, IN

**A Woolly Proposition**

Dear Folks,

In the spirit of alternatives to present economic exchanges, as promoted by your publication, we'd like to offer you the enclosed sweater kit as a barter for a year's worth of subscription to *The Permaculture Activist.*

While true barter must aim at fair energy-value exchange and should therefore often have to ignore present day's price tags, to give you at least some guidelines (in case you choose to resell), when we trade this yarn for cash (wholesale to a yarn shop, even) we get $US 3.50/skein, or $40 for the complete kit, plus postage.

You may check with your spinner, weaver, or rare sheep enthusiast, that this is not some common, easily found yarn. It also didn't come into being by methods common to industrial countries' way of doing things.

Our Navajo-Churro sheep (a rare and hardy old breed) are fed hand-mown hay and the wool comes off their backs by the use of old hand shears. It is processed without the usual chemicals and spun (not by us) on restored antique equipment. But perhaps this is enough of a pep-talk.

Please begin our subscription with "Tools and Appropriate Technology," since that topic is of particular interest to me, not so much in view of how we should do things here, but rather to see what other alternative folks feel about what is "appropriate," as I occasionally write a little on such themes.

With regards to our world-view and way of doing things, we do not know of any specific box we'd neatly fit into, we have long been inspired by Bill Mollison's writings, even if our homestead may not be a model "Permaculture" After 20 years it is still evolving (perhaps "backwards"), open up front, while dogmatic and primitive at its core.

Best Regards,
Peter
Fairy Hill Farm, Vido Family
Perth, New Brunswick
EOJ 1V0 CANADA

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*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. Box 190-pa, Philomath OR 97370. -99

### Miscellaneous

Can anybody part with *New Alchemists Journal* #2? Am also looking for back issues of *Seriatim: Journal of Ecotopia.* I'm not a rich collector, just love to read and wonder. Send leads or greetings to Jorge Velázquez, PO Box 1261, Pigeon Forge, TN 37868-1261. Thanks! -39a

### Green Goods

SEEDS™ - Sustainable Edible Eco-Design System - Pc software for your PC. DOS & Windows compatible. Full satisfaction or full refund. $35 ppd. from Appropriate Systems Design, 1081 Milky Way, CA 95014. -39a

### Internships/Apprenticeships

Wanted: Summer Interns—Telluride, CO. Ecologically-minded, self-motivated individuals. A solar powered artisans guild is preparing to host sustainable building workshops, Summer '98. Send spicey resumé to Atlas Arckology, Box 306, Placerville, CO 81430. We will respond! -39

5-week Intensive Permaculture Course/ Self-Reliance Internship, July 1-Aug. 7, 1998. Incorporating the PC Design Course, high-altitude greenhouse and market gardening, aquaculture, grey-water systems, and medicinal herbs. Emphasis on permaculture livelihoods and integrated systems. Field trips to local farms and Pc sites. Jerome Osentowski and guest instructors. $1700 includes camping and all meals. -39

The Little Black Dog Permaculture Center, located in the Northern Catskills of New York State is offering internship positions for the summer/ fall of 1998. Projects for the period include: edible forest garden designing and planting, waterworks installations, active research in spiritual co-creating, alternative energy systems, and most likely more. Call or write to create a mutually beneficial experience. Ray Pealer. PO Box 162, Cherry Valley, NY 13320. 607-264-3422. -39a

### Help Wanted

Welcoming apprentices wishing to learn about strawbale construction, Perelandra gardening, flower and gem elixers. Terra Flora, 116 Montée St-André, St-André-Avellin, Quebec, J0V 1W0; 819-985-0894. -39

5 1/2 acres, Cottage Grove, OR. Assistance with permaculture design and implementation. Sharon Jean 33914 Row River Rd., Cottage Grove, OR 97424. -39

Help wanted for appropriate technology and community development program. Casa Juliana is a community dedicated to simple living, environmental sustainability & social justice. Location: South Texas. Mexican immigrant / farmworker community. English/ Spanish required. Room & board, stipend, health insurance. Contact Andy McDonald, RR 2, Box 133A, Alamo, TX 78516. 956-702-0524. -39a

### Services Offered

Trained horticulturist will manage and develop your permaculture property. Experienced with propoagation; did design course with Bill Mollison. Or, alternatively I am looking for a permaculture community of artisans. Jana 805-966-0013, <jananz@sprintmail.com> -39a

### Communities

UNAHWI RIDGE Community offers unique homes, rentals, workscapes, and amenities on 600-acre sustainable land preserve in southwestern NC mountains. Encouraging innovative business, agriculture, and education pioneers. Construction / site sales begin Spring '98. Information $3. 604 Grovemont Rd, Raleigh NC 27603.-39a

Namasté—Barnstead, NH 03225. Partners wanted: Aware, committed, alive with loving energies, ready to manifest. Ecovillage: Permaculture priority, partnerships, pods. Land trust, ecology/intimacy, longevity. Now: Namasté invites your story/ correspondence. -39

Santa Cruz Mountains—co-own and share collective house and 26 acres to create happy land, people, community. Mortgage 170K per share. 408-338-3855. -39

Forming small community on 195 acres of farm and woodland in NE Vermont. Seeking sincere, committed people to farm small-scale. Adam Salzberg, Box 81, Craftsbury, VT 05826. -39

Tired of dreaming about living sustainably in community? Leap! Join committed visionaries building a model ecovillage on 325 acres in the Southern Appalachians, near Black Mountain, NC.

We are fulfilling a vision of vibrant community living in awareness of the spiritual unity of all creation, in ways that heal, nourish, and connect us with the natural wourld. Earthaven's learning center, Culture's Edge, has presented courses in sustainable living since 1995.

For more information, send $15 for info packet and 6 newsletters: Box 1107, Black Mtn., NC 28711, or call Steve, 704-254-5613. http:/www.earthaven.org <Earthaven@mindspring.com.> -38a

Permaculture Santa Cruz seeks energetic, intelligent, creative, artistic, conscious beings to co-create Permaculture Community. Call Vince or Liz. 408-763-3848 -38a

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Seeking other Permaculturists in/near Boulder. Lindy.Shultz@Colorado.edu. 303-688-5779. -39



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- ☐ $45 - 3 yrs / 9 issues (U.S., Canada, Mexico only)
- ☐ $25 - 1 year overseas via surface mail ($30 via air)
- ☐ $65 - 3 yrs overseas, surface mail ($80 via air)
- ☐ $400, Lifetime Subscription ($600 overseas)

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# CALENDAR

**July 11-26. Freeland, MD. Permaculture Design Course.** Heathcote Center, 21300 Heathcote Rd. Freeland MD 21053. 410-343-DIRT. lfelch@jhu.edu

**July 13-August 9, Orcas Island, WA. Sustainable Living Apprenticeship.** Mike Lockman, WE-Design, PO Box 45472, Seattle, WA 98145. 206-323-6567.

**July 14-August 13. Austin, TX. Ecovillage Design Course.** Patricia DuBose Michael, 1206 Marshall Ln., Austin, TX 78703. 512-474-8981. Patricia_Michael@compuserve.com.

**July 25-26. Santa Fe, NM. Introduction to Holistic Management.** Christopher Peck, Box 23326, Santa Fe, NM 87502. 505-989-6676. CtopherP@aol.com

**July 26-August 8. Tlaxco, MEXICO. Sustainable Rural Development and Traditional Building.** Ianto Evans, Zopilote/Cob Cottage Company, PO Box 123, Cottage Grove, Oregon 97424; 541-942-3021 ph/fx: 541-942-2005.

**August 1-15. Queensland, AUSTRALIA. Permaculture Design Course.** Global Ecovillage Network-Oceania, lindegger@gen-oceania.org; http://www.gaia.org/gen-oceania/index.html

**August 3-16. Northwestern PA. Permaculture Design Course.** Darrell Frey, Three Sisters Farm, 134 Obitz Rd., Sandy Lake, PA 16145. 412-376-2797.

**August 7-9. Celo, NC. Fifth Annual Southeastern Permaculture Gathering.** The Summer Gathering, Celo Community, 272 Seven Mile Ridge Rd. Burnsville, NC 28741. SASE Please.

**August 8-9. Santa Fe, NM. Introduction to Holistic Management.** Christopher Peck. 505-989-6676. CtopherP@aol.com

**August 10-20. Near Guarambarè, PARAGUAY. Permaculture Design Course.** Send IPRC for info: Stelvio Ravasio, Correo Guarambarè, Manuel Dominguez 592, PY-2670 Guarambarè, PARAGUAY. Ph/fx: 595+098-444-336 (4-6 pm EST).

**August 13-21. Black Mountain, NC. Permaculture Fundamentals for Women.** Culture's Edge at Earthaven Village. 828-298-2399. culturesedge@mindspring.com.

**August 15. Maple City, MI. Intro to Permaculture Workshop.** Sky View Farm, 616-228-6433.

**August 17-29. Opal Creek Wilderness, OR. Permaculture Design Course.** Friends of Opal Creek, PO Box 318, Mill City, OR 97360. 503-897-2921.

**August 20-27. Orleans, CA. Alternative Tech. & the Ethics of Tech. Transfer.** Sandy Bar Ranch, PO Box 347, Orleans, CA 95556. 916-627-3379.

**August 21-23. Quebec, CANADA. Permaculture Gathering.** Terra Flora,116, Montée St-André, St-André-Avellin, Quebec, J0V 1W0; 819-985-0894.

**August 24-September 5. Basalt, CO. CRMPI,** Box 631, Basalt, CO 81621. Ph/fx: 970-927-4158. Email: permacul@rof.net; website: www.rof.net/permacul/

**August 29-30. Black Mountain, NC. Stream Restoration & Water Mgmt.** Culture's Edge. 704-298-2399. <culturesedge@mindspring.com>

**August 31-September 13. Santa Cruz Mts., CA. Permaculture Design Course.** Intl. Institute of Ecological Agriculture. 1-888-PERMACULTURE. www.permaculture-institute.org

**September 3-16. Goldendale, WA. Permaculture Design Course.** Friends of the Trees, 360-738-4972; fax/-671-9668. Email: tern@geocities.net; website: www.geocities.com/rainforest/4663.

**September 4-6. Louisa, VA. Communities Conference.** 138 Twin Oaks Rd., Louisa, VA 23093. 540-894-5126; conference@twinoaks.org.

**September 4-18. Occidental, CA. Permaculture Design Course.** Occidental Arts and Ecology Center, 15290 Coleman Valley Rd., Occidental, CA 95465. 707-874-1557, fax/-1558. www.oaec.org

**September 5-7; 19-20; October 3-4; 16-18. Oakville, WA. Four Weekends Permaculture Design Course.** Kirk Hansen, Ph/fx:360-273-7117; permawest@olywa.net.

**September 7-October 23. Western OR. Permaculture/Self-Awareness Apprenticeship.** Lost Valley Educational Center, 81868 Lost Valley Lane, Dexter, OR 97431. 541-937-3351. Email: lvec@aol.com; website: www.efn.org/~lvec.

**September 11-12. Corallitos, CA. Gourmet/Medicinal Mushroom Cultivation Seminar.** 400 Vaca del Sol, Corallitos, CA 95076. 408-763-3848.

**September 14-18. Rhinebeck, NY. Permaculture Fundamentals Workshop at Omega Institute.** 650-365-2993, information. 800-944-1001, registration.

**September 18-20. Delta, NE of Kingston, Ontario, CANADA. Intro to Permaculture: Orcharding.** Permaculture Community Action Worknet. 104 Bridlewood Blvd., Agincourt, ON M1T 1R1 CANADA. 416-497-5746. mulchman@web.net

**September 18-20. Red Boiling Spgs, TN. Organic and Biodynamic Gardening Conference.** Jeff Poppin, Box 163, Red Boiling Springs, TN 37150.

**September 18-23, 1998. Prague, CZECH Republic. Feng Shui Ecology Conference.** The Feng Shui Ecology Prague Conference, 70A Gladsmuir Rd, Highgate, London, England N19 3JU ph: 44-171-281-0541 fax: -272-6125 mobile: UK 0468 234 723. email: feng shui@real.com.au website: www.real.net.au/~fengshui

**September 18-26. Black Mountain, NC, Fundamentals of Permaculture.** Culture's Edge, at Earthaven Village. 828-298-2399. <culturesedge@mindspring.com>.

**September 28-October 6. Black Mountain, NC. Village Design Practicum.** Culture's Edge, at Earthaven Village. 828-298-2399. <culturesedge@mindspring.com>.

**October 3-4; 24-25; Nov. 14-15; Dec. 5-6. Tucson, AZ. Basic Permaculture Design Course.** Permaculture Drylands Institute, PO Box 3631, Tuscon, AZ 85722. 520-572-1672.

**October 10-11. Freeland, MD. EPTA Gathering.** Linda Felch, EPTA, 21300 Heathcote Rd., Freeland, MD 21053. 410-343-DIRT. lfelch@jhu.edu

**October 17-24. Mt. Nebo, PA. Permaculture Design Practicum.** John Irwin, 130 Creamery Rd, Pequea, PA 17565-9712. 717-284-6318, fx/-4425.

**October 17-31. Queensland, AUSTRALIA. Permaculture Design Course.** GEN, lindegger@gen-oceania.org; http://www.gaia.org/gen-oceania/index.html

**October 18-November 1. Cortes Junction, AZ. Permaculture Design Course.** IIEA. 1-888-PERMACULTURE.

**October 23 -27. Lenox, MA. Feng Shui Ecology Conference.** 860-567-8801. http://members.aol.com/fengshuime/wmhtml

**November 29-December 12. Dexter, OR. Permaculture Design Course.** Lost Valley Educational Center, 541-937-3351.

**November 30-December 13. Harbin Hot Springs, CA.** Larry Santoyo & Assoc., 309 Cedar St. #85, Santa Cruz, CA 95060. dotcalm@got.net; 800-469-5857. www.permearth.org

**January 20-23, 1999. Pacific Grove, CA. Ecological Farming Conference.** CSA, 406 Main St., Suite 313, Watsonville, CA 95076. 408-763-2111, fx/-2112. www.csa-efc.org

**April 23-May 1. Summertown, TN. Fundamentals of Permaculture.** Ecovillage Training Center, PO Box 90, Summertown, TN 38483. 931-964-4324. ecovillage@thefarm.org Web: www.gaia.org

**May 28-June 2. Summertown, TN. Advanced Permaculture/Village Design.** Ecovillage Training Center, 931-964-4324. ecovillage@thefarm.org




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