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Urban Permaculture *Activist*



permacultureactivist.net

Winter

2005-06

No. 58

US\$6.00

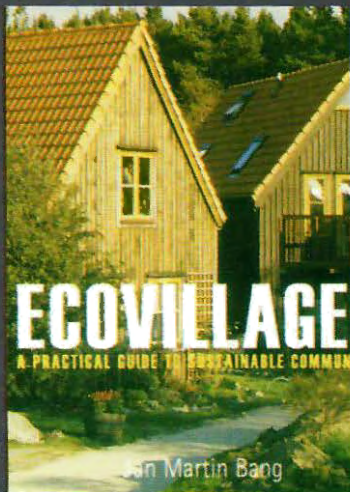
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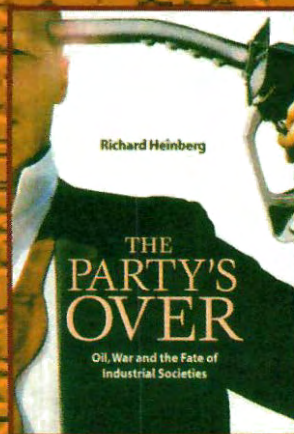
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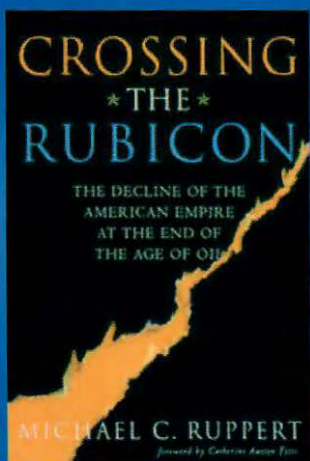
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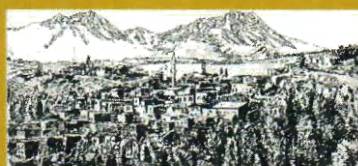
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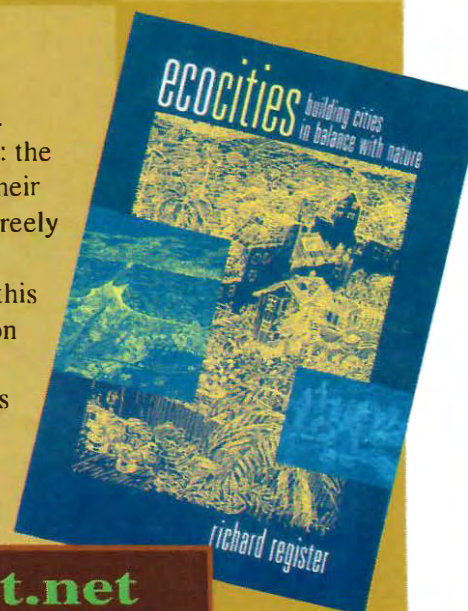


eco- cities

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The Permaculture Activist is an independent publication serving the permaculture movement in North America. Our primary goal is to provide information useful to people actively working to establish permaculture systems "on the ground."

Mailing address for subscriptions, advertisements, materials for publication, and all correspondence is Post Office Box 1209, Black Mountain, NC 28711. Please see inside back cover for complete subscription information.

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An ad rate card is available upon request from:

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and material for publication to:**

The Permaculture Activist
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Black Mountain NC 28711 USA
pcactivist@mindspring.com
www.permacultureactivist.net

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Permaculture is a holistic system of DESIGN, based on direct observation of nature, learning from traditional knowledge, and the findings of modern science. Embodying a philosophy of positive action and grassroots education, Permaculture aims to restructure society by returning control of resources for living: food, water, shelter, and the means of livelihood, to ordinary people in their communities, as the only antidote to centralized power. For 25 years Pc has combined top-down thinking with bottom-up action to make a world of difference in over 60 countries. We are everywhere.

Confessions of a Lapsed Urbanite

Scott Horton, Editor

A YEAR AGO I MOVED FROM OAKLAND to the small mountain village of Idyllwild in the San Jacinto Mountains of Southern California to pursue the permaculture version of the American dream. I don't have a picket fence or a chicken in every pot, but I have a composting toilet and mushroom spawn.

For more than two decades in the Bay Area I lived in an apartment, and for the past few years practiced what permaculture I could—a worm bin on the balcony, saving shower and bath water to sustain a container herb garden, subscribing to a CSA and supporting local organic produce, etc. Mostly I spent a lot of time working on other people's permaculture projects. This tends to make one a star among friends, I found. You get the joy and experience of working with the land and the gratitude and appreciation of friends when you want to, without all the daily responsibilities of maintaining a site. Plus, you usually get to walk away with lots of produce for your efforts.

Now I have my own half acre of land on which I live, and I wasted no time implementing the major systems of my design: building soil, catching water, building greenhouses with locally harvested and hand-milled lumber, planting a small orchard and other activities. I am certainly having a great time and finding many rewards and challenges doing my own site on my own, with welcome helpful visits from friends. I find, though, that I miss many more things about permaculture in an urban environment than I could have imagined. For instance, I long for the critical mass of like-minded people with whom I interacted in the Bay Area. There is a small and enthusiastic community here, but only one other, part time, permie. Exchange of ideas and mutual support is much harder to come by in the country. Access to responsibly grown local food is also a challenge, although two wonderful shop-owners here spearheaded the opening of an organic produce co-op within the last six months. They co-op is enjoying a large and growing success, which bodes well for the community.

As Toby Hemenway points out in the update of his move from rural to urban in this issue, there are unexpected economies of scale and energy inherent in city life, contrary to assumptions, Chief among them for me, is transportation. Life in this small, wonderful village as it stands is simply nowhere near the unattainable sustainable. For instance, we have to drive off the hill to obtain many "necessities." Neighbors and friends pool resources by calling each other when any of us is running to the health food store or farm stands in the valley, but gas must still be used no matter how many errands are combined. Even the local produce co-op relies on delivery by a big, diesel-guzzling truck that makes its rounds of the greater area covering thousands of miles a week.

My point is one that I have known but that has come into sharper focus only since I moved out of the city. If

permaculture is going to save the planet and us, it must be widely practiced in cities, as well as in the country. It's kind of a "no-brainer" to want to practice permaculture in rural areas, but it is an urgent need to propagate what we do in cities.

In this issue, Toby Hemenway and Richard Register make the logic and necessity of this abundantly clear, and all of the authors featured herein shed light on practical and philosophical means to this end. Christopher Shein recounts the role of permaculture in the birth of a vision for city repair that has blossomed as Detroit Summer for more than 20 years, and Scott Kellogg and Stacy Pettigrew of the Rhizome Collective report on urban permaculture in Austin, TX. Historical perspectives reaching back centuries are captured in articles about Mexico's ancient chinampas and a medieval Italian hill town—now an eco-village—Torri Superiore. A pair of features about two different projects—one at an historical landmark, the other a more recent community and education effort—chronicle the scope of activities in Brooklyn, NY. Robert Waldrop has beautifully reduced permaculture to kitchen scale, and Bart Anderson expansively redefines our concepts of zones and sectors for urban applications.

As I begin as the new editor of the *Activist*, I want to thank Peter Banc, Keith Johnson, John Wages, Lee Warren, and Toby Hemenway for passing the baton, giving me advice, support and lots of ideas and encouragement, and to Diana Leafe Christian, Albert Bates, and Andrew Goodheart Brown for being exceptional and inspiring colleagues. I am blessed and challenged to stand on all of your shoulders—the view is great!

Future Issues: Themes and Deadlines

Permaculture's response to peak oil seems to be a topic on all our minds and the articles in this issue are infused with the issues and concerns that surround its contemplation. We have rearranged the editorial schedule to provide a timely forum for your thoughts on the topic as reflected in the editorial schedule and deadlines below.

#59 Peak Oil	Dec. 1
#60 Land Use Past & Present	March 1
#61 The Unseen Kin-doms	June 1

Submissions

The *Activist* welcomes your articles, reviews, photos, news and other items of interest. If you would like to submit something, even if you have written for us before, please let us know in advance of sending your work by contacting editor Scott Horton at editor@permacultureactivist.net or (951) 659-5362 and we'll send you a copy of our writers guidelines.

Cities, Peak Oil, and Sustainability

Toby Hemenway

IN MID-AUGUST I DROVE TO A PARTY in the country outside of Portland, Oregon. Twenty miles of freeway took me to a two-lane road that wound ten miles up steep forested hills and down through remote valleys. As the roads grew narrower and less traveled, I began to wonder how, if gas hits \$5 or \$10 a gallon, people and supplies will reach these isolated spots. What kind of post-oil vehicle will climb this hilly, winding road that quite literally goes nowhere—a converted truck run on home-made biodigested methane? Then, after I arrived at the secluded acreage, I questioned whether my hosts could really supply most of their own needs, just the two of them and their kids.

I think these isolated places will disappear the way that Roman outposts in Britain and Gaul did during the empire's decline.

In a recent issue of this magazine (*Permaculture Activist* 54 p. 2, "Designing Beyond Disaster") I wrote that when I moved to the country 11 years ago, I assumed that rural people use fewer resources than urbanites, but now that I'm back in the city I can see that isn't true. That article has generated more response than any other I've written, and has been reprinted around the Web many times, often with some furious comments. Obviously, a lot of people are thinking about the same topics. I'd like to re-visit the subject, respond to some of the commentary, elaborate on my reasoning, and describe some new thoughts on the subject.

First, a clarification on word usage. When I speak of rural, I generally mean places where people live on acreage outside of towns, with most services too far to walk to. Small towns decreasingly can be called rural, as their takeover by chain stores, engulfment by sprawl, and reliance on non-local goods renders many indistinguishable from suburbs.

Inspiration for my article came from a piece called "Green Manhattan" by David Owen in the October 18, 2004 *New Yorker*. Owen argued that Manhattanites have a far smaller ecological footprint than the average American, whether urban, rural, or suburban. In Manhattan, hardly anyone drives cars, dwellings are tiny (even a ritzy Park Avenue apartment is much smaller than a typical suburban McMansion), and per-capita energy use is relatively low, since far less energy per person is used to heat and cool an apartment building than single-family dwellings housing the same population. No, New Yorkers aren't growing their food, but then, neither are most other Americans.

But, you ask, what about all of New York's infrastructure? It's got enormous water pipes, thousands of miles of roads, and so forth. Doesn't that use a ridiculous amount of resources? Well, yes. But that densely compacted infrastructure serves many million people. Owen pointed out that if the inhabitants of New York City were spread out at the same density of the small Connecticut town where he now lives, they would occupy all six

New England states plus Delaware and New Jersey. Think of all the roads, wires, pipes, fuel, and so on, those spread-out suburbanites would consume far more than what New York uses now. Living in rural Connecticut, Owen uses seven times the electricity he used in Manhattan. Other non-urban sites fare as badly. An average apartment in San Francisco uses one-fifth the heating fuel per capita burned by a tract house out in the suburbs. Given two present-day urban and rural populations of equal size, the urban one has a much smaller ecological footprint.

Some readers of my article thought I was saying that cities are paragons of ecological living. Please. Little in the US, let alone an enormous city like New York, is sustainable. Manhattan may use a bit less energy than some places, but the practice of pouring billions of tons of resources, gathered from millions of acres, into a few square miles to supply many million people in sky-high buildings is only feasible in an era of cheap oil. And we all know that era is ending. When oil hits \$200 a barrel, riding an elevator or pumping water to a 17th-story apartment won't be an option for any but the ultra-rich. I think the mega-metropolises like New York, Atlanta, Houston, and Chicago will decline as energy costs skyrocket. Some economies of scale become dis-economies when fuel is expensive.

Apocalypse, not

I'm not a believer in the Peak Oil "end of the world" scenario, where decreasing oil production somehow mutates into the sudden, permanent shutoff of urban water supplies, and contented suburbanites are transformed overnight into looting gangs. Yes, fossil fuels surely will become much more expensive in the next decades, and scarce soon after. I don't doubt that several tipping points will be broached along the way, with rapid and unexpected changes cascading through society. But civilization won't end. People have repeatedly predicted the apocalypse: in millennial 1000, again in 1666 (the number of the beast), and many times between and since. Is our memory so short that we have forgotten the foolishness around Y2k? Or are we so wedded to the delicious notion of our annihilation that we grasp at any possibility?

Why do we hunger for our own extinction?

Many Peak Oil disaster scenarios are premised on an overnight catastrophe, as if suddenly all over America we'll flip the light switch or turn the tap and nothing will happen. Yes, that would result in riots, martial law, and chaos. But Peak Oil almost certainly won't look like that. We won't drop from today's production of 80 million barrels per day to nothing overnight, or even in 20 years. We'll go to three-dollar-a-gallon gas, then four, then six, with increasing conservation steps along the way. Comparisons to major power outages or massive storms are

wrong. Acute and chronic problems wreak very different results. The US economy has gone from \$1.50 per gallon gas to near \$3 with nary a hiccup. A group of 60 economists predicted that gas prices will have to pass \$4 per gallon before the economy even begins to slow perceptibly. So where is this magic trigger point that will spark the end of civilization?

Like any addict, we will fight for our fix. As the price of oil rises, hard-to-extract deposits will become worth refining, even in disregard of net energy yields (since large concentrations of money make it possible to temporarily ignore long-term economic reality). In August Congress began authorizing states to drill in previously unavailable off-shore reserves. Record petroleum profits will be poured into new extraction techniques. We'll probably sigh-build a lot of nuke plants. And high prices will reduce demand and encourage conservation: SUV sales are already down nearly 30%. We've already cut back in response to high prices. Although the economy has doubled in size since 1979, oil use has only grown 9% (US DOE statistics). I'm not trying to paint a rosy scenario here-Peak Oil will hurt-but we won't all die. Even a societal collapse (read Jared Diamond's book) takes decades or centuries.

Some experts estimate that over 90% of all resources are wasted by the time the finished product or energy is used, so there is plenty of room for upping efficiency. Simply by doubling car mileage-which is within easy technological reach-the US would cut oil use by 25%, taking us back to the consumption levels of the 1950s. Conservation is the cheapest way to create more resources. So my bet is on a decades-long slide-not a sudden crash-into a post-oil age, while we learn to be far more efficient, urged on by skyrocketing costs. In the end, we won't be cranking up the air-conditioner, but we won't be scratching in the mud, either.

Size matters

Neither the mega-cities nor the survivalist's bunker will be viable in a post-oil future. The places with the best chance of surviving an oil peak will be cities of less than a million people, ranging down to well-placed smaller cities and towns. Cities of a million or so existed before fossil fuels-ancient Rome proper held roughly a million people-thus they are clearly possible in a limited-oil era.

Scale works to the advantage of sensibly sized cities. For example, Portland's 500,000 people are served by two sewage treatment plants that use about 2000 miles of pipe to reach every home. Building this cost in the low hundreds of millions of dollars (exact figures don't exist). Compare this to the sewage system for 500,000 rural people. That's roughly 125,000 septic tanks, each with 300 or more feet of drain-field pipe, plus trenching and drain rock for all. A septic system costs about \$10,000 to build, so the cost of 125,000 of them is \$1.25 billion, several times that of the urban system, and the ruralites need 7000 miles of pipe compared to Portland's 2000 miles. Of course, composting toilets and graywater systems would obviate the need for both of those unsustainable, resource-intensive methods of waste treatment, but I'm talking about what exists right now. Virtually any service system-electricity, fuel, food-follows the same brutal mathematics of scale. A dispersed population

requires more resources to serve it-and to connect it together--than a concentrated one. That fact cannot be gotten around.

"A dispersed population requires more resources to serve it--and to connect it together--than a concentrated one."

Some readers confused my concerns over the sustainability of rural life with my disappointment with the quality of my own rural community. Wonderful rural communities exist (as do wonderful urban ones). We happened not to choose one when we moved to the country, but rather, an area depressed by the collapse of the timber industry, where alcohol, spouse beating, methedrine, and child abuse were rampant responses to a shattered economy. But sadly, that describes most of the rural Pacific Northwest, and much of the rest of rural America. Our county was not unique. Country people in Appalachia, the Rust Belt, and the stricken farm states are not exactly flush with cash and optimistic about the future. There are pockets of prosperity in the rural US, but overall the social and economic picture is miserable, and most people there lack the education and resources to cope with even today's economy, much less one ravaged by an oil shortage.

Even if a country community is vibrant, having friendly neighbors does not reduce rural America's immense ecological footprint. In rural areas, a car is even more essential than in suburbia. As the sewage-plant example shows, the laws of physics force a spread-out populace to consume more resources than one that is compact. The key question is, how large can that compact populace be and still be sustainable? What size of community is best for a post-oil world? No one knows the answer, but the mega-cities are surely too large, and the survivalist in his bunker is too small.

My guess at a post-oil scenario is for the disappearance of suburbs and a return to the city/country pattern as it existed for thousands of years before the oil age. In the film, "The End of Suburbia," James Howard Kunstler calls the suburbs "the greatest misallocation of resources in the history of the world." I believe as suburbs empty or condense over several decades they will be gutted for their re-usable resources and be replaced by what preceded it until forty years ago: small farms ringing every city, producing food in easy reach of urban markets.

I often hear the assumption that without land, urbanites will starve. Nonsense. Farmers were feeding urban populations long before the oil age, and they will do so after it. New Jersey's seemingly absurd license plate motto, "The Garden State," refers to its thousands of vanished market gardens that fed New York City until the 1960s. Even urbanites in triplexes will be able to buy locally grown food.

Giving up fantasies

It's likely that suburbs, many isolated small towns, and dispersed rural homes will wither and die. Tools and other essential supplies won't be transported far from the cities where they are produced and where economic power is, so people outside urban areas will need to be virtually self-reliant.

One of the most common responses to the Peak Oil panic is, "We're planning on moving to the country with our friends and producing everything we need." Let me burst that bubble: Back-to-the-landers have been pursuing this dream for 40 years now, and I don't know of a single homesteader or community that has achieved it. Even the Amish shop in town. When I moved to the country, I became rapidly disabused of the idea of growing even half my own food—I like doing one or two other things during my day...during my life.

Growing all your own food, repairing and maintaining tools, keeping livestock, cutting firewood, doing all the carpentry and plumbing, and so forth, is dawn-to-after-dark work. And learning to live in an intentional community is a supremely difficult task—I've been around plenty of them. Combine the donkeywork of survivalism with the stress of building a new community, and the failure rate climbs to near 100%. Post-oil, we will all still be as interdependent as we have been since before we came down from the trees, and the farther you live from other people, the poorer you will be.

One out of a thousand has the temperament to grow and make

everything he needs. One out of a million-maybe-has actually done it. America's pioneers were a tiny minority of the millions who stayed behind or came after the task of settlement was finished. If anyone reading this is utterly self-reliant, I would love to hear your story. And if anyone truly believes that fleeing to the country is the solution, then pack up now, because it will take a decade to develop the skills you'll need to eke out a lonely subsistence.

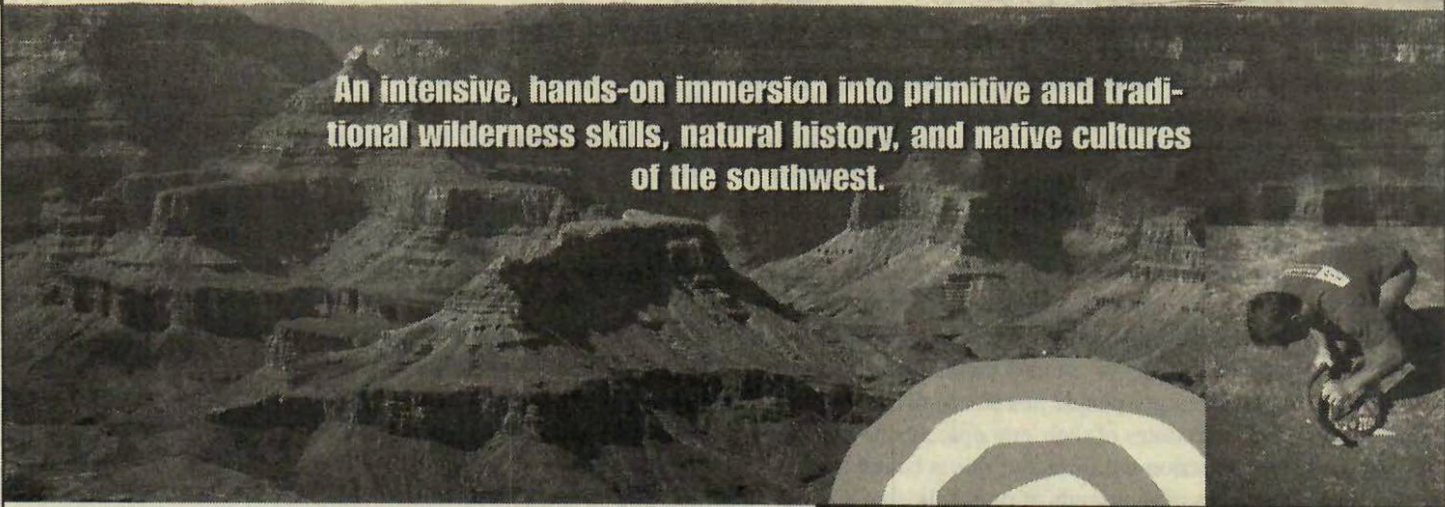
Some of the back-to-the-landers do have one thing right. It will be healthy communities that will survive the end of the oil age. Even in the unlikely "roving terror gang" scenario, which neighborhood is likely to be invaded? One where each household and its own little garden is isolated, or one in which 30 neighbors are solidly looking out for each other?

Communities are much easier to create where people live near each other. They form when population passes a critical mass, and where people have similar interests and needs. During my rural sojourn, I was astounded by how little my neighbors had in common. Present-day development in rural areas is wildly haphazard, with mansions next to decrepit trailers. The makeup of the new ruralism is not yeoman farmers and ranchers (fewer than 7% of ruralites farm), but a cheek-by-jowl mix of retirees, poor refugees from cities and declining inner suburbs, low-wage workers in service or resource industries, and affluent dabblers in country life.

Consider our two-mile gravel road in southern Oregon. There were no farmers. My wife and I were middle-class urban refugees. Our nearest neighbor on one side was a meth-selling

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ex-con living in a trailer; on the other, a retired psychiatrist. Nearby were lower-middle-class ex-suburbanites living in a double-wide, a right-wing retired graphics artist, a liberal young school teacher, and a Christian auto-body mechanic. With no commonality, there was no hope of community where I lived, and it didn't happen. This miscellaneous assortment of unlinkable diversity is common in the rural US. In rural areas (meaning where homes have acreage), neighbors often come from utterly disparate income brackets, lifestyles, and beliefs, with scant

It's likely that suburbs, many isolated small towns, and dispersed rural homes will wither and die.

chance of finding common ground. In contrast, in cities, zoning and housing prices encourage people of similar incomes and backgrounds to live near each other. The city neighborhoods I know—and I've lived in a lot of cities—have far less diversity than rural ones. Cities overall have more diverse populations than most countryside, but they are generally segregated into neighborhoods having similar attributes such as affordability, hipness or staidness, and ethnic make-up. Of course, uniformity can lead to monotony, exclusivity, and a false belief that everyone is like you. But it also means that urban opportunities for community are much greater than in the country, from sheer proximity, from common backgrounds, and because more galvanizing issues arise to spark gatherings.

Breadlines are a good sign

In my earlier article, I cited scholars who said that in hard times, city dwellers had in general fared better than those in the country. A few readers argued that during the Depression it was in the city that breadlines formed, not in the country. But this proves the point. Breadlines, though the classic image of the Depression, occur when local restaurants and other businesses team up with city governments to bake bread, cook meals, and offer them at little or no cost. Breadlines mean a community is pooling its resources. That can't easily happen where people are dispersed and don't have cars to connect them. During hard times, in the country, hungry people just starve-or flee to the city. Some readers cited anecdotes of their grandparents having plenty of food on their Depression-era farm, but this is belied by the data showing hundreds of thousands of rural folk abandoning their homesteads. Urban breadlines contained plenty of relocated farmers. The Okies weren't from the city.

To believe that ruralites will fare better, post-oil, than urbanites is to believe that scattered individuals are more resourceful and capable than large assemblages of people acting in concert. Of course, groups can be as stupid as individuals. But collective wisdom and action are usually far more effective than isolated single efforts. Just as most science, technology, art,

culture, education, political and social action, money, and power are created and applied in the city, solutions for a post-oil world will also evolve among concentrations of people.

Will a post-oil era look like the Depression?

The Depression was not a time of scarce resources, but rather of money. Peak Oil, however, means scarce resources, so in some ways it's futile to speculate. One thing we know about the future is that predictions are almost always wrong. Perhaps the doom-and-gloomers are right and Peak Oil will result in an utterly calamitous crash and unspeakable horror. In that case, all bets are off and both cities and farms will be places of death and misery. But the fact that the end-of-the-world crowd has been crowing for millennia and still have a 100% record of error suggests that they are wrong this time too. Any of several other scenarios is more probable: a technological fix and business as usual (I'm not betting on that one, either), slight descent to a techno-green future (only a bit less unlikely given our political leadership), or a long decline to living within our true energy budget.

My point is not to trade the scenario of post-oil urban chaos for one of rural disaster. I don't believe either place will be the nightmare that some claim. I simply want to counter the notion that we'd be better off abandoning the city. In the "end of the world" scenario, cities and everywhere else may be full of gangs roving and looting—and then starving with the rest of us. But I don't buy that prediction. I think as oil prices rise, driving 20 miles to get your chainsaw repaired or to take your child to soccer practice will be the first piece of contemporary life to evaporate. When prices soar, country people will be far from friends, manufactured goods, medical care and everything but their gardens—if they know how to garden. Urbanites will have mass transit and bicycles. And my favorite urban farms, my livelihood, and my friends will still be within walking distance.

A note added after Hurricane Katrina

For some, the looting and assaults in New Orleans after Katrina are signs of what Peak Oil has in store for cities, but I don't agree. There will be rough spots, and perhaps even sporadic gasoline riots. A generation of smug "I've got mine" leadership in this country has instilled a beggar-thy-neighbor ethic sadly evidenced in a few cases in Louisiana. But the rapid evacuation and destruction of a major city and the sudden deaths of hundreds of from flood and disease bear little resemblance to the much slower evolution of Peak Oil stresses. Looting an empty store in a ruined metropolis deserted by its populace and police takes no courage or organization. Someone trying the same in a functional city inhabited by gun-toting store owners, a police force, and wary neighbors generally ends up in jail or dead. The circumstances, scale, time-frame, and causes in the two cases have little in common. A comparison is both forced and unwise. Δ

Toby Hemenway is the author of Gaia's Garden: A Guide to Home-Scale Permaculture, and lives in Portland, Oregon, where he does design consulting and leads workshops. He will be teaching permaculture courses this winter in Portland, Hawai'i and Belize. More information at www.patternliteracy.com.

Permaculture Grows in Brooklyn

Claudia Joseph

NEW YORK CITY MAY NOT BE THE MOST obvious place to look for a strong environmental movement but more is happening here than meets the eye. Roof-top greening, water catchment systems and watershed restoration groups are present and active. Alternative energy development, city farming groups and strong co-ops exist. A vast Park system, a massive and diverse population and strong political consciousness feed the movement. There are numerous supportive institutions and spiritual workers as well—and there is plenty of work to do. Phil Forsyth and I began our permaculture adventures here at about the same time and have found many receptive ears for the basic ideas. Though our stories are different, I think we both agree that permaculture has a future in Brooklyn and the greater NYC area.

Building Models

The Garden of Union in Park Slope, Brooklyn is an active permaculture site. Cultivated on demolition rubble for the past 30 years it is a testament to the power of compost. A partnership with the Park Slope Food Co-op (a membership of 12,000 makes it the largest one in the US) brings 30,000 lbs. of produce waste annually to the garden. Six mega-bins are tended by Co-op worker/members year 'round. The bins are constructed with recycled plastic lumber and slanting bulletproof plexi-glass tops with special venting systems incorporated into the design. At the bottom and center the pile of pvc pipes draw air into the bin and a series of small holes at the top of the front face allow air to escape. And not to be overlooked, the bins are rat-proof.

Building a model system requires more than a good box, although gaining that basic improvement was a permaculture exercise in itself. Negotiating an established system that had outgrown its hygienic limits was a job that awaited me after I moved to NYC in May of 2001. When my 3 year-old wanted to leave the garden because "it stinks" I knew some changes were in order. Addressing a group of highly intentioned people who were facing a large and difficult job required practicing positivism and respect.

Four years later, the system still faces the challenges of worker (re) education and pushing the limits of its capacity. The program has expanded to two additional sites, one of which is a city farm as the Co-op continues to grow. The flow rate of the raw materials - green and brown - has steadied. And the Co-op created 200 work slots at the local food shelter to reduce waste from the produce aisle. Communication around the project has become more relaxed if not more regular. The garden also accepts kitchen material from the surrounding neighborhood; implementing an education program for individuals who use the bins is our next step.

Defining and Refining Communal Operation

The Garden of Union has always been communally operated. Originally, this meant that anyone could do anything at any time. Later, if two people were in the garden at the same time and agreed on something, then it was OK. I negotiated this system and then worked with the garden's mainstays for two years to



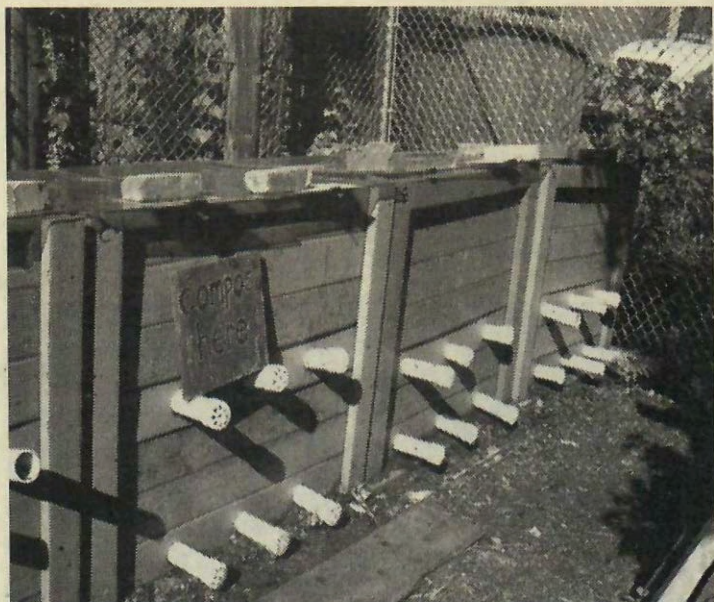
Outreach and demonstrations to neighbors of all ages furthers the mission, increases participation and enhances the quality of life embodied in the Garden of Union's programs.

revise it. We were able to honor the garden's history and also develop plans for its future. We now use a clearly written code and designated stewards lead new members through the process of getting to know the space and the gardeners. The garden's board of directors aims for consensus regarding structural changes and other fundamental issues. Our operating process is much more visible than before. The social aspects of the garden almost outweigh the importance of the plants and honoring both is vital to urban work.

A partnership project at the Old Stone House (circa 1699) in J.J. Byrne Park and the adjacent Middle School 51 created more public models. Funded by a Con Edison grant, it allowed development of the existing memorial and ornamental gardens and the creation of two new naturalized zones at the school. The park gained a (colonially referenced) culinary and medicinal herb garden and a wildlife corridor. Compost bins were added at both

locations. Classroom visits brought 25 students out for our planting day. Twenty-six berry yielding shrubs and trees and 160 under-story plants were installed this spring. The school's garden club uses the space sporadically.

Maintaining the gardens, integrating with classroom programs and educating land stewards all lie in the work ahead. Workshops at the Old Stone House will fuel the project and another large area (currently a dog run) will be included in the Stone house



Designing, building, maintaining, refining and redesigning composting systems proved to be an excellent example of the permaculture design process. In addition, it served as a model and metaphor for education, building participation and enhancing healthy community process.

gardens in spring 2006. Familiarizing city residents with land restoration techniques and using on-site materials are two of the project goals. Keeping well-meaning friends from raking the leaves to tidy up the space is an ongoing irony and the project's starting point is picking up the trash. To develop a continuing model there requires long-term vision and commitment.

Public offerings bring community together and spread seeds of change

Other work this year included workshops at the Brooklyn Botanic Garden, Just Food, Wyckoff House and a drought seminar with NYC Parks. These agencies and many more are very receptive to permaculture's problem-solving focus. The Permaculture-Exchange (originating in Oakland, CA in 1997 with the pre-fix East Bay) is an organization that promotes the exchange of permaculture ideas, labor and materials through an e-list. The New York Permaculture Exchange is now active. A connection with a developing intentional community upstate (Camp Epworth) has opened an avenue for Geoffrey Lawton to come from Australia to do some permaculture teaching in New this fall. The relationship of small upstate farms to the city is a strong one and greenmarkets proliferate here. Some communities grow their own food on city farms.

My community has fed my spirits and sustained my work.

Permaculture had come to the Garden of Union before me so I felt an agreement with the space and it's guiding personalities from the start. Phil Forsyth does permaculture at the Wyckoff Farm House, the oldest house in Brooklyn and was the first permaculture friend I met here- through a Permaculture Activist article. That bond kept me going and now we have started co-teaching. The outreach directors of the Brooklyn Botanic Gardens are solidly behind permaculture's gathering energy and the Council on the Environment for the City of New York provided a great (permaculture) slideshow to 1,000 local community gardeners for a GreenThumb event - the agency that administers the 600 gardens on NYC Parks property. Most of all, dedicated friends and community gardeners have volunteered on projects and provide the emotional sustenance necessary for positive change. Finding land to use here is possible and finding community has endless possibilities. Δ

Claudia Joseph began practicing permaculture in California in the 1990s, establishing the East Bay Permaculture Exchange, an ongoing site at the Oakland Botanic Demonstration Gardens and the first permaculture course at Merritt College. She moved to Brooklyn in 2001 with her husband and now six-year-old daughter, opened the New York Permaculture Exchange and began teaching around public permaculture models. To contact Claudia permie@earthlink.net. To join the NY Permaculture Exchange: permaculture-exchange-subscribe@topica.com

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Another Side of Brooklyn

A Permaculture Alliance with History

Phil Forsyth

IN THE DENSELY PACKED URBAN ENVIRONMENT of New York City, land is at a premium. It can be difficult to acquire the space to create an effective permaculture demonstration site. Thus it becomes essential to develop relations with other established cultural institutions whose missions align with permaculture principles. At the Wyckoff Farmhouse Museum in East Flatbush, Brooklyn, I've been able to push a permaculture agenda based upon the historic sustainability and self-sufficiency of local agrarian life from the 17th century through the early 20th century. Over the last three years we have reconstructed the farm landscape and developed an active Community Demonstration Garden program. Similarly, Claudia Joseph has recently started a relationship and a garden at the Old Stone House, another historic house museum in Brooklyn. This sort of programming at historic sites may prove a valuable model in other communities.

Located amidst a vibrant Caribbean neighborhood and an industrial zone, the Pieter Claesen Wyckoff House (circa 1652), is the oldest structure in New York City and a National Historic Landmark. The Wyckoffs farmed the 75 acres surrounding the house for nine generations, until 1901. Thanks to great soil left by a glacial stream during the last ice age, Brooklyn (historically Kings County) contained some of the best farmland in the United States. As late as 1880, Kings County ranked second nationally in production of agricultural goods and adjacent Queens County ranked first. By 1940, however, urban Brooklyn had expanded to cover the last sizeable tracts of productive farmland. As the most significant remaining artifact of this proud but neglected agrarian history, the Wyckoff Farmhouse Museum and its 1.3 acre park serve today as a uniquely powerful tool to reconnect Brooklyn to an era when it was a vital part of the local food system.

The reconstructed landscape of Wyckoff House Park and its Community Demonstration Garden are not intended as a simple historic recreation, but as a dynamic community center for sustainable living. I had the good fortune to assist landscape architect Rachel Kramer of NYC's Parks Department in designing the landscape reconstruction project installed last year. The park now includes an apple orchard of historic varieties, an extensive berry garden hedgerow, and a kitchen garden featuring heirloom vegetables and 50 varieties of historic herbs. This year's 7,000 square foot Community Demonstration Garden, appearing as the fields of the Wyckoff Farm, serves as both market and demonstration garden. A variety of sustainable techniques are employed, including sheetmulching, polycultures, and water harvesting. The breadth of locally viable crops are also demonstrated to inspire the local community to grow more of their own food. Over 40 different vegetable crops and 10 herb crops are grown in the garden and sold at a Sunday farmstand,

along with additional fruit and vegetables from a pair of upstate farms. Access to fresh produce is very significant in a community that has no other vendor of local or organic foods or any other community gardens. Three local high school students are involved with the project as paid interns, learning gardening and entrepreneurial skills in the process. The garden also hosts a series of free community workshops—eleven this season—on topics from cooking to composting.



Although the Wyckoff Farmhouse landscape, limited by historic considerations, does not include a typical forest garden or other standard features of permaculture demonstration sites, permaculture principles have guided my hand in the development of the site since the day of my arrival. One small indicator of the success of this endeavor has been the change in the avian life in the park. I don't believe I saw any birds other than pigeons, starlings, and an occasional seagull in my first year here. Now we have a resident pair of mourning doves, masses of housefinches, and a wide variety of migratory birds. In the context of the Wyckoff project, I've found that a good deal of the strength of the project comes from partnerships developed with other organizations, including Just Food, the Brooklyn Botanic Garden, and Cornell Cooperative Extension. We have also successfully submitted and received grants for the program from a variety of sources. △

Phil Forsyth studied permaculture at the Central Rocky Mountains Permaculture Institute with Jerome Osentowski and Peter Bane. He is currently the Gardener and Caretaker of the Wyckoff Farmhouse and Museum (www.wyckoffassociation.org) in Brooklyn, NY and may be contacted at pdforsyth@yahoo.com.

Redefining Concepts for Urban Applications

Zones and Sectors in the City

Bart Anderson

WHEN PERMACULTURE WAS DEVELOPED in the early 1970s, it emphasized agriculture ("permanent agriculture") and the design of homesteads and small farms.

Thirty years later, conditions have changed. The most urgent environmental issues are what permaculturalist Tim Winton calls the "hydrocarbon twins": global warming and the end of cheap energy (Peak Oil). Since both conditions are caused by fossil fuels, the pressing problem is how to minimize their use. Re-examining transportation is key, since that sector is the biggest consumer of petroleum. According to the New York Times, the transportation sector "represents two-thirds of all oil demand in the United States and is solely accountable for the growth of the nation's oil thirst over the last three decades."

A second emerging issue is the destruction of local communities and their replacement by a globalized commercial culture. Local communities are critical buffers against rising energy prices, economic dislocation and dysfunctional national governments. Their absence puts us at risk.

Proposed solutions are often so big and general that we feel helpless. What can one person do about the Kyoto protocol? Large economic interests dominate the US government, so that the recently passed Energy Bill consists largely of handouts to the fossil fuel industries.

To this impasse, permaculture brings a unique emphasis on what can be done by individuals and small groups, fostering a sense of empowerment.

This article describes how a classic permaculture technique — zone and sector analysis — can be adapted to deal with current problems.

Zones and Sectors

Zone and sector planning is a design tool originally conceived for analyzing the site of a homestead or small farm. It suggests locations for activities so they can be performed efficiently and sustainably. The technique is regularly covered in permaculture texts and Permaculture Design Courses. Zones and sector analysis are covered in David Homgren's *Permaculture: Principles & Pathways Beyond Sustainability*, Bill Mollison's *Introduction to Permaculture* and *Permaculture: A Designers' Manual*, Rosemary Morrow's *Earth User's Guide to Permaculture*, John Quinney's "Designing Sustainable Small Farms" in *Mother Earth News*, July/August 1984 and Patrick Whitefield's *The Earth Care Manual* and other sources

Zones are usually pictured as six concentric circles, ranging from Zone 0 (home) to Zone 5 (unmanaged land). Structures, plantings and activities are located so that those frequently visited are nearer home and those seldom visited are farther away. For

example, intensive gardening is usually set in Zone 1, orchards in Zone 2 and crop farming in Zone 3.

Bill Mollison has an interesting explanation for zones. In his *Permaculture Design Manual*, he notes that zones are a way to manage "energies available on site: people, machines, wastes, and fuels of the family or society." Later, as we extend the definition of zones, we'll draw upon Mollison's understanding of energy as the principle underlying zones.

If zones are for on-site energies, sectors are a way to look at natural or wild energies that flow across the land. Such energies include sun, wind and wildfires. These energies come from outside the site and pass through it. Sectors can be pictured as wedges in the concentric zones, though their real configurations will be different on different sites.

As powerful as zone and sector analysis is, I found it awkward for planning our life on the San Francisco Peninsula. This is no surprise, since the technique was originally developed for a different purpose—planning homesteads in rural areas. The homesteads depicted as examples of zones and sectors would cost \$1 to \$5 million in our area. Our activities are not agricultural; even small-scale gardening is a challenge in the city.

And yet there are billions of us city-dwellers in the world. Any tool that enables us to live more ecologically sane lives would make a big difference.

Redefining zones

The first step in adapting zones for a wider audience is to expand the notion of the site. The usual image of a permaculture site is that of private property owned by an individual, family or small group attempting some degree of self-sufficiency. The reality for most people is very different. The city-dweller ranges over a much larger landscape, exerting energy and obtaining resources from properties owned by different entities. An individual may work on property owned by a corporation, buy vegetables from a farmers market (local owners) and hike in publicly owned parks.

Just as zones can be used to minimize distances traveled on a farm, so they can be used to reduce distances traveled in a metropolitan area.

Instead of defining zones by distance, let's define them in terms of energy expended. (Remember the connection that Mollison drew between zones and energy.) Since the key variable in fuel usage is the type of transportation, we could define the zones as:

- Zone 0: Home.
- Zone 1: Walking distance ("pedosphere").
- Zone 2: Bicycling distance ("cyclosphere").

- Zone 3: Reachable by public transportation or by a short drive.
- Zone 4: Driving distance.
- Zone 5: Reachable only by plane or other long-distance transport.

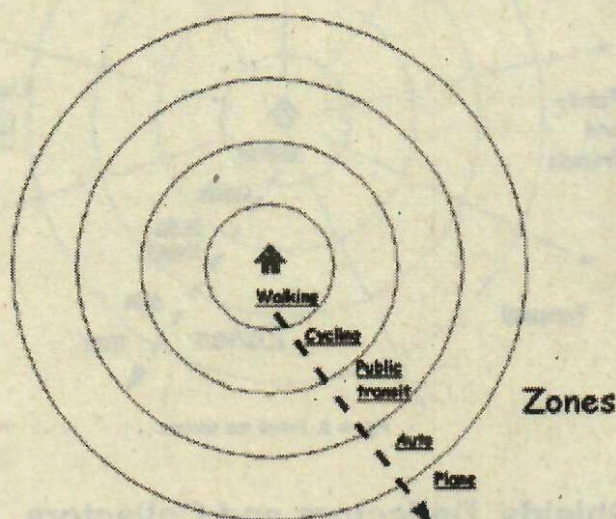


Figure 1. Zones based on fossil fuel usage

Figure 1 shows the zones with their new definitions

Defining the zones in this way emphasizes the fact that motorized transport burns fossil fuels and generates greenhouse gases. Zones 0 to 2 (home, walking and cycling) are environmentally benign; Zone 6 (air travel) is an environmental no-no.

A tool for awareness

To apply the zones to your daily life, make a zone map. Begin by marking the locations of your activities on a local map. Sites would include the workplace, stores, library, parks, family, friends — wherever one visits. Frequency of visits can be indicated with different colored pens.

Next, outline the different zones on the map. They won't be the idealized concentric circles of Figure 1, but will be of irregular shapes, determined by the particulars of your situation. Walking and cycling may be bounded by barriers such as freeways. The zone reachable by mass transit will follow the service corridors.

As with any model, modify the categories for your own case. Maybe you don't bicycle or there's no public transit. Or perhaps your definition of cycling distance is a 20-mile radius.

After you've gone through this exercise, you can transfer the information to the simplified diagram of concentric circles. A simplified model can make it easier to see patterns.

What do you see? The diagram shows how you're allocating your energy — your time and the fossil fuels you use. The map is a tool for awareness, so don't be judgmental or in a rush to make changes.

An energy diet

Over the years I've put myself on an energy diet by changing jobs and dropping commitments that required long distance travel. The result is shown in Figure 2; it's not perfect but it's much better than it was five years ago.

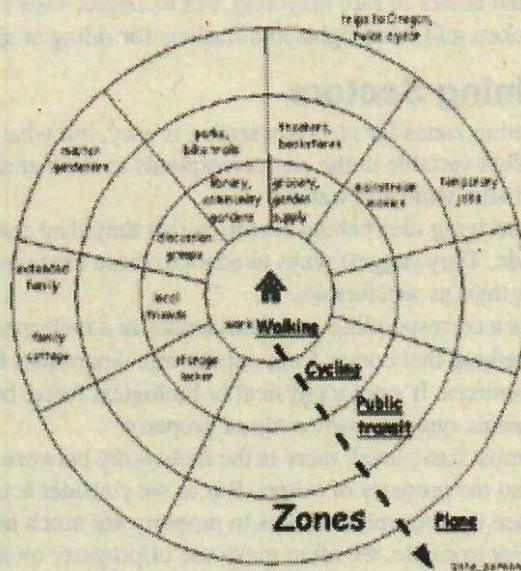


Figure 2. One person's zones and sectors

As with dieting, I've found that the most lasting changes happen slowly as one gradually modifies one's lifestyle. Draconian resolutions to cut out all car travel don't work — it's like the starve-and-binge routine that dieters experience.

Nor does it help that American cities and suburbs are designed for cars, not people. Many stores and essential services can only be reached by car. Perhaps as gas becomes more expensive, people will turn away from cars and the vision of cities on a human scale will come to pass; the prophecies of Richard Register and James Howard Kunstler will be vindicated.

In the meantime, there is much that individuals can do in their own lives. The big win would be to move to a community that IS designed for pedestrians and cyclists. There are often easy changes one can make, like skipping vacation trips which are long, expensive and stressful.

Mantra: Go local, go deep

About traditional zones Bill Mollison said, "The golden rule is to develop the nearest area first," and the same applies here. Make full use of what is in front of you, what is local and available:

- Get involved with groups close to home.
- Adapt tastes to what is available, not what the media advertise.
- Do chores via the phone, Internet or postal system.
- Explore the local ecosystems and natural history.
- Try making what you need at home (food or music for example).

I've found that as I became involved in local activities, my schedule rapidly filled up. I no longer had the urge to travel. I didn't have the time!

Bicycles deserve a note of their own. With their unsurpassed efficiency, bicycles will have an important role to play in a low-energy future. To make full use of the possibilities, get hold of the bicycle maps prepared by cities, cycling clubs or map companies. Find routes on which you feel safe and comfortable and learn the basics of safe bicycling. For example, wear bright cycling jackets and carry lights and flashers for riding at night.

Redefining Sectors

Translating zones for an urban setting is easy, but what about sectors? What variable in the city corresponds to the natural energies of sun, wind and water?

The underlying idea behind sectors is that they map energies from outside. They suggest ways to adapt to those energies, such as planting trees as windbreaks.

There is a corresponding set of influences in a metropolitan area—something that comes from outside and determines how you use resources. It's not a physical or biological force, but a socio-economic one: the ownership of property.

At the most basic level, there is the dichotomy between our property and the property of others. But as we consider actual cases, we see that our relationships to property are much more complex. For example, we often make use of property owned by family members or by the community as a whole. In fact, seven sectors can be defined by type of ownership:

- * Personal - the nuclear family or household unit, owned or rental.
- * Family and friends - informal but strong relationships.
- * Associations - clubs, churches, volunteer groups, etc.
- * Community - city, county, state, federal.
- * Local businesses - local retailers, professionals, farmers and crafts people.
- * Mega-corporations - conglomerates, chains, the Fortune 500, etc.
- * Undefined - some resources and lands have no clear ownership, such as underpasses, vacant lots, abandoned houses, rights-of-way, etc.

If we overlay the new concept of sectors onto the zones, we get the diagram in Figure 3.

With the new model, you can continue the mapping exercise from before. Transfer the information from the zone map into the appropriate zone and sector, and you'll see where you're spending your life energy. Are you devoting yourself to alien far-away institutions? Is this how you want spend your life?

If you want to make changes, the same guidelines hold true for reducing fuel use: a gradual and non-judgmental approach works best. You're fighting the mainstream culture, so patience is required.

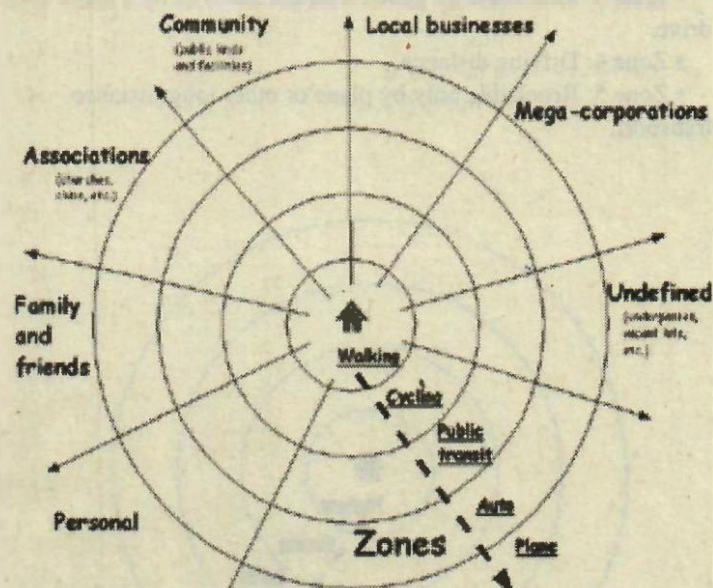


Figure 3. Zones and sectors

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Shields, Deflectors and Collectors

An intriguing set of possibilities is suggested by Bill Mollison's remarks on natural energies: "Some factors we may invite in to our homes... Some we may exclude... Energies from outside can be thought of as so many arrows winging their way towards the home, carrying both destructive and beneficial energies; we need to erect shields, deflectors, or collectors."

In other words, we need to think deeply about the different sectors. It's simplistic to label one sector good and another bad. The task is to understand the nature of the sectors and to develop complex relationships with them. There's enough material here for years of thought and discussion. As a start, let me offer these stray thoughts:

* The mega-corporations are the most problematic sector in the modern world. As the dominant form of ownership, they control the resources that flow in and out of an area.

* Re-localization is the banner cry of Peak Oil activists such as the Post Carbon Institute. They argue that in a low-energy future, shipped goods will become prohibitively expensive as transportation costs increase. If there is widespread employment or an undependable national government, it is better to rely on local institutions. This argument for local production is echoed by local food enthusiasts and the food security movement.

* The "undefined" sector is large in Third World countries, where title to property may be difficult to obtain. People build homes, businesses and gardens without clear land ownership, and consequently live in a state of insecurity, never knowing if the result of all their work will be taken away. Community gardens often exist in a similar state, with developers hungry for land to build on.

You can use zones and sectors to expand your awareness of resources available in your area. Draw a zone-and-sector diagram, then fill in as many of the blanks as you can with real or



This exercise demonstrates that there are many other ways to meet needs besides personal ownership. For example, in our area you could spend hundreds of thousands of dollars to buy a home with a yard in which to garden. Or you could get a plot at a community garden. Another possibility is gardening in the yard of someone who wants a garden but can't do it herself. Shops and churches offer other opportunities.

As I write, the effects of Hurricane Katrina on the supply of oil and natural gas are yet to be determined. Oil is topping \$70 a barrel. No one can predict when we will enter the period of "sustainability with teeth," as Richard Heinberg puts it, but it may be soon.

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Bart Anderson has been a reporter, high school teacher and technical writer. He now gardens and writes on sustainability and energy issues. He is co-editor of Energy Bulletin (<http://energybulletin.net>).

Growing Food in the City

TIRED OF CORPORATE CONTROL of the food supply? Fed up with eating food grown thousands of miles away using huge amounts of fossil fuel in its production and transport? In Gainesville, Florida, we've formed a group that's promoting edible landscaping and local, sustainable food production.

We realized that it wouldn't take much effort for us to start a nursery where we could produce large numbers of fruit and nut trees of excellent, locally adapted varieties. And by doing the project on a volunteer basis, we could charge just enough money for the trees to cover our costs, making them very affordable. We thought that many people would like to learn about plant propagation but hadn't had the opportunity, and many would like to grow food, but didn't had a source of plants. By pairing people's needs with our surpluses, we realized that we could teach valuable skills of plant propagation while producing large quantities of food plants.

To get “seed money” for the project, we started with a weekend of dumpster-diving (amazing what good stuff gets thrown out at the local college at the end of the semester), followed by a big yard sale of the loot we’d collected, which netted a few hundred dollars. We used this money to buy a truckload of potting soil from a nursery supplier, plus some pots and irrigation supplies.

Then we began the really fun stuff: starting fruit trees. Some of our favorites are mulberries, pomegranates, and figs, which grow and fruit really well around here and start easily from cuttings. Whenever we located a mulberry or fig tree around town loaded with tasty fruit, we took cuttings and rooted them in the nursery to start new plants. Some fruit trees, like loquats, start well from seeds, so when eating fruit from the best loquat trees around, we'd save the seeds for planting. Always the basic idea was the same: find those fruit trees around town that do really well here, making huge quantities of tasty fruit, and start new trees from them, using whatever method works best for that species.

Most of the work of the project happens at regular work parties, where we tend the plants in the nursery, start cuttings,

plant seeds, pot up seedlings, and weed. The volunteers learn how to propagate and care for food trees. This generates lots of trees which we distribute mainly at the local farmers market, where other volunteers sell them for two or three dollars each. The goal of the project is not to make money, however, it's to distribute the trees, so we're always happy to give away plants to folks without funds to buy. So far we've been able to sell everything we've grown just by bringing it to the market. We want to ramp up production in order to supply large quantities of plants, especially to the poorer areas of town.

The long-term goal is to have food-producing trees all around town, in yards, street corners, and public places, so that every month of the year is marked by different fruit trees ripening. Tree crops need to be planted only once, and they bear for decades, an abundant source of free food that frees us from having to support intensive agribusiness.



Volunteers have done everything, from dumpster diving to propagating, potting, and promotion, learning valuable skills in the process.

Beyond spreading plant material, we also want to spread information about how best to use these plants. When a prime fig, mulberry, or loquat tree around town is at its peak of production, it's sad to see how many people walk right on by, blind to the bounty before their eyes, their minds trained to think that food comes only from the store. By spreading the word about what people are missing, we can make sure not only that fruit trees get planted, but that the fruit gets used. The right recipes and processing techniques can help ensure that the abundance will be well used (for example, dehydrated mulberries taste like mulberry-flavored raisins). We've been experimenting with solar dehydrators to complete the cycle—not only would the fruit be grown with solar energy, it would be preserved with the sun's rays too, providing a year-round supply of tasty dried fruit.

We've tried various techniques of plant propagation. Our most successful method for starting new plants is to take cuttings, a procedure that is very simple and reliably produces large numbers of plants. It's easy if you'd like to try it. We simply cut trimmings of the branches into four- to eight-inch long sections, trim off all but one or two leaves from each cutting, and trim the

remaining leaves to less than half of their original area. During winter, leafless deciduous plants can be cut into twigs. We then stick a whole bunch of these cuttings a couple of inches deep into a pot of soil on about a one inch spacing; 20 or 30 cuttings easily fit in a ten- or twelve-inch pot. Water the soil generously.

Since these cuttings lack roots to draw water up from the soil, they are vulnerable to drying out until they have rooted. There are two ways to deal with this. One is to use misters that spray the foliage every 10-30 minutes, much like systems in the grocery store. A more low-tech method is simply to put a clear plastic bag over the pot and set it where it will get filtered sunlight.

Within six weeks of taking cuttings, many plants have started to root, and by three months many are well enough rooted to be carefully separated out and planted in individual pots. We have had great success using this method with mulberries, figs, and pomegranates, and have had at least a few "takes" of plum, blueberry, pear, muscadine grape, avocado, and peach.

A Replicable Model

One of the most exciting things about our project is realizing how much potential there is for it to be replicated, in one form or another, around the country. Plant propagation is easy! Although we have chosen a group-based, not-for-profit route, there are many possible models. A single person could produce, in a smallish suburban yard, hundreds of food plants for distribution every year. Done as a for-profit project, this could become a nice small business for someone. Or for someone with land, this could be an inexpensive way to produce plants to develop the property as a commercial tree crop farm. On a smaller scale, even a few pots of cuttings a year could produce quite a number of plants for distribution. Every fruit or nut tree started could yield for decades—a huge return for little effort. No matter what your climate zone, there are tree crops adapted to your area.

One of our plant propagation and breeding projects that seems to have tremendous potential is with avocados. Avocados grow and fruit in abundance in south Florida, but here in north Florida our winter lows in the upper teens to low 20s (°F) rapidly turn avocado varieties from south Florida or California into crispy critters. In the wild, the most cold-tolerant avocados are native to Mexico. A few trees of these Mexican varieties, planted years ago in our area, produce regular crops of fruit and handle most winters with little problem. In Texas, also, many excellent varieties have been selected from Mexican avocado parentage. We have been propagating trees from both of these sources.

The neat thing about making cold-hardy avocado trees available is what's likely to happen if we get enough trees of the numerous cold-hardy varieties planted around town. Once the trees begin to flower, they will cross-pollinate and become a true breeding population, mixing and matching genes for a variety of characteristics, from cold-hardiness to fruit size and flavor. The seeds will find their way to favorable locations, with the aid of human accomplices, many of whom may never have heard of our project—who can resist planting an avocado pit? Already in Gainesville, almost every street has one or two houses with an avocado plant grown from a supermarket fruit—though these plants freeze to the ground every winter, never setting any fruit.

As new seeds of the cold-hardy stock get planted, the gene pool expands. The occasional colder winter will knock out of production the less cold-hardy individuals, while trees that reliably produce the largest, tastiest avocados are most likely to get distributed to friends and neighbors (or swiped by the neighborhood food foragers!). Every avocado eaten has at least a fair chance of its seed being planted. The result would be a vast breeding project, involving many people over many years, more or less unknowingly selecting for cold-hardiness, fruit quality, and general adaptation for local conditions. A Gainesville-based center of cold-hardy avocado germplasm would supply material that could be grown all around the Gulf Coast, and up through coastal Georgia and South Carolina.

Natives and Non-Natives

Some people have a keen interest in planting only native plants, based on concerns for maintaining the ecological integrity of their bioregions and not wanting to be responsible for introducing the next kudzu. There is a lot of justification for this position, and certainly there are many native fruit and nut species to work with in North America: pecan, chestnut, pawpaw, persimmon, and species of blueberry, grape, and blackberry. In our project we have taken the position that we will propagate both natives and non-natives, as long as the latter will not aggressively spread into natural ecosystems. We base this decision on the grounds that whatever food can be produced for people by trees planted as part of the "human-scape" is food that doesn't have to be produced someplace else, likely displacing native species there.

Although the main focus of the group is on propagating tree crops and other perennials, we've also begun a seed bank of locally-adapted, open-pollinated vegetable varieties as another way to promote local food production. By letting non-hybrid vegetables in our gardens go to seed, we are able to save tremendous quantities of seed for distribution. This has been one of our most popular items at the farmers market. Packets of seed

for which we charge a dollar cost less than half what commercial seeds usually sell for, and these are varieties that will do well here without intensive chemical fertilizer or pesticides. Also, we are able to bring seeds to the market at the right time for planting them—Florida gardening goes year-round, but most vegetable varieties need to be planted at the appropriate season to do well.

Our most exciting seed distribution so far has been of a tropical lettuce variety, Indian lettuce (*Lactuca indica*). Ordinary lettuce does well here over the winter months, but fades in the heat, making locally-grown salad lettuce nearly impossible from May through September. Indian lettuce thrives in the heat and humidity of Florida summers, and makes quality greens for salads. Currently, there is no commercial source of Indian lettuce seed in the United States. Our first distributions of Indian lettuce seed were to seed companies and to vegetable growers who sell at the farmers market. We hope to see greens of this type in the market all summer. Indian lettuce has the potential to make the Southeast independent of California lettuce during the warmer half of the year.

Edible landscaping in actual practice

Another long-term vegetable project is breeding perennial leaf chicories for this area. Many varieties of chicory (*Cichorium spp.*) make excellent salad greens, and they handle our summer heat and winter frosts equally well. There are many varieties of leaf chicories, some of which are reported to have some degree of a perennial growth habit. The perennial trait seems to vary from individual to individual—within a planting of a single variety, some plants flower and immediately die, while others flower and keep growing. The good part of this is that after the first year's flowering, you are left with only perennial individuals. By planting a number of varieties, we hope to keep selecting for perennialism and good quality salad greens.

You hear a lot of talk about 'edible landscaping,' but it's amazing how rarely the idea is actually put into practice. How much food could we grow as part of the human-scape if the trees

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Dr. David Suzuki, biologist, geneticist, broadcaster, international environmental advocate.

Hawaii: Jamie Mulligan-Smitt, 415-298-0915, mulliganj@hotmail.com; Central America: Jenny Bell, 206-949-0496, jennywhere@yahoo.com; Bahamas: Chris Shanks, ch_shanks@hotmail.com; or for full details, photos, instructor's bios, etc., visit www.permacultureonline.com

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were chestnut, mulberry, and persimmon, the shrubs blueberry bushes, all of these selected, high-yielding varieties? How much could we shrink our ecological footprint with each fruit and nut tree we plant? It's difficult to buy low-impact food (although there certainly are some examples of sustainable, organic food production). Most food eaten in the US comes from the Midwest or California, costs huge amounts of fossil fuels, is irrigated with water from fast-depleting aquifers and rivers, and is grown with petroleum-based fertilizers, pesticides, and herbicides on rapidly eroding soils. Much more energy is then used to process this food and transport it across the country to its place of consumption. Every dollar spent on such food supports a destructive system.



Farmers markets provide a venue not only to sell plants to raise funds that sustain the project, but the chance to spread the word about permaculture, urban food production and community.

Declaring independence

By planting fruit and nut trees and vegetable gardens where people live and work, we can declare independence from this system. Perhaps the greatest potential for moving our society toward sustainability is for tree crops and other perennials to be developed and used in commercial agriculture, but having these plants in our urban landscape can improve people's lives in many ways. Instead of buying highly processed, depleted foods that aggravate rampant health problems, we could eat fresh, wholesome fruits, nuts, and vegetables, harvested at the peak of ripeness. Rather than consuming energy-wasting food, we could eat locally grown food with net environmental benefits (especially if the trees are irrigated with graywater or rainwater catchment).

Food could again be something that connects people with nature and with the seasonal cycles of life. Anyone who has ever stood under a tree loaded with fruit, gorging themselves on the crop, can appreciate this abundance. Once people realize how easy it is to grow food, there will be many opportunities for sharing this abundance.

Craig Hepworth is a co-founding member of the Edible Plant Project of Gainesville, Florida. You can reach him at floridabamboo@yahoo.com or (352) 665-2175.

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How Detroit Summer Spawned a Permaculture Revolution

Urban Visionaries

Christopher Shein

I FIRST CAME ACROSS THE PERMACULTURE concept in 1992 as a volunteer for Detroit Summer, an intergenerational grassroots movement to redefine, reinspire, and revision Detroit from the ground up." Mississippi Freedom Summer and the Civil Rights era voter registration drive of 1964, inspired Detroit Summer. High school students from Detroit, MI, and college students from across the country come together to help fix up homes for elders and the homeless, paint public community murals, build and plant community gardens, and help with free youth bicycle programs.

Failing economy, shrinking population

Detroit, a post-industrial city with a former population of 2 million, it is now home to fewer than 1 million people. Along with Philadelphia, Detroit is the only major US city to continue to decline in population due to lack of employment and resulting economic failure. The plight of Detroit illustrates, in reverse, the permaculture principle of redundancy, "Let every essential function be met by multiple elements. Have more than one source of water, heat, and income." (Peter Bane, pp. 79 in *The Art of Natural Building*) Detroit is the classic one-industry city, the Motor City, and largest manufacturer of automobiles, where the factories are all vacant and the jobs all went South. So the remaining citizens are coming up with all kinds of creative means to create community-based employment. This former "Paris of the Midwest," with over 30,000 vacant homes and 65,000 vacant lots, offers great potential for the urban homesteader.

On my first day at the first Detroit Summer, one of the organizers, John G., handed me an article from *Permaculture Activist* about Urban Cooperative Permaculture Blocks by Richard Register, about sharing backyards and outbuildings, growing food, harvesting energy, and building community. What was so great about this was that John had already been working on exactly this in his Northwest Detroit neighborhood. As a city electrician, he had gotten block grants and bought up more than 10 houses in his neighborhood and was taking down fences, building gardens in yards and alleyways. The next year we painted murals and built a greenhouse as a Detroit Summer project in his housing cluster.

It was easy to catch the enthusiasm of Detroit youth to build something new from the ashes of the old order. They held a strong multicultural vision for a new Detroit based on social and environmental justice and a more sustainable economic future. This sounded to me like the ethics of permaculture, especially with the diversity of the participants (age, race, class, gender).

Visionary leaders, legions of activists

For four summers I faithfully helped to build community

gardens with many youth and with an amazing Detroiters, Gerald Hairston (1949?-2003). Gerald was a visionary urban ecologist and a high-energy organic revolutionary, who worked with diverse groups such as Detroit Summer, Detroiters Working for Environmental Justice, Detroit Agricultural Network, the Gardening Angels, and the Boggs Center. Gerald helped many seniors with a dozen community gardens and scores of backyard gardens. He learned to garden from his grandmother who was of Blackfoot Native American descent and was blind. She would send him to the fish market to get fish heads and parts to bury under mounds for corn plantings. Gerald was active with the 4-H and local churches, always teaching youth his passion for growing food and flowers. He was also an artist who recycled everything into beautiful costumes for international Carnival festivals. He was well connected with local landscapers and would have piles of woodchips and grass clippings dropped off at his gardens.



To longtime Detroit activist Gerald Hairston, urban sprawl meant expansive, thriving gardens.

I remember getting a 10-yard dump truck full of horse manure and riding with a bunch of young Detroiters in the back to a community garden. Gerald was a great salvager: He would fill his truck with leftover starts from the Eastern Market and deliver them all over the city.

Gerald also worked with artist Tyree Guyton and the Heidelberg Project, where a whole block on the East Side was taken over as a public art installation. Tyree started with his house and painted it with polka dots and made giant sculptures

out of bicycles, baby dolls, TV's, car parts, etc. There were hundreds of pairs of old shoes glued to the sidewalk in a big line. Gerald was also a part of D.A.N. (Detroit Agricultural Network), which is an umbrella for the many gardening projects in the city, bringing backyard gardeners to the Eastern Market and the black farmers up from the South. It also created youth nurseries, a one-acre vegetable garden for an AIDS hospice and many other urban agriculture projects.

Paul Weertz is another urban farming legend. He started an agriculture project as the science teacher at Katherine Ferguson Academy, a public school for teenage mothers. Paul has put in several acres of fruit trees, with gardens, beehives, and livestock, including two ponies. Twenty-five chickens and ducks are used for eggs and the dissection/anatomy part of the biology classes he teaches. As a hobby farmer he has taken over a six-acre field and is raising alfalfa and oats; he gets four cuts per year. Paul stores 250 bales of straw in an abandoned house nearby. In his backyard he keeps many animals in the shed including dairy goats, turkeys, pheasants, chickens, and ducks, as well as bees in a special hive attached to the house. He's built a strawbale swimming pool with pond liner between the narrow alleyways between two houses.



"Vacant" lots could not be more occupied, multi-functioning as gardens, playgrounds, classrooms and community centers.

The intellectual movers and shakers behind Detroit Summer and activists over the past 50 years, are James Boggs and Grace Lee Boggs. James was the author of many books and pamphlets including *Revolution and Evolution* with his wife Grace, who has also written her autobiography, *Living for Change*. James came to the city from the South to work in the auto factories. He passed away in 1993 away after witnessing two Detroit Summers. He challenged the younger folks to think broader and dig deeper into the fundamental problems, and challenged us to think for ourselves. Grace Lee Boggs is still going strong at 90. She's a Chinese-American daughter of immigrants who received a PhD in the 1930s and has been a life long educator/activist. I visited her for a day this summer to check up on how the movement was

going. She still writes a weekly column for the *Michigan Citizen*, travels, lectures, and hosts the Michigan plenary of the Bioneers. She has a pamphlet on "Freedom Schooling" and is challenging the current factory-based education system that inner city schools are still using to prepare urban youth for prison and not for post-industrial America. And she's trying to organize student strikes to reform our current education system. She lives at the Boggs

"It was easy to catch the enthusiasm of Detroit youth to build something new from the ashes of the old order. . ."

Center, where she has university students come for internships and organizes youth dialogues. (See www.BoggsCenter.org)

There are also architects working for sustainable Detroit, who with students and community visionaries, have come up with city scale blueprints (really greenprints) for local year-round food production and building walkable enclosed greenways to create jobs, energy, and food security. (See www.Adameh.org.)

Thinking about the core model, Grace, Gerald, Paul and other Detroiters have made a huge impact on the vision and implementation of a truly green city. We need more connections between youth and elders, passing down hard won life experiences of struggling to make the world more equitable for all people and all of our relations. (Also see www.DetroitSummer.org.)

The work spawned by these activists and the thousands of participants in Detroit Summers and their continuing commitment provide a comprehensive model for urban transformation. △

Christopher Shein practices and teaches permaculture in Oakland, CA, where he is founder of the Oakland Permaculture Institute. Dedicated to affordable and time-convenient access to permaculture training for all, he teaches two design courses annually at Merritt College. He is designer and director of the new Ploughshares Nursery, a community-based non-profit program of the Alameda Point Collaborative community.

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Rebuilding New Orleans -- and Everytown, USA

Richard Register

WHAT DO NEW ORLEANS AND SUBURBIA have in common? Both need to be rebuilt. That's the big secret behind today's headlines that nobody is talking about. If New Orleans was victimized by Hurricane Katrina, the habit of building in the suburban style was largely the cause of it. How so? Climate change and automobile-dependent sprawl. Specifically, scattered development patterns impose long distance travel on our everyday lives, causing us to burn great quantities of fuel, thus loading more climate-changing CO₂ into the atmosphere. This is not a trivial contribution to the problem. Cities are the largest creations of humanity—you'd think we'd be very careful how we build them, but we haven't been. And also, the vast land areas gobbled up by car-induced scattering makes it well-nigh impossible to build appropriately to the natural environment in any location.

Let's run this mind experiment for a moment. Suppose someone on our planet had enough time, wisdom, and information to sit back and say, "What are the basics here?" We start with the city because of its commanding size and direct link to climate change. Then we ask, "How have cities been built over the ages? How have they interacted with nature?" And in particular, "How have they been built in relation to rivers and oceans and floods?" Let's suppose you and me are thinking this.

Old ways of city building made new

The lessons from history for rebuilding New Orleans—and building cities in general—go back to some of the oldest cities on Earth, such as Ur in today's Iraq, almost 5,000 years ago, and to Mohenjo-daro in ancient India. Both were built in river floodplains, but on constructed platforms of earth, Mohenjo-daro's over 20 feet high. These were pedestrian cities and though their buildings were not very tall, their residential density was fairly high. They had narrow streets with no front, side, or back yards. No freeways with sweeping landscaping there, no sidewalks or driveways, no parking lots or gas stations. Their populations were modest by today's standards, but the highest anywhere in those times—up to 50,000 for Ur and 40,000 for Mohenjo-daro.

Now, fast forward to the present. Typical of contemporary cities of the automobile era, New Orleans—also built in a floodplain—has spread out beyond its dense center to establish a very large footprint, displacing the natural buffering landscape/waterscape locally called the bayou. The perimeter wall of Ur was six miles long, the levees of New Orleans, 350 miles long. For comparison, that's six times more levee per person at New Orleans with its 500,000 population than at Ur—and of course, at Ur, behind those protective walls the city was elevated instead of sunken below water level.

Locally more to the point, however, is that ancient Native American cities along the banks of the Mississippi were also built on mounds. As far away as coastal California, the Indians built villages on top of shell mounds—for multiple reasons. Not only were these settlements built above the highest tides and waves for security, but the views were better for defense, for assessing the surrounding water and landscape for fishing and hunting, and for appreciation of the weather and the distant horizon. The air was fresher, the sunny side drier and warmer, and generally, a new environment with a new integration of effects and services added inspiration to the culture itself. It feels great to make something unique, useful, and beautiful.

To those early builders, settlements on elevated promontories were even more; they were places of ceremony—burial in many cases, of remembrance of the past and dedication to the future.

The compact pedestrian environment of high diversity makes such multiple benefits possible, whereas, the suburban single-use bedroom community exemplifies the opposite. Diversity of experience there is only available electronically, or by using a far-flung transportation system involving lots of time, heavy machines, and massive flows of energy.

The bankers and business people of modern New Orleans have been far too busy making money to contemplate historic cities on elevated platforms or the virtues of the pedestrian community, and so, 80% of the city was built below sea level.

Five strategies for rebuilding cities

But now we are back to the here and now of our mind experiment. What might we conclude?

1) Raise the level of New Orleans wherever possible by adding fill and building on top of that. Calculate the sea level rise likely to be caused by global warming over a few more decades and add another ten feet of fill. We subsidize car makers and oil companies by spending billions on freeways, wide arterial roads, parking lots, and garages. Better we should spend money to protect those places we love the best, like San Francisco and New Orleans: more steel to San Francisco, more fill to New Orleans. There need to be federal, state, and local incentives to encourage this.

2) Make the city much more compact and pedestrian friendly, for several reasons. First, to reduce the area of land needing protection in flood-prone places like New Orleans, making it easier and cheaper to defend. Thus the perimeter of whatever levees necessary would also be reduced. Diked areas would include historic districts of small area and existing higher density areas where many people are served. Second, make the city more compact to reduce the commuting distances and make transit

efficient and economical and bicycling very convenient. This applies to Everytown, USA as well as New Orleans. Make suburbs into real towns with their own mixed, vital economies and culture by adding higher density and diversity of uses to their centers. Create car-free areas and increase them in size to whole districts over time. Roll back sprawl. Remove automobile-dependent development on the periphery. This is essential if we are to conserve enough energy to combat global warming and at the same time deal as best we can with the dislocations that will accompany passing world peak oil production. We are about to start the permanent slide into expensive, limited energy availability.

Pedestrian cities can accomplish small footprint land uses and high performance. Car cities are too gigantic in land area to accomplish anything but perpetuating the disasters we see multiplying right now. Giant metropolises need models—New Orleans could become one—for downsizing into regions in which city centers becoming whole smaller compact cities and district centers and neighborhood centers becoming eco-towns and eco-villages relocating essential manufacture and caring for the restoration of agriculture and natural environments earlier displaced by ill-advised sprawl.

3) Put in place incentives to reduce population voluntarily in the dangerous areas, such as grants to people who want to move but can't afford it. In the Oakland/Berkeley Hills firestorm of 1991, 3375 homes were destroyed and a full 30% of the people affected wanted to sell and move. But their insurance policies required they rebuild in the same fire-prone location. Laws could be passed to require the insurance companies to pay victims of disasters to rebuild—or simply move anywhere they wanted. A little flexibility please! The real estate with destroyed buildings or with vacant lots would then be inexpensive enough to be purchased for the restoration of open space—bayou, nature preserve, farmland, open water—whatever makes the most sense. Make urban homesteading programs available again for those choosing to live in and upgrade urban and even suburban centers on their way to becoming real towns with the full range of working and living, of economic and social life close together.

4) Establish a crash program for renewable energy like solar and wind—that fits perfectly with the energy conserving structure of the city rebuilt in the compact, mixed-use pattern. Coordinated with reshaping cities around pedestrian and transit needs, renewable energy systems constitute the most fundamental and effective strategy available for combating global warming and ameliorating future hurricane fury. Again, this applies to New Orleans and the vastly larger sprawl of Everytown, USA. Forget making cars “better” in any way. That only perpetuates the disastrous waste of land, energy, time, and lives—and even climate stability—indefinitely into the future. Build future cities for people, not cars.

5) Connect cities internally and between one another, mainly with energy efficient rails, and de-emphasize energy squandering highways steadily into the future. Build streetcars rather than streets for cars. With one line of rail delivering as much freight and passenger service as eight lanes of freeway, it is close to insanity in an energy-constrained future to not build that way.

There are tools that work magnificently with transportation and land use transformation, such as transfer of development rights and ecological zoning maps, land trusts and natural habitat restoration plans—and simply straightforwardly investing money in such work that, with resolve, could do the trick.

...Cities with suburbs all need to find their centers and reinforce them.

In New Orleans, this five point strategy—1) building up appropriately to the location, 2) shifting to development to pedestrian centers, 3) encouraging flexibility in population migration, 4) building renewable energy systems, and 5) switching from cars to rail—would preserve much of the city that was above the Katrina flood, notably the historic French Quarter and downtown. The lowest areas and those close to Lake Pontchartrain should be allowed to go back to water or bayou, which ever makes the most sense from the ecological and storm buffer points of view. Areas of whatever elevation, farthest from higher density pedestrian centers, are the most car dependent and should also be abandoned for restoration of nature and agriculture, and in some areas around New Orleans, aquatic food production.

Areas selected for higher density that sustained particularly high levels of damage should be bulldozed and earth brought in for fill. Dating back some 1400 years, the city of Venice was built on fill in shallow waters and on sandbars that barely broke the waves. But this fill was known to be too soft to support buildings. And so, the whole city of Venice stands on wooden pilings driven into the sand and silt. Submerged under water and deprived of oxygen, this wood is still strong and solid after well over a millennium.

A similar solution might work for New Orleans. The pedestrian city makes it possible—and makes significant energy conservation possible as well. Two issues for New Orleans in particular are sediment from the Mississippi and subsidence along the coast. As most people who have read about the catastrophe in the popular press now know, the river has been locked behind levees and dredged for the benefit of shipping. As a result, the river heads straight out to the farthest edge of the delta in full flow and drops its burden of silt over the continental shelf and into the abyssal depths. This starves the marshlands around New Orleans of both nutrient-containing silt for plants, and hence animals of all sorts including food organisms that support the fishing industry. This channelling also diverts fresh water that would otherwise flow through smaller channels perpendicular to the main stem and across the vast acreage of the delta wetlands. Depriving these wetlands of fresh water allows saltwater intrusion, which kills many of the plants and animals.

Meantime, not only has sediment been diverted to the depths, but the land has been sinking due to extraction of oil and natural gas and the level of the ocean has been gradually rising too. Notice the suburbs' role in this.

Burning prodigious amounts of oil in the form of gasoline, this low-density way of living has caused subsidence by extracting oil and also helped cause higher sea levels—as well as more violent storms—by contributing more to global warming than any other single activity of humanity.

The solution, then, would be gradually to reduce extraction toward zero to combat further subsidence and to reserve most of what we do use in terms of oil and natural gas in the rebuilding of all cities so that low density is replaced with ecologically informed pedestrian infrastructure steadily into the future. This also means less climate-changing CO2 going into the atmosphere. The problem for New Orleans in particular would be how much silt to capture for raising the overall level of the new, smaller footprint city, and how much to dedicate to rebuilding the marshes and all the life based on them? If much of the river's flow should be returned to side channels, perhaps part of the answer would be to use shallower draft ships up and down the Mississippi and out to sea and back. I can't answer such technical questions until others with much more local ecological, hydrological, and engineering knowledge join the debate.

A pattern for suburbs everywhere

Finally, I acknowledge that this prescription for a healthier New Orleans has to do with its physical description. Beyond that are the obvious social, economic, and political questions raised by the Katrina disaster. Will the rich succeed in limiting the return of the poor to an imagined tourist destination city only as hotel clerks and maids, tour guides and musicians, casino dealers and bartenders? Will the city become a shipping port and energy

extraction and processing center continuing the old patterns of subsidence and global warming with high paying jobs only for people taking part in such use-it-up-until-its-gone exploitation of finite and dwindling resources? Such a rebuilt New Orleans would be a cultural disaster not just for the displaced but for the whole country. Will the habit of providing for car drivers first reassert itself, while services to the pedestrian again be forgotten, as the memory of high winds and high waters and hundreds of miles of vulnerable levees slides away with time, as people fall back into old ways of short-term thinking? I have no real answers for that other than to hope people take seriously that what we do build physically has very real consequences.

Here then, winding up our thought experiment, is an overall rebuilding pattern for both New Orleans and suburbs everywhere:

Metropolitan areas and cities with suburbs all need to find their centers and reinforce them. They need to withdraw development away from their low-density fringes and toward pedestrian, bicycle, and transit centers. Cars and sprawl not only will kill us, they already are killing us in Everytown, USA, where car accidents and air pollution, violently or quietly, lay the people down, and in New Orleans, on the front lines in the new war of climate change against all of us.

Richard Register is an internationally recognized urban design activist. In 1990 he launched the Intl. Ecocity Conference, held every two years since on five continents. Founder and President of Ecocity Builders, his work has taken him to 19 countries to promote environmentally sound urban development through public education and work with governments and planners.

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The Enduring Chinampas of Xochimilco

Learning from the Megalopolis

Nik Bertulis

DEEP IN THE BOWELS OF ONE OF LATIN America's most industrialized cities lurks an ancient Garden of Eden, the floating gardens of Xochimilco. Clumsily, I pole our rustic wooden canoe down a canal whose banks burst with tangled root mass of the *ahuejote* tree. Herons burst into flight as our raft glides past the rectilinear forest. Leathery middle-aged farmers quietly steer their harvest of lettuce, spinach, and flowers through thick stands of cattail, bulrush, and hyacinth. The sulfuric stench of rotten egg bubbles up from a toxic brew of sewage, agricultural, and industrial effluent. The half dozen Xochimilca farmers in our boat laugh and crack jokes about the clumsy maneuverings of the *gringo*: me. The farmers, some wearing cowboy hats, others Oakland Raiders baseball caps, precariously juggle their traditional way of life and the constant forces of colony, industry, and urbanity.

These are the famed *chinampas*, the last vestiges of a massive wetland farm system upon which Mexico City is built and into which it is sinking. For over two hundred generations, the Xochimilcas have been farming these so called "floating gardens." This system, arguably the most fecund agriculture the planet has seen, fed Tenochtitlan, capital of the Aztec empire. When Hernan Cortés conquered this ancient city he was awestruck by its size—up to a million inhabitants, ranking it as the world's largest urban agglomeration 500 plus years ago.

Building land from the lake bottom up

Slashing and piling mounds of vegetation into an irregular grid across Lake Xochimilco gave form to the *chinampas*. Nutrient-rich mud was scooped from the lake bottom and slathered on top of the mounds. *Ahuejote* trees, a kind of willow, planted in rows along the perimeter, held the floating mud-piles together. Eventually years of accumulated mud and plant matter would force the mound to the lake bottom whereby it effectively became an island. Hundreds of heirloom varieties of crops and trees grew abundantly in this rich, moist soil. Fallowing, mandatory in most agriculture, was not necessary due to the constant application of nutrient-rich slurry that accumulated on the bottom of the canals. As with its modern cousin, hydroponics, *chinampa* irrigation needs were minimal because enough moisture wicks up through the mud to nourish the plants. Dozens of species of fish, frogs, crustaceans, salamanders, water bugs, and fowl thrived in the canals between the *chinampas*, and the people thrived on them. A fleet of 200,000 canoes carried the abundant harvest to the heart of the city. Unheard of in industrial societies, this agriculture supported a dense urban population, while symbiotically maintaining an outstandingly diverse ecosystem.

In the early 17th century the Spanish began destroying this

magnificent system, in part to avoid periodic flooding but also to assimilate the landscape, and thus the people, into their European way of life. The Spaniards needed wide open fields to plant their wheat and graze their cattle. So the canals were filled in and massive tunnels pierced the valley's basin to begin the draining of the lakes. As food was no longer harvested from the remaining canals, they became filled with sewage and garbage, a practice strictly forbidden in Aztec times.

First agriculture, then urbanization wreaked havoc on this ancient agricultural ecosystem. Explosive population growth in Mexico City in the second half of the 20th century continued to place undue burdens on Xochimilco as massive infrastructure



Willows hold the banks of the *chinampas* the same way they have for centuries pre-dating the conquest. Erosion and misuse of water in modern Mexico City have lowered the Xochimilco water table 13 feet.

projects were built to meet the city's growing water needs.

Today, 4,820 wells puncture the Mexico City's ancient aquifers to meet 70% of Mexico City's water use. These wells extract twice the amount of underground water that flows in naturally. Like a sponge left to dry, the soil shrinks and compacts, or subsides as geologists say. In some years, the city has sunk 18 inches. People have died falling into sinkholes whose covering

spontaneously collapsed on street corners. Amongst other problems the now very unstable soil intensifies earthquake destruction, causes water and drain lines to snap, and the chinampas themselves to sink and flood. Wheelbarrowing in truckloads of soil to keep the chinampas above water has become an annual ritual for the farmers who can afford it.

Deforestation and illegal mining of topsoil in the surrounding mountains further compounds the problem as it causes the rain to run off instead of being absorbed and slowly percolating into the aquifer. Several times a year heavy rains wash the pollution off the streets into the sewers, then overwhelm the water treatment plant. The plant, unable to treat the excess water, discharges the toxic brew into the canals and thousands of fish, floating belly-up, speckle the waterways.

Millions of gallons of quasi-treated and untreated wastewater are regularly discharged into the canals. Amongst other harmful substances, mercury, arsenic, and lead abound in these waters. One university investigator measured 200 times the safe level of lead in some vegetable crops of the area. Yet most people are unaware of the extent of contamination because the study has not been disseminated. The study's principal investigator says, "If I publish this, I will get fired and lynched. No one wants to hear this news." At stake for the chinamperos is the collapse of their families' livelihoods, and for the government a public revelation of their inability, or unwillingness, to clean up the mess. Another university researcher was promptly fired after publishing a story about dangerous levels of metals in local dairy products.

Salt and sodium also pervade in these discharged waters. As the farmers irrigate their crops the salt accumulates in their plots, often rendering them infertile, then they are abandoned. Eventually the land is squatted, sold to developers, and consumed by urban sprawl.

Only five percent of the original chinampas remain unpaved, yet one could still spend weeks floating through the existing 125 linear miles of tree-lined canals. Here in the nation's capital, ancient tradition and the modern condition collide head on, yet the people keep marching amongst the wreckage.

Young farmers preserve an ancient legacy

Jorge Ramirez, a thoughtful and friendly 29-year old, is one of the increasingly rare young Xochimilcos who has chosen to keep farming the family chinampa instead of looking for more lucrative work or migrating to the US. He spots me stumbling around some chinampas and waves me over to his canoe loaded with several huge bundles of spinach. "Nikolas, look how big and beautiful my spinach are," and with a proud, beaming smile says, "and they're organic."

Jorge took part in an ecological agriculture training course sponsored by the city government. At the Xochimilco campus of the National Autonomous University of Mexico a group of agronomy students became aware that traditional agriculture was being overrun by modern chemical agriculture. They also realized that the bulk of high quality organic food grown in Mexico was being exported to Japan, Europe, and the United States, while the most toxic food stayed in Mexican markets. Eventually, the government hired them to create the first organic

certification program by Mexicans, for Mexicans. Though their task is formidable, they have trained hundreds of producers, written their own organic standard and helped open the first cooperative for affordable, organic, products in Mexico City.



Young chinamperos in increasing numbers are choosing to preserve the chinampas following the ancestral ways and incorporating new concepts like permaculture. Their activism gives Mexico hope for urban sustainability based on ancient futures.

Many chinamperos are still hooked on chemical farming, but some have realized the wisdom of their ancient ways and are trading in the chemical fertilizers and pesticides for compost and garlic spray. Some have even succeeded in reviving the fertility of their salt-crusted soils using worm compost and salt-absorbing plants. Others have created inexpensive systems for removing the roots of the aquatic plants that accumulate heavy metals, and using the rest for animal feed.

Trying to grow organically in the middle of a cesspool is no easy task. As Anselmo Gonzalez, a chinampero trying to grow organically comments, "the water, and the plagues that come with it, is really our biggest problem." Several local universities have found that constructing artificial mini-wetlands and filtering the polluted water through them can do wonders toward purifying the contaminated waters. In one study, crops gave considerably higher yields when irrigated with the wetland treated water instead of the canal water. There are plans to build the first of several mini wetlands for various chinampas. If the farmers take a liking to them, and all the key players come together, these biological filters could transform the ecology, environmental health and economics of the entire area.

With the support of the neighborhood council, an entrepreneurial local woman, Josefina Mena, started fabricating composting toilets and has sold hundreds to people whose sewage discharges directly into the canals. Biologists from local universities have started breeding programs for some of the most endangered animals, including the *ajolote*, an amphibious salamander prized by the Aztecs for its medicinal properties.

One local non-profit organization is researching ways to create soil and fertilize plants using human urine diverted from the composting toilets. Another works with local women to preserve the knowledge of traditional herbal medicine.

Agriculture in the midst of an industrial megalopolis is a complex affair, full of the resilience and innovation of the Mexican people, yet not immune to the political trickery ubiquitous in modern democracies.

Historically it has been the massive water diversion programs, inspired by California's mega-projects that have received funding to address the water woes of Mexico City. And like in California, Mexico's grandiose engineering schemes have destroyed plenty of far away eco-systems. First the waters of Lake Chiconauhuapan and the hundreds of springs that fed it were pumped to the city from a neighboring valley. When those dried up they found the Cutzamala watershed. 75 miles of tunnels, aqueducts, pipes and six power plants were built to pump 4,200 gallons of water a second over a 2,600 foot high mountain pass to the thirsty Capitol. These were the glitzy wow-em' projects that won votes. Now the city's annual deficit for water services is a billion dollars. Its ecological deficit is unquantifiable.



In addition to being the principle source for Mexico City's flower markets, the chinampas of Xochimilco are returning to production of organic food and a vibrant locus for families and community.

Saved from Becoming a Theme Park

In the mid 1980's there was a nefarious political scheme to sell the whole chinampa area to a wealthy theme park developer, who planned on turning it into a Mexican version of Disneyland. Ironically, it is the area's immense beauty that rouses undesirable growth. In spite of the profuse signage condemning illegal construction, all too often people with the right bribe for the right official, end up building their dream home on top of some waterfront chinampa. Needless to say the people tend to be very suspicious of the government. The meetings I attended between the "authorities" and the farmers were full of crossed arms, sullen looks and emotional rants.

Non-profit and university folk also tend to be critical of government handlings. Martha Zarate, who runs an organization that helps farmers convert to organic techniques, points out "the problems in Xochimilco are very big, yet people who have been working on these issues for over thirty years are frequently ignored."

Meanwhile, when I asked one young biologist who worked on "cleaning" the canals for the local government for his view of the problems he sheepishly responded, "They're really not that drastic." As for the chinamperos, during my last visit, a large group of them had occupied the entrance to a local government office with a flaming barricade in protest of their constant dodging of issues.

Nevertheless most people are eager for change. Many realize what a gift to humanity this ingenious farming system is, and are not ready to relinquish it to the pages of history books. Dire circumstances now dictate a different kind of strategy. There is talk of watershed management and programs are being implemented to swap water-guzzling toilets for low-flush varieties. There are hopes to build a water treatment plant where treated wastewater is recycled for potable use, although better policing of industrial effluent would be a prerequisite. The city's average rainfall of 30 inches a year, most of which is quickly pumped out of the valley for want of storage, may be put to use to recharge the shrinking aquifer.

Necessity is the mother of invention, and in Xochimilco her children are many. Yet to avoid the complete extinction of this urban farming culture, bioremediation technicians, hydrologists and conservation biologists need to come together with the community, the government and some serious financial support, and reconcile this clash of cultures.

Of the people who live and work in this battlefield, most speak of their work with an air of wry fatalism; they see what they are up against. Yet they march on, these merchants of change, whose work will, must, someday, blossom into an era of eco-industrial enlightenment, and take root far beyond the mountains of the Valley of Mexico.

"The farmers of this land carry the earth on their hands and faces... the earth that created us and the earth we have struggled for and loved... the earth which gives us our daily food, water, air, recreation, equilibrium, and sovereignty, in short all that keeps us alive."

—Anonymous Xochimilca farmer at a public gathering

A world-roving carpenter, activist, and designer, Nik Bertulis lives at Green Faerie Farm in Berkeley, CA. He teaches natural building at Merritt College in Oakland, and works as an ecological sanitation systems designer.

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City Form, Country Venue

A Village for the Ages

Peter Bane, Albert Bates, and Keith Johnson

Photos by Albert Bates

FOR ONE OF US (Albert Bates) it was a return to a familiar place, and a swim in the Alp-fed river was the first order of business after an all-night rail trip up the scorching coastline from Spain. For the other two (Keith Johnson and Peter Bane), it was the first visit to this magical castle, and the swim was a splendid introduction, rooting us in this ancient river valley of southwestern Imperia.

Old Tennessee Valley familiars converging from separate trajectories, the three of us had met by chance in the dusky train station at Cerbere on the Spanish-French border. We jostled our way through narrow corridors, then stretched out on seats as the train carrying us eastward eased into the midnight darkness. Dozing fitfully through a rumbling night of stops and starts, we came to realize that the surly border town we'd left behind had indeed been guarding the gates of hell, for clouds of drifting smoke from wildfires in the drought-stricken *garrigue* obscured the tracks. The ancient Roman city of Nimes, the great port of Marseilles, the marshes of the lower Rhone rolled past our windows. Late and hungry, but relieved to be met at the first Italian stop by a fellow ecovillager, we loaded our luggage in the

lorry and puttered up the mountainside toward a renovated suite of vaulted rooms in Torri Superiore (43°50'25"N, 7°33'04"E).

Greeting us from afar as we went our way inland, the "upper towers" of the little village of Torri, looking like a rustic miniature of the great Potala in Tibet, floated above a narrow valley covered in tiny rock-rimmed fields. There are many such old stone towns in rural Italy, and a surprising number are nearly abandoned and in severe disrepair, the ruins of a forgotten era when kings and lords vied for control of territory and the feudal workforce that even steep hillsides might support. Old terraces stretching from the valley below Torri all the way to the ridgelines around it are some indication of how many people called this stretch of the Mediterranean littoral home many centuries ago. From at least the 14th C. the stone towers (or "torri") served a border garrison dutifully watching for invaders. Today's residents say that on some nights during the Bosnian war they could see from their windows the lines of gypsy refugees moving over moonlit terraces, following the mountain trail to France.

Below the high hamlet ("Torri Superiore") and hugging the steep banks of the river is a larger village (Torri Inferiore)



composed of four other quarters, each with substantial stone and lime buildings nearly as ancient. Here the bus line stops, a few shops provide basic services, and a noteworthy local restaurant makes the four-kilometer trip up from the coast worthwhile for visitors. In days long past, the inland location of this and other Ligurian villages helped protect the farmers from pirates raiding along the shore. The tower form of settlement too reflects both the persistent danger facing those medieval pioneers and the hungry pressure to conserve precious land.



Climbing the agricultural terraces requires courage and often a length of rope, as Peter Bane demonstrates. The stonework has provided fortification and protection throughout Torri Superiore's history.

Aware of successful reinhabitation efforts in other valleys of Imperia, this westernmost coastal province of Italy, where similar fortified hill villages emerged from the stormy conditions of the late Middle Ages only to be abandoned in the last century's modernization, a handful of young restorationists began in the late 1980s to look at the high hamlet and the terraces beyond as a diamond in the rough. With confidence but no assurances, they began a complex negotiation process to acquire the rights to reconstruct the historic buildings.

The structure of the towers is exceptionally complex and cellular, its eight levels having been built gradually over succeeding generations by the handwork of villagers, rather than quickly by a wealthy lord employing master engineers. With the vernacular approach came good fortune, for the many builders arrived at unique architectural solutions after lengthy, even multi-generational trials. These slow and small solutions refined a building system well suited to site and climate, as evidenced by the remarkable survival of the towers through earthquakes, wars,

shifting settlement patterns, and the weathering of seven centuries. As resident Lucilla Borio put it, "Narrow passageways and staircases create a magical labyrinth, a web of rooms and corridors intricately interwoven, which spread with unusual connections." To us, it looked like a scene from "Lord of the Rings."

Restoration was no easy feat for the youthful enthusiasts. Foundations that had inched downhill left large cracks in stone supporting walls and had collapsed arches and vaults holding up rooms and rooftops above. Debris blocked corridors and filled half the rooms. Moreover, the ecovillagers were determined to keep the character of the buildings and furnishings by using only local marlstone, natural lime mortars and plasters, cork insulation and wood from native species like the old olive trees on the hillsides. They forswore cement, Styrofoam, aluminum, and synthetic paints, floors, or finishes.

The result, after nearly 20 years of work, is an emerging ecovillage with more than a dozen permanent residents and many wonderful common spaces. There are offices, art studios, a laundry, a library, a community kitchen and dining rooms, guest suites, a small auditorium, and many sunny outdoor decks. Solar panels add a contemporary touch to the roofline, but in no way detract from the rugged charm of a structure obviously growing right out of the mountain. In addition to receiving savvy travelers, the community hosts courses in renewable energy, permaculture, bodywork, cooking, ceramics, and village design. Its offices are a communications hub for the Network of Italian Ecovillages (RIVE) and the Global Ecovillage Network (GEN).



Celtic peoples settled the mountain heights behind Torri in 500 BC, and for 900 years lived as highlanders in a region where the air was cool in the summer and winters were moderated by the warm Ligurian current that sweeps up from Elba and tracks along the Riviera coast of western Italy, France, and Spain. Follow the river down from Torri and you reach the sea at Ventimiglia. San Remo Bay is very deep and so acts as a huge thermal battery that charges from the summer sun and discharges in the winter, sending its warm breezes wafting up the valleys to keep lemon and orange trees from freezing. For the castle-

dwellers of Torri, this means only modest seasonal swings in climate, which can be compensated for by thin cork insulation and small woodstoves in the apartments.

The walk from the village to the swimming hole upstream follows a narrow mountain road that sends side paths up and down hill to make the terraced gardens accessible. Rainwater catchment and springs feed 100- to 200-gallon tanks nestled into the hillsides. This stored water is drawn down to irrigate vegetables in the dry months from May to October. The main crop of the area however, is olives, and the eye can follow the gray-green lines of foliage right up the mountain nearly a thousand feet to the ridgetops. Many of the old orchards are abandoned, but the Torri S. villagers have begun to reclaim a section west of the towers for their own use. There they have built a summer kitchen, hung hammocks, and provided water and toilets.

As we made our way down to the water, other drought-adapted plants such as lavender, rosemary, and fig lent their fragrances to the soft Mediterranean air. Groves of white-flowered mimosa shrubs filled small fields in the bend of the river and grew as well out of neglected corners of the terrace walls. Here and there we spotted *Robinia pseudoacacia*, the North American tree we call black locust, but most of the hillside not covered in olives grew pine trees.

The tiny plots supported by the ancient terraces are still valued by some in the region, for the climate permits almost anything to grow if water can be supplied, and the mild wet winters allow cropping throughout the year. Our friend and host Massimo Candela, resident permaculture designer and an instigator of the Torri project, is trialing carobs, cacti, opuntia, and tagasaste in an effort to discover what will endure the dry summers without irrigation. Flowers, which are raised commercially along the coast in great tracts of greenhouses, bloom freely across the hills as well.

Bathed in the cool alpine waters, we lay ourselves out to sun on the limestone ridges jutting up from the river bottom, and contemplated the marvellous contrast of past, present, and future arrayed before us. A few miles away, French tourists

were flood-ing over the border to buy cheap liquor and hunt for bargains in the Friday market, while Africans swinging great boards covered with watches or sacks of shoes over their shoulders sought their entry to global economic heaven in the streets of the port. We watch this parade through the timeless eyes of the stones. Torri Superiore is solidly connected to the modern world, yet its ancient towers hold up a vision of a time to come, when the olive growers will persist as the gypsies and the pirates return.

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Peter Bane publishes Permaculture Activist. A seed saver and gardener extraordinaire, Keith Johnson manages the website for the magazine. Together they traveled from North Carolina to Croatia for the 7th International Permaculture Convergence—where Peter was awarded the Permaculture Diploma for his work as a teacher—and ran into Albert Bates en route. Albert was a founding board member of the Global Ecovillage Network and currently directs the Ecovillage Training Center at The Farm community in Summertown, TN: www.thefarm.org.

Permaculture Helps Alameda Transform

From Military Base ...to Home Base

Doug Biggs

M WAS UP TO HER ANKLES in wet, goopy cob, surrounded by other residents, children, and volunteers who had joined in to mix cob for a structure in the community garden. “Look at me, I’m doing Permaculture!” she shouted with a broad smile, and indeed, she was.

What separates M from many other permaculture practitioners is the life journey that brought her to the cob garden project on that sunny summer afternoon. M is a resident of the Alameda Point Collaborative (APC), a supportive housing community for homeless individuals and families. Supportive housing is a successful, cost-effective combination of affordable housing services that helps people live more stable, productive lives.

APC has 500 residents, including more than 270 children and youth 18 and under. Residents include survivors of domestic violence, adults and children with disabilities (including substance abuse, mental illness, and HIV/AIDS), and

veterans and their families. The diversity of our community reflects the face of homelessness in Alameda County: 60% of our residents are African American, 21% Native American, 8% White. Hispanics and Latinos make up 6% of the population; Asian Americans and Pacific Islanders another 5%.

In addition to the community of residents, APC’s other main asset is the land we occupy. APC’s 200 units of housing, service center, and commercial properties occupy 34 acres at the decommissioned Alameda Naval Air Station. Drawing on these two assets, APC is creating a sustainable community, using permaculture principles.

Restore the land, restore the people

Like many others, our introduction to permaculture arose from an interest in restoring and developing the land to provide food for our residents. To date,

our most visible success has been the way we have transformed the landscape. Residents and neighbors to grow organic vegetables in a centrally located community garden. Edible landscapes are beginning to take the place of the regimented lawns that had been intensively and painstakingly manicured by the Navy.

Four acres of open space are being developed as a commercial nursery to produce organic and climate-appropriate plants. Members of the local permaculture guilds helped to ensure that principles such as relative location, diversity, stocking, stacking, etc., were taken into consideration so that the flow of work, product, and energy through the zones would be efficient and sustainable.

APC has also sponsored workshops, charettes, and speakers, both to help educate residents and staff about permaculture principles, and to apply permaculture design to the physical development of our community.

Because we are a human service agency, however, the second permaculture ethic—care of people—has had the greatest influence on our agency and our community.

Permaculture is very much about identifying and working with assets, whereas most traditional human service models deal with deficits—fixing problems, overcoming shortfalls. Even the jargon of the social service worker deals with deficits: residents are “cases” to be “managed.” Not so at APC, where community members’ strengths and needs are considered and addressed in a dynamic balance aligned with the ethics and principles of permaculture.

Keys to ending homelessness

For APC to succeed in its goal of ending homelessness (at least for those residents of APC), then members of the community need to recognize and utilize their own skills and assets to become self-reliant, and to take responsibility for their community. Our job as an agency is to provide the resources and opportunities to make this possible.

The first step in accomplishing this was to recognize that we needed a shared process. We began that sharing at a retreat that included residents, staff, and board members. There we created a mission statement, “One Community Enriching Lives Through the Sharing of Resources and Talents,” that gives shape to our intentions.

One Community—Residents, staff, board members, volunteers, sponsors, and others are all stakeholders in the community who have a say in determining how it works.

Enriching Lives—People’s lives will improve through their involvement with APC. Residents will gain the skills and support needed to overcome barriers that lead to homelessness. The lives of staff and other stakeholders will be enriched by engagement with the community development process, and through participation in culturally diverse opportunities at APC.

Sharing of Resources and Talents—APC is an asset-based, solutions-oriented organization that builds community by drawing on the knowledge, skills, and interests of all stakeholders. In addition, we use our physical resources, such as large amounts of open space land and commercial property, to

provide services such as a community garden, playgrounds, a donation warehouse, and revenue generating projects like Ploughshares Nursery.

Daily life

Residents are involved at all levels of the organization. They participate in interview panels and make recommendations on all hiring decisions. An active Resident Council advocates on behalf of and mobilizes residents to respond to community issues. For example, in the last year, the Resident Council undertook a successful campaign to overturn transit cuts that would have eliminated the one bus line serving Alameda Point. It also



Food and fellowship bring APC residents, staff, and neighbors together regularly, nurturing familiarity, communication, and vision.

coordinated a drive to register more than 50 residents to vote. On election day, the Council secured a limousine to take residents to the polls under the premise that “voters are VIP’s.”

Some residents work at APC in full-time, part-time, or on-the-job training positions. The APC employment service keeps a databank of residents with skills in construction, maintenance, etc., and hires them on as-needed. Last November, after a devastating fire destroyed several housing units, residents quickly went to work clean it up.

A first source hiring goal was written into the agreement with the city that created APC. Eventually, 15% of all new jobs at Alameda Point (not just at APC but at all businesses being developed at the old naval air station) will be filled by APC residents. On-the-job training and databank opportunities help the residents to build skills for these jobs.

However, for many residents, finding and keeping regular employment is difficult due to disabilities and other challenges. Our community is exploring non-traditional work-at-home opportunities to earn income. Potential activities are as unique and diverse as producing high-quality fertilizer from worm compost (building on a partnership APC recently established with Bay Worms); producing arts, crafts, and household items to sell to residents moving into new homes that will be built around

APC; opening a convenience store and bike rental shop, and growing out plants on a contract basis for Ploughshares Nursery.

Youth, who make up most of our population, are also contributing their talents. In the last year, a youth leadership group has started and successfully developed a program and secured funding to engage in community service—working with a church in Oakland to help feed the homeless. Over the course of the project they began to talk about and struggle with issues such as food security, nutrition, and sustainability.

This year, APC is undertaking a one-year food security assessment to look at the issues and opportunities regarding food and nutrition at APC. Youth are being hired to serve as project researchers, and out of their work will come a series of strategies to improve the food environment. Naturally, with the wealth of land we have, it is our hope that some of the strategies will include ways to increase the growing of food by residents.

Ongoing community events are also an important component of “people care.” Weekly community breakfasts—organized and prepared by residents and staff working together—are a great way to check in, catch up on the latest news and gossip, talk about the weather, prod the kids to get off to school on time, and encourage and celebrate the talents of community members who

performance space, galleries, education facilities, and of course, a kitchen! Our dream was dealt a setback two years ago when the building we were going to use burnt down. Until we do get a permanent space for the arts, we are making small advances by offering gallery space to residents in our service center, and organizing cultural events such as pow wows and solstice celebrations.

Partnerships realize residents' vision

Last fall, members of the East Bay Permaculture Guild facilitated several workshops with the Resident Council to identify physical improvements that were needed in the community. As a result of that process and subsequent refinements made with members of City Repair Oakland, APC is now building a legacy wall and shade structure in the community garden. Instead of buying a pre-fab gazebo, the community chose to build a structure from scratch over a period of months that would then be “theirs.” At a typical work party, children, adult residents, staff, and volunteers work side by side, sharing skills and talents—some are excellent cob dancers, some have strong backs to carry the loads, some keep us entertained by singing or telling jokes and stories, and of course, some are excellent chefs, keeping the work crews well fed. In doing so, they are all, as M said “doing permaculture”—connecting people to create a sustainable community.

Doug Biggs is the Community Resources Director of the Alameda Point Collaborative. His experience and interest in permaculture started when he spent a decade working on community development projects in Nepal. More information about the Alameda Point Collaborative, including information on upcoming community build days is available on the web at www.apcollaborative.org.



A community Garden, workshops, and projects open to the neighborhood and public, plus lots of hard work together are developing healthy infrastructure for APC designed to care for the earth and for people.

make the sacrifice of showing up at 6:00 am to cook for and feed others. APC also holds regular community dinners that are often potluck and include singing, dancing, presentations, or other activities that showcase resident talents. At this point, it is probably obvious that food is a common theme in many of our activities!

Like gardening, art and culture are important components of becoming a “whole community” as well as providing common ground for APC residents and others to come together. Anyone, regardless of income, ethnicity, ability, or any other label that may apply can appreciate and participate in arts. APC’s vision for the arts includes a regional community arts center that will house

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Beverly Doty

A Permaculture Campaigner in Suburbia

Susan W. Clark

BEVERLY DOTY HASN'T SPENT her golden years in a rocking chair. Instead, she has been converting suburbia to permaculture. In 1978 Doty bought a daylight basement style house in Vancouver, Washington. Her corner lot had scant back yard and lots of visible front lawn, which she began to remove in 1988.

"I killed the lawn without a rototiller or poisons. I used newspaper and organic matter," she said. She sheet mulched the

grass to death with cardboard, grass clippings, wood chips, leaves, "any kind of organic matter I could lay my hands on," she said. Her first lawnless area was along the curb, which she filled with fifteen varieties of thyme and almost as many of lavender.

Even though she used no noisy tillers or poisonous chemicals, her neighbors complained to the city and began a two-year campaign against what they called an illegal landfill and a smelly nuisance harboring rats. After successful inspection by local

government she was allowed to continue the conversion of her yard, but official approval didn't change her neighbors' minds.

Developing a yard without lawn on a 9,000 square foot corner lot put permaculture right in the face of the neighbors. Doty takes to heart the permaculture principle adage, "the problem is the solution." She saw her neighbors fearing the unfamiliar, so she began informing and educating them.

Open garden teaching tours

Doty's teaching centers on her quarterly tours, through which she has initiated hundreds of people to permaculture. On her May 2005 tour Doty welcomed eight guests to see the results of 17 years of permaculture. Doty, now 78, keeps the groups small because her voice doesn't carry as well as it once did.

She was introduced to gardening in her mother's victory garden, when all gardening was organic. In 1992 Doty took an introductory permaculture class, and in 1994 she attended a two-week intensive class in British Columbia as well as another intensive in California.

"I killed the lawn without a rototiller or poisons. I used newspapers and organic matter."

She started the tour in the sunroom telling how she used Patterns for Living to design the space in the south-facing courtyard of her home. A failing roof spurred her re-design of the house, which included extending the eaves over a balcony, removing a sun-blocking wall, and using the wood from demolition to build edges for raised beds.

The beds are oriented north-south with lilies at the north end and evergreen herbs at the south. Doty stops for a moment and asks, "Do you see all the things I don't plant?" Doty advises the riotous mixing of volunteer plants, plantings from seed and transplants, and not removing a plant unless it is in the way.

Outside the sunroom she shows guests winter jasmine, honeysuckle, and passionflower, all plants that hummingbirds love. "I don't have time to clean and refill a feeder. This is so much easier," she says. Some tour guests, clearly new to gardening, struggle to make notes about plant names, specific techniques, and permaculture principles.

—"Ground beetles that eat slug eggs
—Lemon balm, red valerian, coral bells
—Edible locust tree blossoms and leaves"

She pointed out a dwarf peach tree planted under its own custom roof, to get light but not rain, reducing fungal disease. Further south was a 2 by 10 foot area of 5 apple trees. "What do you do about apple maggot?" someone asks. "Plant disease resistant varieties," Doty replies.

She led the group holding a pointing stick as long as she was tall, and carried herself with an air of authority and command. "Don't step off the path. You never step where you want plants to grow." She pointed out rainwater capture tanks that feed a frog pond, and a fava bean cover crop that is protecting the soil from compaction by raindrops.

"Comfrey as mulch and nutritious compost, volunteer leeks...
—Asian pears espaliered into shapes called candelabra and horizontal
—Black, white, red currant giving "much more vitamin C than oranges"

"In the beginning I used potatoes to help build soil, like contractors used to do in new yards, and bread seed poppies as a cover crop." She still grows the poppies, and chuckled as she said, "A thief last year boldly clipped seed heads, probably mistaking them for opium poppies. I imagine he was very disappointed later."

"Harvesting rainwater in tanks, and in frog pond outside sunroom
—Calla lilies, parsnips, snakes, serviceberry
—Malva, lilac, mulberry..."

Sharing was woven through her talk. Her nursery area was filled with plants being donated to a local plant sale, and her tour was peppered with offers to taste, take seeds, or dig a start. One guest asks, "Does it give fruit?" and Doty replies, "Yes, it's very generous."

"Do you see all the things I don't plant?" Doty recommends the riotous mixing of volunteer plants, plantings from seed, and transplants.

She has mason bee houses made from pieces of wood held together with a clamp. "This gives the mason bees exactly the size hole they prefer, and can be taken apart if it needs to be cleaned out. No tubes to replace," she explains.

"Rocket stove made from tin cans
—Dark bucket for weeds too invasive to compost, white bucket for the others
—Russell lupine used as catch plant to attract aphids away from crops"

Doty pointed out a mini-swale that captures rain before it can run off into the street, and a New York Muscat grape for healthful grape seed oil. Pink ribbons mark plants for seed saving, and hard pruning keeps fig trees low, for easy harvesting.

Doty has had her share of challenges. A male Actinidia kiwi with gorgeous foliage was shading the second story porch in

May but has since died due to a drainage problem. The neighbor to the west planted evergreens years ago and they have grown tall, shading areas that used to be in full sun.

“Plum-sized Kiowa blackberries from Raintree Nursery.

—Bird perches help direct their manure to feed plants below

—Beds are mixed, with every possible volunteer plant staying in its chosen spot”

A native plant area included red osier dogwood, cascara, mountain hemlock, horseradish, thimbleberry, and vine maple, useful for hummingbird habitat. Its branches waving above this area, red alder gave shade to a work area for chipping trimmings and composting. Doty said she uses leaves from neighbors as well as sand, straw, and chips to make rich compost in a roofed system of bins.

“Evening primrose blooms late, but the stalk lasts to spring for birds to eat

—Volunteer giant asparagus, borage, strawberries

—Blueberries disguised by the nearby buckwheat”

The narrow north yard featured bamboo drying racks, a clothes drying line over fragrant lavender, and a “horrible” wisteria planted by a prior neighbor on their border and now far too vigorous for Doty’s taste. As the tour moved into the east yard, Doty pointed out her chestnut trees, planted two in one hole to save space and provide pollination. Resinous kiwi cuttings are saved to use in fire starting.

The House

Her east-facing balcony shades a lower patio, so both floors have a large, covered outdoor area. She rents the lower level to a house partner who helps with the plant care. Doty was the first person in Clark County to use a Puron-charged air conditioner rather than one charged by Freon. (Puron has is much less harmful to the ozone layer of the atmosphere.) Her kitchen cabinets have a custom worm bin, which, answer to a question, she pulled out to show how she uses.

Diverse home heating includes a forced air furnace, a wood-burning fireplace with an insert and a sunroom that helps heat the house. She also has water tanks in three locations, collecting rainwater sufficient to irrigate her vegetables through Vancouver’s long dry season.

“Countertop tile made from recycled auto glass

—Carpet from recycled milk jugs”

Her floors and countertops are covered with green building materials, and her bookshelves are filled with a collection of resources she prioritizes for her tour participants. *Plants for a Future*, *Sustainable Industries Journal*, and *Farming Source Book* all get recommendations.

At the end of the tour, participants offer comments like, “Wow! Inspirational—so dedicated and willing to share,” “I

guess you don’t need a hundred acres to make a difference,” and “What impresses me most is how much technique she has integrated.” Dean Baker writing for *The Columbian* newspaper called Doty, “...an apostle for the Earth.”

“She’s always experimenting and trying new things. For someone my age to see all she’s doing at her age is inspiring,” said Karen Tillou, Manager of the Home Orchard Society’s Arboretum in nearby Oregon City, Oregon.

Layers

Layers add complexity to Doty’s yard and to her impact in her community. On a tour of her dense plantings, the permaculture features were the focus; less visible were the community layers.

“... her neighbors complained to the city and began a two-year campaign against what they called an illegal landfill and a smelly nuisance harboring rats.”

Doty began with her nearby neighbors, sharing values and information, and trying to overcome prejudice and fear to make her neighborhood more accepting. Then she began hosting quarterly garden tours, for people with an interest in food growing, seed saving, or any of Doty’s other projects. She shares knowledge and encourages the hesitant. Even the casual passerby can read the Department of Fish and Wildlife certification identifying the yard as a Backyard Wildlife Sanctuary.

Doty also has a “layer” that functions like invasive rhizomes. She shares plants and seeds. She is generous with a purpose. Useful, unusual, nutritious, and delicious plants have been gifted to gardeners at many places including the tours, her church, and Oregon Tilth meetings.

A “layer” that is still in the wishing stage is to find partners with whom she could form a statewide land trust to protect Washington agricultural land for future generations of growers. Living as she does where population growth has destroyed many acres of farmland, she knows the importance of protecting farms, but hasn’t found her fellow visionaries yet.

These are the ways in which Doty has introduced permaculture values to a widening public, using her golden years to make the world a better place. Δ

Susan W. Clark lives among several hundred fruit and nut trees, grape vines, and sheep on 20 acres south of Portland, OR. She and her husband, Will Newman, founded Oregon Sustainable Agriculture Land Trust.

A little way of justice and peace

The Permacultured Kitchen

Robert Waldrop

GANDHI SAID THAT THE WAY towards personal and community empowerment that will nurture social change is to “be the change you wish to see in the world.” One bad decision at a time, we have come to the present impasse—a world teetering on the edge of the abyss of cultural collapse triggered by resource exhaustion, social injustice, financial bankruptcy, environmental degradation, and toxic political responses to these challenges. We will find our rescue in a similar, incremental, manner—one good, better, or best decision at a time, as people take personal responsibility and become the change we want to see, at the grassroots of their culture.

Permaculture tells us to “start at the doorstep.” For most of us, however, the “doorstep to permaculture” is the kitchen. People have more control over their kitchen than almost any other area of life and work. It is the most easily accessible and understandable place for city folks to start, especially those without land for growing food. The kitchen can provide great rewards for time invested in learning and work. A permacultured kitchen offers an accessible way to make lifestyle changes that have major (and multiple!) beneficial impacts on the environment, create social justice, and limit the damage we do to the biosphere. Kitchen permaculture increases family and community food security, and is an essential adaptation to the upcoming era of fossil fuel decline and famine. A permacultured kitchen is a peaceful kitchen, it does not demand that the government go to war to conquer energy producers to keep the kitchen supplied with food and energy. Permaculturing the kitchen is an effective way to work for justice and peace.

Local food systems grow from personal choices

The permacultured kitchen is the essential foundation of a local food system. If we want a more sustainable and just food production system, then there must be a market for the products of sustainable and just food production systems. Personal and household choices about where and how we spend our kitchen money and time are critical to the design of the permacultured kitchen. This design process begins with observation of your present situation and an inventory of what you have and do, what you need, and the challenges of getting from here to there.

We start small or we don't start at all

Natural succession works in kitchens as well as in forest gardens. We make thousands of food choices every year, and shifting a small fraction of the household's food choices in the “good - better - best” direction is a great place to start. Most people should not try to do everything at once; pick the low



hanging fruit first, then move on to even better choices. Do one thing, and do it well, then do two!

Be willing to embrace change

A local food system is about distributing basic foods; it doesn't look like WalMart. Don't expect all the ersatz “convenience” offered by manufactured foods. The good news is that while the process is not always easy, the change that the permacultured kitchen brings to your household is uniformly positive. The food will be more nutritious, it will taste better, you will feel better about your work in the kitchen.

Form and function follow food

Modern consumer culture has degraded food to the status of mere fuel, and devalued it of any greater cultural or existential meaning. But food is not just fuel. Food is life. It speaks of our families and our cultures, our identity as persons and



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communities. Eating is an agricultural act and a moral act: you are what you eat. The physical design and layout of the kitchen is not the most important design work. The big questions are - what food is in the kitchen, where did it come from, who produced it? Do the groceries create social justice and promote biospheric sustainability? Or do they support oppression and environmental degradation? Focus on the food first, and then let the form and function of the kitchen evolve as a reflection on your food.

Eat with the season

These days, everything tastes the same everywhere all the time, 24/7/365. But real life has annual rhythms and seasons, and so does food. We have learned by sad experience that by extravagant expenditures of energy and oppression we could have summer salads in winter, but what does this willingness to oppress third-world farmers say about our personal and social moralities? In most areas, as the seasons change, winter food will be different from summer food. The physical layout of the kitchen may also change from season to season. For example, we set up a summer kitchen on our porch and cook outside during the hot months. When we are processing summer produce, we set up extra counter space, and food processing tools are brought out of storage and set up for work.

Be temperate in your selection of foods

The virtue of temperance is the practice of balance - not too much, not too little, just the right amount. The average American table is a glutton's delight, loaded with every delicacy regardless of season. In reaction to homogenization, we crave variety and novelty. The permacultured kitchen offers a wealth of tastes and food delights, but without lusting for the gluttony of the on-demand agribusiness food system. Indeed, during certain seasons, we may eat the same vegetables every day for a time. The

authentic nature of the food and our kitchen experience, however, does not leave much room for boredom. The permacultured kitchen avoids foods that are unsustainably harvested, such as most ocean fish, and products with a high degree of environmental degradation and social injustice in their production, such as non-fair trade certified coffee and chocolate and meats produced in confined animal feeding operations.

Prepare meals from basic ingredients

The permacultured kitchen offers meals prepared from basic ingredients. Not everybody has these skills in the beginning, but people can develop better food preparation practices so that using basic ingredients fits into the urban lifestyle. I once complained to my grandmother that I couldn't make a decent pie crust. She said, "Bobby Max, the problem is you haven't made enough pies. When you have made 100 pie crusts, then you will be able to make a great pie crust as quick as a whistle."

Organization your kitchen systems

Permaculture looks at whole systems. The question isn't "What do I have for dinner tonight," but rather, "What am I eating this season?" and "How do I get my food?" People with a lot of experience might be able to get by without planning their meals, but that doesn't describe most of us, especially in the beginning. Planning menus and the acquisition and preparation of the ingredients are necessary design opportunities.

Waste Not, Want Not!

Recycle resources and energy

A permacultured kitchen has no waste, all food is eaten, if not by the humans, then by the animals, the worms, the composting process, etc. Its essential frugality avoids wasteful appliances like

USEFUL KITCHEN EQUIPMENT

- Boiling water canner: a large pot at least 13" deep
- Canning jars in a variety of sizes
- Chest freezer, manual defrost
- Crockpot
- Dehydrator. Plans are readily available for solar food dehydrators.
- Food-grade storage containers, variety of sizes
- Food processor/blender
- Grain and meat grinders.
- Jar lifter, funnels, colander, strainer, sifter, measuring cups, and spoons
- Knives
- Outdoor cooking equipment
- Oven-ware: casserole pans, loaf pans, baking pans.
- Pressure canner for processing vegetables & meats.
- Solar oven/cooker
- Sprouter

USEFUL KITCHEN SKILLS

- Bread baking
- Brewing (beers, soda pops, wines)
- Energy management
- Food acquisition
- Food safety
- Gardening and food production
- Juicing
- Knife skills
- Meat cutting
- Menu planning
- Recycling, composting and waste management
- Sauce and gravy making
- Solar cooking
- Spiritual/religious practices and devotions
- Stock making

the dishwasher, electric can opener, garbage compactor, and automatic defrost refrigerators. Even in the city, we can access renewable energy by purchasing wind power electricity (if available) from your utility. Never buy paper towels, paper napkins, or disposable plates and utensils, use cloth towels and rags and natural sponges like luffas. Make your own non-toxic kitchen cleaners or buy all-natural products made in your local area. Install grey water recycling and rainwater harvesting systems.

Learn to preserve and process foods at home or in a community kitchen

Our household likes "cheese whiz," but we don't buy it, we make it from real cheese we buy from a farmer. We like roasted peanuts, so we buy peanuts in season from farmers and then roast them all year long. We grow our own fruit, and make jams, jellies, salsas, pickles, condiments. Those without gardens can buy extra produce in season and preserve it for winter eating. Food processing tools and equipment can be owned by individual households, but community and religious organizations can also purchase such equipment and make it available in community kitchens. Many food preservation and processing tasks are easier when done by a group.

Buy locally produced foods

Stay out of supermarkets as much as possible. Buying foods from local farmers is the urban permaculture equivalent of yield from Zones 3 and 4. To facilitate this in our area, we helped organize the Oklahoma Food Cooperative, whose producer

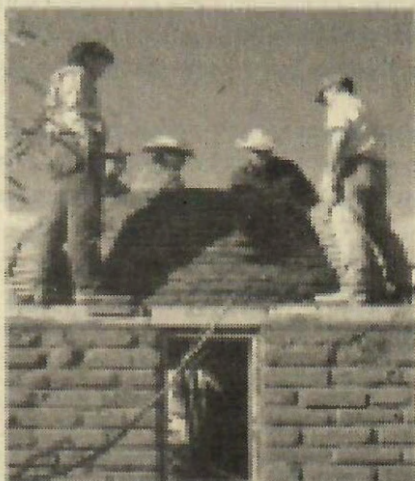
members only sell Oklahoma foods. Our inner city household gets 80% of its food either from local farmers or from the gardens on our former lawns. Locally produced foods tend to cost more than the processed foods of the supermarket, but overall we aren't spending any more for food now than we were back when we bought everything at the grocery store. Then we bought a lot of prepared and packaged foods, now we buy basic ingredients. This wouldn't be possible for us without the cooperative.

For items simply not available from a local market, seek out organic sources, and if imported, look for fair trade certification. If this increases your costs, then use less of these imported foods (coffee, tea, bananas, chocolate, citrus, etc.).

Never buy meat from confined animal feeding operations

Access to local and natural meats and poultry is a major challenge for urban residents. With a very few exceptions, all meats in supermarkets originate in confined animal feeding operations, and every dollar spent for them subsidizes a terrible food production system that creates much social and environmental evil. One solution to the higher cost of locally produced meats is to "eat less meat" - set limits to your personal consumption. Eat less expensive cuts - more ground meat than roast or steaks. With farmer-direct meats, the more you buy, the better the price. Consider this to be incentive to build community. Four households could go together and buy a whole beef from a farmer, or a whole pig. Where would you find someone willing to sell a whole beef? Start by asking at the farmers market, look for phone listings for "custom butchers" in rural towns (they usually keep a list of farmers willing to sell meat directly to the public).

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Look for meats that are 100% forage fed and free ranging.

People who can't access natural meats raised in the local area should consider vegetarianism. People who buy eggs, meats and poultry from grocery stores should not kid themselves about the animal cruelty and environmental degradation made profitable by those food choices.

Practice Food Storage

Every household should design for catastrophe. There are a hundred things that could happen in a heartbeat that would disrupt the steady flow of trucks to and from warehouses and grocery stores that feed our urban areas. In an uncertain economy, many people are at risk of losing their jobs and incomes. A well-stocked home pantry is an essential aspect of family and community food security in the event of disruptions to the food distribution system or family income.

Design for Economy

A well-stocked home pantry is also an enormous convenience in today's busy world. It can easily take an hour to drive to the store, park, hike across a 40 acre parking lot, navigate a crowded and poorly organized store, stand in line at the checkout, hike

back across the acreage to the automobile, and then drive home - just to get "a few things for dinner". Store what you eat - and eat what you store.

Grow Some of Your Own Food

We live in an urban central city, we have about 1/7th of an acre with a duplex, small house, sidewalks and driveway. Even so we manage to cultivate 120 different varieties of useful or edible plants on our former lawns, 2/3rds of which are perennials. We do not aim for self-sufficiency on our property, instead, we grow foods that (in our opinion) produce a lot of value for the space they need - 23 varieties of organic fruits, 28 different herbs, hot peppers, cooking greens (mustard, kale, chard, spinach, collards), and lots of alliums (garlic, onion and garlic chives, shallots, walking onions, multiplying onions, Welsh onions). This year we designed and planted tomato guilds of basil, chives, petunias, marigolds, pansies, horehound, asparagus, bee balm, hot peppers, and borage with our tomatoes. We don't raise wheat or corn or animals because of space constraints (and city ordinances). However, we have easy access to these products through the Oklahoma Food Cooperative. People without land can join community gardens, and it is possible to raise food on concrete using containers. This year we are growing potatoes in buckets on a sidewalk!

But what about the poor?

We often are told that all this talk about organic agriculture and local foods is a trendy upscale fad and is not really relevant to how people with limited financial resources do their shopping and cooking. Some say that poor people shouldn't even try to permaculture their kitchens, but should stick with the cheap supermarket groceries. But real poor people never say this to me. They look at our information materials and ask intelligent questions about making bread, soup, and casseroles. My own permacultured kitchen began with my personal experience with poverty. I learned to bake bread from home ground flour 25 years ago because that was the cheapest way I could put bread on my table.

Last year we did an experiment to show how a food stamp budget could work in a permacultured kitchen. We combined six aspects of food security to create a healthy and good tasting week of meals:

1. frugal (and limited) supermarket shopping,
2. preparing meals from basic ingredients,
3. buying local foods,
4. gardening,
5. food storage, and
6. home preservation of food.

We were able to spend 3/4 of our available grocery money on local foods, with 1/4 going to the supermarket. We ate the foods we normally eat, and did not exceed the food stamp allotment for a household of our size. This experience suggests ideas for building capacities in low-income neighborhoods.

ESSENTIAL KITCHEN PERMACULTURE BOOKS

Architecture for the Poor, Hassan Fathy

Ball Blue Canning Book

Better Times Almanac of Useful Information, 5th ed.,

Robert Waldrop

Build Your Own Earth Oven, Kiko Denzer

Eat Here, Brian Halwell

Encyclopedia of Country Living, Carla Emery

Fast Food Nation, Eric Schlosser

Gaia's Garden, Toby Hemenway

Holy Cows and Hog Heaven, Joel Salatin

How to Develop a Low-Cost Family Food-Storage System, Anita Evangelista

The Integral Urban House, Farrallones Institute

Laurel's Kitchen, Laurel Robertson

More with Less Cookbook, Doris Longacre

The New Complete Joy of Home Brewing, Charlie Papazian

Permaculture Design Manual, Bill Mollison

Permaculture: Principles and Pathways Beyond Sustainability, David Holmgren

The New Putting Food By, Ruth Hertzburg

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Don't let the perfect become the enemy of the good

Nobody goes from 100% bad food choices to 100% good, better, or best choices overnight. But procrastination is equally problematic. Wholes are made from parts, and if you can't see the total solution in the beginning, step back, pick one thing that you can understand, and do that. Then look at your situation again and do something else. Everyone can find something to start with and that's where each person should begin. Slow down, simplify, make better and wiser choices. One thing leads to

another, and before you know it, you have transformed permaculture from an esoteric science to a lived reality in your kitchen. Your work in the kitchen will become beautiful, and as it is said, "The world will be saved by beauty." Δ

Robert Waldrop is president of the Oklahoma Food Cooperative, the founder of the Oscar Romero Catholic Worker House, and director of music at Epiphany Catholic Church. He cultivates a "forest edge garden" at their central Oklahoma City home. He can be found on the Internet at www.bettertimesinfo.org, www.energyconservationinfo.org, www.oklahomafoodcoop.com, and runningonempty2@yahoo.com. bwaldrop@cox.net.

The Rhizome Collective

Radical Vistas from the Urban Frontier

Scott Kellogg and Stacy Pettigrew

AN ESSENTIAL GOAL OF PERMACULTURE is the creation of intensely cultivated systems that provide for many human needs while having minimal impact on the rest of the world.

Already intensely cultivated with existing infrastructure, cities make ideal candidates for reinvention as sustainable human habitats. With time and energy, cities have the potential to be providing for many of their residents' needs within their own boundaries: food, water, energy, shelter and waste.

The Rhizome Collective, a non-profit organization, has been building a model of urban permaculture and a center for radical community organizing since 2000. Located in the industrial corridor of Austin Texas, we have transformed a fire-damaged warehouse into a place of thriving activity.

The Rhizome Collective's Educational Center for Urban Sustainability is named the Rhizosphere after the area of enhanced biological activity surrounding plant roots. It contains numerous demonstrations of ecological tools and technologies, including lush gardens, poly-aquaculture ponds, constructed wetlands and bicycle windmills. Our goal is to create and display systems that are low cost and simple to maintain.

Believing that building a sustainable world includes the struggle for social justice, the Rhizome Collective provides low cost space to community activist organizations. The Inside Books Project, a books for prisoners project, the Austin Independent Media Center and Bikes Across Borders, a group that repairs salvaged bicycles and sends them to the Global South all operate out of the Center for Community Organizing.

Opposing systems of oppression ingrained in our culture, we are a consensus-run organization that challenges hierarchy and fosters egalitarianism.

Choosing to undertake this project in an urban location was deliberate. We wanted to have this model be visible and relevant

to as many people as possible. A city was the logical choice.

It is projected that within 20 years over 51% of the world's population will be living in urban areas. If city populations are to have any hope of a sustainable future, homes and neighborhoods will need to be more self-reliant. This formidable undertaking should begin today while energy surpluses needed for the transformation are still available. Most importantly, the initiative for change must come from the people, beginning with individuals and neighborhoods. We cannot rely on city planners and boards of supervisors hindered by bureaucracy. Radical changes in every aspect of life are needed to create communities that are sustainably self-reliant and autonomously self-governing.

The past few years have taught us a lot at the Rhizome Collective, particularly about the challenges unique to urban design. This article is a collection of observations and lessons learned from the past five years' experience.

Space and the struggle for land

Equal access to land provides the basis for community self-reliance, equality and justice. Aspects of permaculture can be practiced without land - rooftop gardens, window boxes, indoor worm composting bins, etc. - but true self-reliance requires secured access to land.

= Many urban residents have no secure access to land. Renters constantly face the threat of eviction. High prices prohibit many people and communities from owning property. There are some hopeful examples of community groups that have obtained land without having had to buy it.

In Albany, New York, the Albany Free School has acquired several garden plots in their neighborhood using a legal process called adverse possession. It allows people to lay claim to a piece of land after openly occupying it for a period of time. The amount of time varies from state to state. By making use of a

piece of land (ie., gardening on it) and informing its owner of your actions, you can be awarded the title to a property if the owner never acts to stop you.

The Rhizome Collective was recently given 10 acres in the city of Austin that we plan to turn into an ecological justice education park. Labeled a "brownfield", the property was covered in 2 acres of illegally dumped debris. It would have cost its owner more to clean it up than could have been made by selling or developing it. Following the donation, the Rhizome Collective was awarded a \$200,000 EPA Brownfield Cleanup Grant. The cleanup employed numerous innovative technologies including a veggie oil-fueled tractor and chainsaws laden with mushroom-spore oil. Many of the hundreds of illegally dumped tires on the site will be used to construct informational kiosks telling the story of the ecological justice movement. Over time, bioremediation techniques will be used to restore the damaged land.

Many cities will donate foreclosed properties to non-profit organizations. It is also possible to petition city councils for community space--city property is community owned property.

Codes and zoning

Some of the biggest obstacles to building a permaculture design in a city are the highly stringent building and zoning codes that regulate development. In most cases, building and zoning codes are well intended. They were originally created to prevent landowners from constructing unsafe, unhealthy or substandard buildings, or to protect the integrity of a neighborhood. Sadly, these codes were typically only enforced in the wealthy, white parts of towns. In East Austin's historically majority Latino neighborhoods car salvage lots and power plants still border homes. Today's overregulated building codes serve a bureaucratic system which fears liability and supports the construction industry.

It is easy to see the appeal of retreating to unregulated areas of the country like the rural south. However, there is hope of challenging certain codes in cities, and the option of ignoring others.

"Many cities will donate foreclosed properties to non-profit organizations. It is also possible to petition city councils for community space--city property is community property."

Many code inspectors are unaware of or not sympathetic to the need for more sustainable design options in cities. Educating city officials about these concepts is a needed form of activism. Due to the persistence of a few dedicated people, some cities are now accepting ideas like natural construction and biological wastewater treatment.

Unfortunately, codes seldom permit the more innovative aspects of permaculture design. The right to build composting toilets, graywater systems, or strawbale houses, raise chickens, or have urban cohousing may have to be fought for at city hall. This lengthy process can take years and be frustrating, especially if unsuccessful.

In some cases, alternative systems are allowable if they are given the approval of a professional engineer. For those not lucky enough to know one who is permaculturally aligned, finding an engineer willing to approve experimental designs can be difficult. It can also be extremely expensive.

Once a precedent has been set in one place, however, the way is paved for replication elsewhere. Only when alternative technologies have been tested and accepted by municipalities will they have any hope of being implemented on a scale large enough to have a significant impact on the environment at large.

At the Rhizome, we wanted to publicly display a composting toilet. We feel it is very important for people to know that human waste recycling is an option, and want to be "out" about it. Our talk about "closed loop cycles" meant little while we flushed away our nutrient rich humanure. Knowing that fecophobia runs deep, particularly among public health officials in densely populated areas, we figured that putting an un-permitted composting toilet on display in a high-profile public space would be a grand mistake. The health department would likely shut us down before our first five gallon poop-bucket could be filled. Instead, we began the process of researching the laws on composting toilets.

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We were surprised to find that composting toilets were permitted in Austin, provided they met simple national sanitation foundation standards. It was only after drafting up detailed plans and submitting them for approval that we learned of the legal obstacle which apparently forbade them. If your building is within 100 feet of an existing sewer line, you must connect all toilets to it. Even though there was no problem with the professionally engineered composting toilet itself, ours was denied because of this seemingly illogical provision. It didn't matter that we already had 3 working flush toilets and intended the composter to be an auxiliary system. Frustration prevailed.



Necessity mothers invention, which is itself a necessary tool of urban permaculture necessity. At the Rhizome Collective, graywater aquaculture is urban-innovated from cans, tanks and plumbing fixtures

Our recently donated 10 acre brownfield presents a new opportunity. This unusual piece of urban real estate is more than 100 feet from a sewer line. The legal obstacle will not apply. We have applied a second time for a legally approved composting toilet. Hopefully we will have the chance to demonstrate composting toilets' safety and usefulness, giving us leverage to confront the prohibitive legal obstacles that prevent others from doing the same. We look forward to the day when we will all be free to not poop in clean water.

The amount of work that goes into challenging codes and the relatively low success rate is certainly discouraging. However, don't let that dash out your city-dwelling permaculture dreams. Under-the-radar deep sustainability is an option. Being clandestine about your activities can allow you to live the way you see fit while you work to change the system that aims to prevent you from doing so. A large determinant in your success will be your relationship with your neighbors. Code enforcers are not likely to ever know about certain things unless someone complains. Planting fruit trees and beautiful gardens on your street or in your front yard can be a great way to win people over. It may also help them overlook the fact that your bathtub wastewater makes the gardens so lush. A few hens in the

backyard will be easier to keep on the down-low if fresh eggs are shared with those living around you. In some cases, it can be helpful to create urban camouflage—like hiding a humanure bucket in the hollowed-out bottom of a plastic port-o-potty. You wouldn't even need to lie to anyone about what you were doing in there, just empty the bucket into your "compost pile" when no one is looking.

Sustainability and gentrification

Many so-called "sustainable" urban-based projects result in the displacement and destruction of the communities they are developed around. Given labels such as "smart growth" and "new urbanism", these projects masquerading as green renewal programs are often fronts for the plans of greedy real estate speculators, developers and short-sighted city planners. The gentrification process begins when neighborhoods inhabited by poor people are permitted to fall into ruin. Neglected by landowners and municipal service providers, the area decays to the point where community resistance to takeover by developers is weakened. New developments result in the increase of property values for many blocks all around, which in turn increase tax rates. People who have owned and lived in their homes for generations find they can no longer pay their taxes and are forced to move.

A recent trend seen in East Austin is the selling of upscale developments by promoting their "green" features - solar panels, natural building methods, high density cohousing, etc. While these are desirable features, if long-term residents of the neighborhood could never afford to live in them, they will eventually be displaced.

One of the primary ethics of permaculture is to "care for the people". Any project which results in the displacement of poor people cannot be considered sustainable and is not an example of permaculture.

Challenging gentrification is difficult. There are many differing opinions on its causes and appropriate strategies to combat it. It manifests differently in every community. Responses must be locally molded. Opening dialogue on the reality and negative consequences of gentrification is a positive first step. Its "naturalness" is too often an unquestioned paradigm.

Contamination

Apart from gaining access to land, the largest obstacle to food production in cities is the ubiquitous contamination of their soils. As a result of years of combined pollution from industry, car exhaust, leaking fuel tanks, illegal dumping and leaded house paint, many acres of urban land have been rendered toxic and are unsuitable for gardening. Soil contamination presents one of the most unique and challenging aspects of urban permaculture design. The need to produce food within city limits will only increase as we enter an era of declining energy resources. Fortunately, we can significantly hasten the natural degradation of toxins through a process called bioremediation.

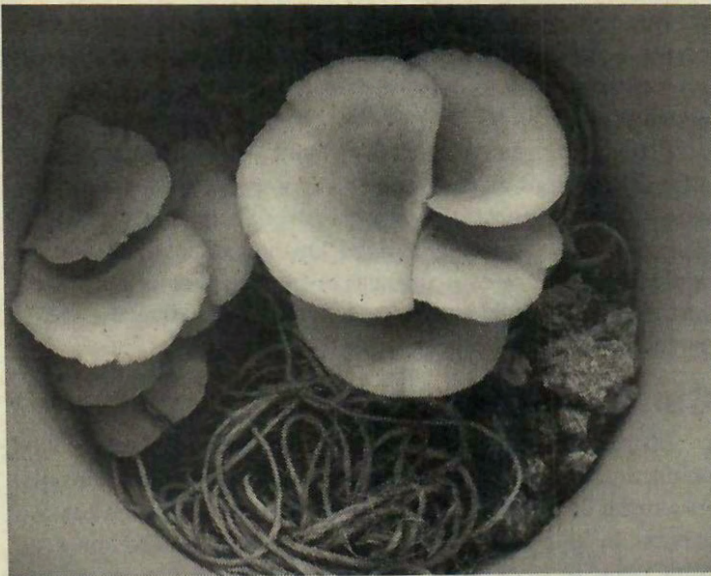
Bioremediation is the practice of using the natural properties of biological organisms to either break down or absorb different

toxic materials. Bioremediation is an attractive alternative to expensive, invasive and technically sophisticated conventional methods of soil remediation. It can be done with minimal cost and expertise, and can be applied on site without needing to remove contaminated soil. The appropriate method will depend on the type of soil contamination.

Bioremediation can be broken down into three sub disciplines: bacterial remediation, mycoremediation, and phytoremediation.

Bacterial remediation is helpful in restoring the microbial ecology to damaged urban soils. Urban development often begins with layers of asphalt or concrete over the land. The weight of the buildings and cars severely compacts the soil and forces out water and air. When buildings are removed, the vacant lot is left with effectively lifeless soil that is incapable of supporting higher plants. Importing enough new soil or compost to cover an entire parcel can be cost and energy intensive.

An alternative is to jumpstart the soil-making processes needed to sustain plant life by inoculating the damaged soil with microbe-rich compost teas. Compost teas are made with a bit of healthy compost, from either a compost pile or a worm composting system. It is placed in a container of non-chlorinated water, aerated by an air pump, and given a source of food: usually molasses or fish hydrolase. The beneficial bacteria, fungi and protozoa in the mixture proliferate in the presence of oxygen and nutrients. After 24-48 hours, the air pump is removed and the tea is immediately applied to the affected area. Repeated treatments with compost tea can bring a damaged urban lot back to life and may assist in degrading certain toxins. Numerous recipes for compost teas can be found on the internet.



Mycoremediating with edible mushrooms turns otherwise wasted food into, well, food! Minimizing, then reintegrating "waste" back into cycles is nowhere more important than in cities.

Mycoremediation (myco = fungi) is the process of using fungi to degrade toxic compounds. Fungi are nature's decomposers. They secrete powerful enzymes capable of breaking down contaminants such as hydrocarbons, PCB's, and

even dioxins. Oyster mushrooms (*Pleurotus ostreatus*), a common fungi species, have been experimentally grown on earth contaminated with diesel fuel. By the time fruiting mushrooms were produced several weeks later, the fungi had successfully broken down 90% of the diesel fuel. Unlike a plant which absorbs toxins, fungi secrete enzymes that break apart the hydrocarbon chain, eating the carbon and gassing off the hydrogen.

"We were surprised to find that composting toilets were permitted in Austin, provided they met simple national sanitation foundation standards."

Growing fungi is an art and science in itself. It is also a challenge to apply appropriate fungi species to affected areas. At the Rhizome Collective, we have been cultivating oyster mushrooms in five gallon buckets filled with waste coffee grounds collected from local coffee shops. Sterilized by the brewing process, coffee grounds are ideal substrate for the mushrooms. The edible mushrooms typically fruit three weeks after inoculation. We spread the remaining substrate over contaminated areas, hoping that enzymes produced by the fungi still present in the substrate will be washed by rain into the ground, where they can break down toxins. At the same time, the coffee grounds break down and form a rich new layer of soil.

Phytoremediation (phyto = plant) is the process of using plants to absorb toxic metals out of soils. Bacterial and mycoremediation are effective in degrading toxic molecular compounds - chains of elements that can be broken down into simpler, more benign components. However, metals such as lead, mercury, and cadmium are elemental and cannot be broken down any further. An option for cleaning soils with heavy metal contamination is to grow select plant species that are "dynamic accumulators" of those metals. Some experiments using mustard greens have reduced the lead levels of soils by 60%. The main drawback of phytoremediation is that it contaminates the plants themselves. The harvested plants are most commonly disposed of in landfills. In this sense, the problem of metal contamination is not fully dealt with. It is just moved from one place to another. It could be argued that it is preferable to have these metals be in a landfill rather than in a garden.

Air quality

Air quality in cities is often abysmal. From car exhaust to industrial inversions, it can cause burning eyes, asthmatic reactions, and lead to cancers and emphysema. Luckily, there is a biological defense we can employ to protect ourselves that doesn't require wearing a gas mask. Through studies on space ships, NASA determined that common house plants can filter toxins directly out of the air. Through their respiration, they draw air into their root zones. The particles get filtered out in the soil and microbes living around the roots break down many common air pollutants. Having houseplants can greatly improve overall indoor air quality. The book *How to Grow Fresh Air: 50 Houseplants That Purify Your Home or Office* by B. C. Wolverton goes into considerable detail about the subject.

Waste as a resource

The literal mountains of waste produced by cities are tragic aspects of modern life. The enormous amounts of organic matter occupying space in landfills and producing methane, a primary greenhouse gas, are a squandered resource.

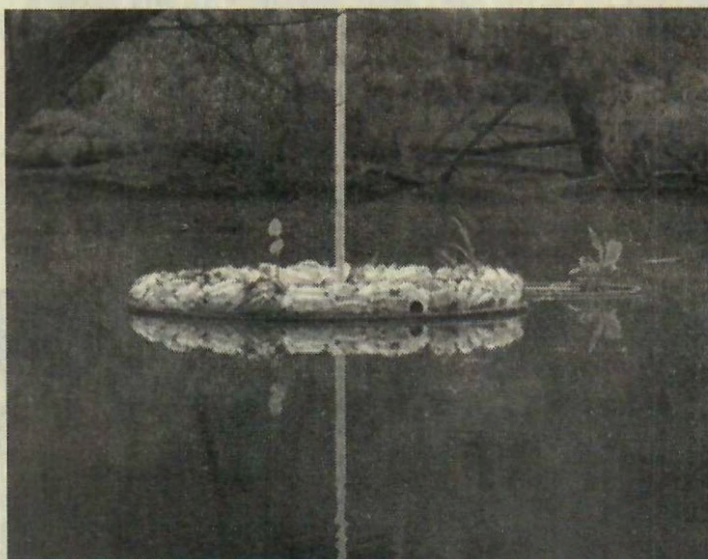
There are few uses for fossil fuels more ethical than collecting the tons of food waste produced in cities and turning it into compost. There are many empty lots in cities with impoverished or non-existing soils. Building these soils with food compost is a noble investment in our future. Tomorrow's energy surpluses are dwindling. It is crucial that we make our cities into high-yielding food production centers while the ability remains.

In the upcoming year Rhizome Collective will be launching a neighborhood-based composting operation to be run from our brownfield property. Organic matter (food, leaves, manures, etc.) will be intercepted from the local waste stream and turned into rich compost by a recycled vegetable oil powered tractor. The compost will be sold and also shared with other urban gardens trying to restore their soils. If the project shows itself to be practical and economically sustainable, it will have demonstrated a local business utilizing the wastes of others while making cities more self-reliant in food production.

Another plague of today's cities is the toxin-laden runoff produced after every rainstorm. Rain washes the multitude of pesticides, fertilizers, oil spills, dog droppings and trash found in city yards and streets into the sewers and ejects it into waterways. There is a stormwater retention pond on the Rhizome Brownfield filled with plastic bottles, poisoned water, and all manner of flotsam. The water from this pond spills over into the Colorado River, a sensitive riparian ecosystem.

In one of our bathtub ponds at the warehouse, we observed how water plants will occasionally break loose from the banks and stay afloat in the center of the pond. While there, the plant develops an extensive network of roots suspended in the water. Around these roots we'd frequently witness high levels of biological activity: a whole food chain cycle involving minnows, invertebrates, algae, and although invisible to us, bacteria. We imagined if that environment could be recreated on a larger scale, it would greatly assist in the absorption and degradation of excess

nutrients and toxins in the retention pond. Keeping plants afloat in a large pond without the protection a smaller pond provides presented a challenge. The idea came to us to create a floating island made from the myriad of plastic bottles washed into the pond. We rolled a length of plastic mesh into a sock-like shaped and stuffed it full of the bottles. Once filled, it was connected end to end into an eight foot diameter ring with plastic mesh spanning the center. Water plants of several varieties were attached to the mesh and allowed to grow roots throughout its supportive structure. The whole thing was slid over a vertically mounted pole which allowed it to move up and down with the water level while remaining in the same space. The plan is that once the plants develop an extensive, dangling root system, water passing through it will be treated by the diverse biota sheltered by the suspended root mass. In time and with hope, this trash bottle floating island will support a thriving ecosystem and will act as a biological filter to a critical water system.



Floating rafts made of used plastic bottles support water-purifying plants and add visual interest to a pond, making the bioremediation process beautiful and legible to visitors.

These observations and ideas have come out of a process of experimentation, trial and much error and learning. We encourage people to practice permaculture in urban settings where and when they can, learning and sharing their experiences. The creation of autonomous and egalitarian urban communities is critical to our survival and to our hopes for enduring justice. Δ

Scott Kellogg and Stacy Pettigrew are co-founding members of the Rhizome Collective in Austin, TX. Scott is director of Rhizome's sustainability program and Stacy is a journalist for W.I.N.G.S., the women's international news gathering service. Visit the Rhizome Collective's site at www.rhizomecollective.org.

Memoires of a “Rurban” Permaculturist

Andrew Goodheart Brown

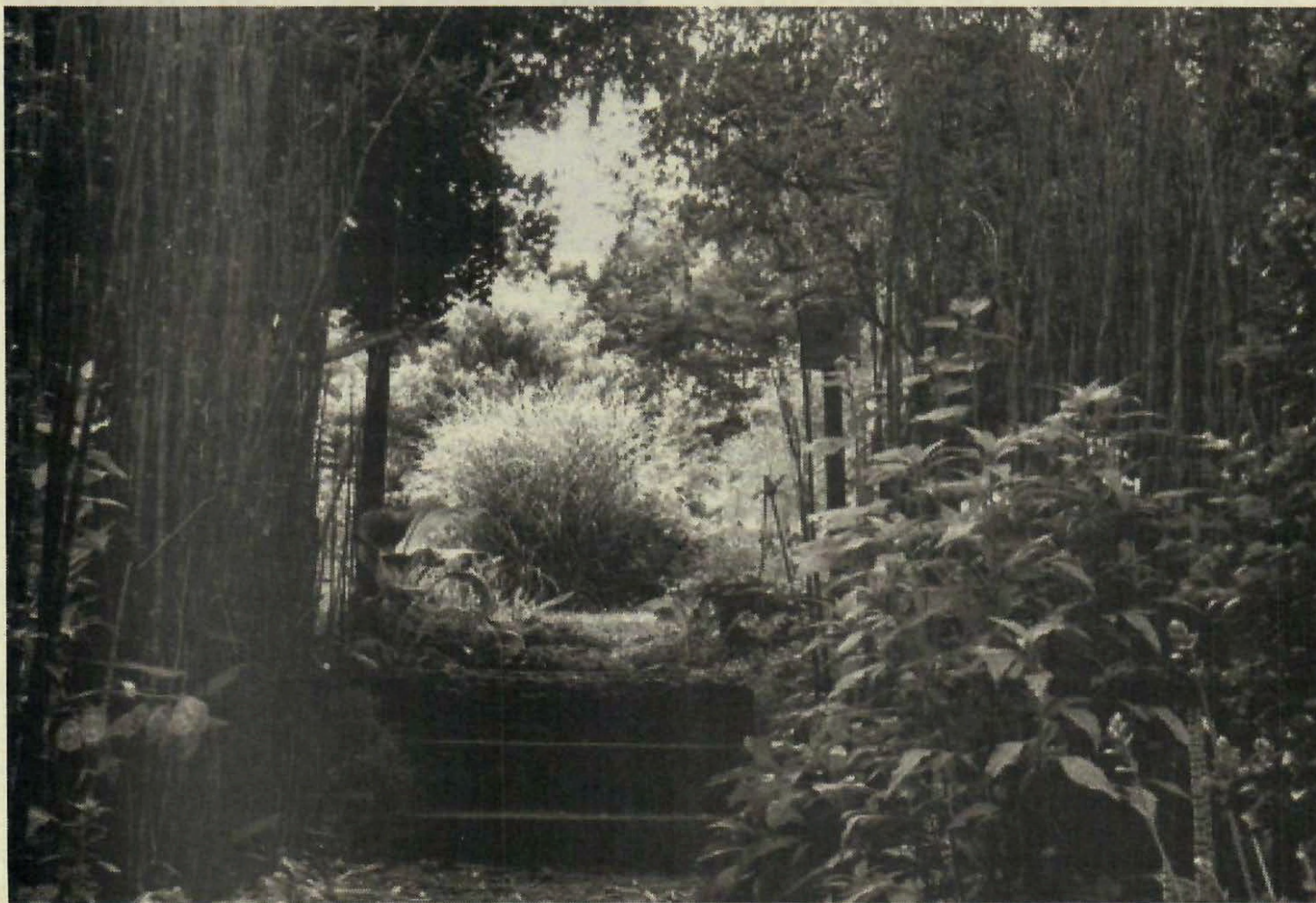
THE ENTICING DREAM—

Once rural yet now urban, the 1918-era home where my wife and I live was built on a small hill, facing east. There had to have been a water source very nearby, yet that information is lost to this present time. Otherwise, knowledge of passive solar siting was decades away, as was permaculture’s zone and sector analysis. So we, like many others, inherited a site sans planning. If our acre was swept clear, what a joy it would be to design it according to permaculture principles! If we could pick up our home, it would get relocated to the northern property line, facing south across and slightly above the open gardens and orchards. The sun would warm us, the house design would keep us cool in the summer, and gravity would move our roof-collected rainwater to the gardens and orchards. An attached greenhouse would be pure delight, keeping figs, basil, a dwarfed lemon, and

banana growing all year, while providing extra winter heating as well as comfortable three-season habitat, not to mention a seed starting area. A small, enclosed pond would provide us with enchanted space, a few tilapia, and amphibian habitat to gather the peepers and other callers of the spring. I would have to have a shower in the greenhouse, and of course, all water would be reused for the nearby plants.

What morning reveals

What we have though, is a small, well-built, east-facing home, sited on the edge of a crest sloping west, in the middle of an acre. The most level area lies east, and slightly upslope. When it come to gravity, slightly upslope is still against the natural flow of water. So our collected roofwater must be schlepped up the small



slope for garden use. The edges of our site are wooded, as is the back (and lowest) third. Squirrels planted the Zone 5 back section with Black Walnut, which provides food and medicine, and can provide good lumber, yet also contain allelopathic substances in leaves and roots that deter the growth of many other useful plants. Although we certainly have been experimenting over the years with guild plantings, and have success with raspberries, blackberries, jerusalem artichokes, mulberries, and bamboo, by comparison with the diversity of the remainder of our site, zone 5 is a simplified ecosystem. And unfortunately for our forever edge-pushing plantings, has proved fatal for some plants such as pie cherries and blueberries, even 30 feet from the nearest Black Walnut. Also on site is my wife Chiwa's pottery studio and kiln, a chicken house we call "Baba Yaga," and a woodshed. At last count, in our garden/orchard, are five varieties of apple, including five of one variety (Goldrush) and three of another; three varieties of pear; two of plum; an asian pear; two types of mulberry; two types of persimmon; four types of peach (two arrived in compost for the chicken tractor); a dwarfed nectarine, two siberian apricots, and 24 varieties of berries. Interspersed are the garden beds containing culinary and medicinal herbs, native and cultivated edibles, and lusciously scented (both day and night blooming) flowers.

A new designation

Not bad for an urban homestead. I am beginning to refer to our site and situation as "rurban," for even as we live well within the city limits, and can hear some traffic noises, visually and ecologically, we reside in the country. Rurban: a hybrid site combining desirable properties of both rural and urban. A living, productive, beautiful, biologically friendly, island oasis, in this case, located in a small, middle-sized city in the Katuá bioregion of the southern Appalachian Mountains of western North Carolina.

Not perfect though. No water. Water is the key to life: just travel westward and pay attention. Water is life, and life is harsh in its absence. Two years ago, on a project in Bolivia, I was traveling on the back of a small motorcycle to a remote community. As we traversed a mountain, I witnessed the harshest land I have ever passed through; a land without hope of recovery in a human timeframe. Dry, high desert, punctuated with cactus and scrubby shrubs, huge ravines, no topsoil to speak of, and no obvious way to reclaim. I was both in awe of the plant life tenaciously able to hang on, and wondered how people could possibly exist in this landscape. As we crested the mountain range, off in the far distance was a new moon-shaped sliver of green. We motored down to this isolated community, lushly perched around a small stream. A green buffer duplicated the meanders of water, but all else was harsh and dry. Never before have I so overtly experienced the life-giving presence of water. In an otherwise inhospitable, severely degraded landscape, water was life, and the riparian buffer was green with corn, grapes, and other crops. Turning my back to the river revealed a harsh desert.

Too much of a good thing

This spring, just as the orchard was in bloom, wet, cold conditions settled over the area. Bad on two counts: tough on pollinators (forget honeybees in inclement weather and hooray for native pollinators!) and truly terrible for flowering fruits in the east. Perfect conditions for the spread of fireblight, a bacterial infection affecting first the blossoms, then spread by splash, wind, and pollinators. Any fruit variety grown (in our areas of the east) with ecologically friendly methods, must be chosen first for its blight resistance, and then for long chill factor, which is necessary due to our mountain weather pattern of long, warm periods in February, followed by killing frosts. (Chill factor refers to the amount of dormancy below a certain temperature required for a fruit variety to flower).

A stitch in time

Anyone here who succumbs to the lures of growing their own fresh fruit, and doesn't strictly adhere to blight resistance and long chill factor, is literally doomed to fruitless frustration and subsequent loss of plants. After one has lovingly grown a pear tree for seven years (average first fruiting time) and then lost that tree due to fireblight, the frustration and loss is palpable. One of my pear varieties, Beurre Bosc, has never, in our 10-year relationship showed any sign of blight. This season's conditions resulted in several blossoms demonstrating the classic fireblight signs—a blackened, wilted "shepherds crook," and within three days the entire top half of the tree was blackened. (I learned later from an ATTRA paper on growing organic pears, that fireblight in less than fully resistant varieties can move systemically in just two-three weeks, and kill the tree as quickly). I immediately and regretfully cut off the top two-thirds of the tree, well below any sign of blight (12 inches) just to save its life, and burned the infected branches. At present, the truncated tree looks well, yet a few tiny branches have recently showed darkened leaves (could be mites, could be fireblight) and I am demonstrating my newfound "tough love" and immediately pruning them out and burning.

"A healthy natural system will respond to utilize the unused resources, thereby increasing the site complexity."

The other trees (apple and pear) that are more resistant may have showed some classic signs, yet their resistant nature contained the infection in that particular new growth, keeping the bacteria from effecting a systemic infection. From there, it was easy to prune the infected twigs—making sure to disinfect the pruners after each cut with a 5% bleach solution—and burn.

Is it worth having an organic orchard in the Southeast? Without any doubt! The orchard is truly lovely in spring, brings

daily delight as the fruits swell, grow, and ripen, and in autumn, provides us with all the incredibly delicious fruit we can consume. Our fruit can be eaten right off the tree, and we delight in eating ourselves silly!

Build it and they will come

Having designed a biological oasis has many rewards, such as living in an ecological richness as a self-declared “friendly giant,” and being a daily part of a polyculture garden and food forest. However, there are also unexpected disadvantages that result from the discrepancy of surrounding simplified sites. Three years ago, I was pleased to notice a new bird on site: a pair of Gray Catbirds. Our increasing site complexity was creating new niches, and nature was filling them. This mimics a natural law: there is no such thing as an unused resource (an unfilled niche). Our permaculture dictum is to complex our site, create multiple niches, multiple levels of surplus. A healthy natural system will respond to utilize the unused resource, thereby increasing the site complexity. The rewards are legion: for instance, a bird will fly in and land on a bird-friendly perch, swoop down for an insect, and drop a small deposit of phosphate-rich manure in the garden.

Turns out that Catbirds are fruit lovers, and our site’s abundance resulted in a successful nesting. The following year, four catbirds returned, nested, and helped themselves to all manner of fruits; wiping out all elderberries, decimating the raspberry crop, the wineberries, and making a huge gap in the blueberries, until we netted the plants in self-defense. The birds then swooped in on our first concord grape harvest, destined for our first “from scratch” homegrown wine, and out came more netting. The catbirds gnashed their beaks, and took out their frustration on a few apples and pears. This season, seven catbirds appeared, nested, and I knew we were in for serious repercussions. They took more than their share of the raspberries (although the early summer crop was enormous and we too had our abundant share), all the elderberries again as well as most of the wineberries. We hastily covered our heavily laden blueberries with bird netting in advance of ripening, and our largest crop ever awaits us. The catbird contingency was itself a niche of abundance, and natural predators have since taken their toll, reducing the numbers to a smaller population.

Gleams of wisdom

The problem as I have started to see it, is not so much in the presence of other animals such as catbirds, as it is in the scarcity of preferred food and habitat in the fairly sterile surrounding urban landscape. A simple culture of grass and trees does not a catbird delight! As we permaculturists inhabit our sites, following the principles in our design for abundance, we can expect an initial out-of-balance response to the richness of niche and harvest. Yet natural law is natural law, even in an unnatural surrounding landscape. Pest activity itself becomes an abundance that invites response from nature, and a livable balance results. I am happy to host a catbird pair, happy to test my *Homo sapiens* brain against the mental capacity of these feathery-winged modern dinosaurs, ensuring they receive only their fair share of our abundant surplus.

Other animals interact with our site, some semi-residential, and others passing through on occasion, and during the growing season, partaking of the abundance and maybe leaving behind some fertile payment. Most notable of the latter are the Black Bears. Three years ago, a massive male bear (I named him Mr. Volkswagen) began moving through at night, and on occasion by day. We were always excited to see him, and due to the vigilance of our neighbor’s dogs, were often alerted to his presence. During one diurnal visit we photographed him in the forest garden, under an old apple tree. The resulting photo revealed a contained area of blackness in the dense shadows of our intense polyculture. Later, Chiwa noticed a bite out of one of our Moon & Stars watermelons, and a few nibbles on a handful of apples. Generally though, this massive, magnificent bear moved through with little sign. Several times that we know of, he was within 30 feet of our active chicken tractor, and most fortunately for all, never the hens them any attention. Had he been in an opportunistic mood, he could have easily and effortlessly destroyed both tractor and birds.

Last autumn, a female and two yearling cubs began showing up regularly during the daytime, and forcing our neighbors to tighten up their trash habits. We first noticed the bears’ presence when the bird feeder was pulled down and emptied. The ursine visitors lived for three weeks in a bamboo grove across from our site, and I was happy to learn that most of our neighbors were favorably excited about their presence. Frequently we would see them during the day, and often at night. During this period, a next door neighbor walked out one night, and his motion detector light went on to reveal the mother bear 15 feet away at the base of a tree, her two cubs up in the tree, Mr. Volkswagen across the street, and another bear in the next yard. Yes, this is well within city limits!

Unexpected yield

The bears have moved into east Asheville at what appears to be a response to disruption of their preferred habitat corridor. So frequently are they seen that the city no longer responds to “bear



Practicing permaculture creates food and habitat for humans and our neighbors that can be particularly important to the survival of senior species like this black bear.

in my yard" calls. Our future site design must include bear-proofing the chicken tractor and henyard. Our first step—following a daytime garden ramble two months previously—was to move the garden hens from the front garden tractor to the back-of-the-house henyard. Though we hated to surrender their superb bed-building services, we weren't willing to risk their lives.

In permaculture training, we say that the yield of a system is theoretically unlimited. A totally unexpected result of our currently inactive chicken tractor is the thickly abundant, waist high polyculture of plant growth contained within that caged space: tomatoes, acorn squash, millet, corn, sorghum, and black-eyed susans. All this arrived in compost fed to the previous occupants, as did two large peach trees nearby (of undetermined varieties). The chicken-prepared beds are the richest areas of our garden: when we move the tractor, the newly created bed is already thickly mulched with compost, straw, and manure; the seeds and insects have been turned into delicious and healthy eggs; and the bed is ready for planting.

I haven't returned the hens to the tractor this season due to my curiosity about this unexpected bonus of potentially harvestable abundance. Will tomatoes grown in this wild profusion bear fruit, live long, and avoid the late blight that does most tomatoes in before their natural time? The acorn squash has already outwitted the squash-vine borer and produced a harvest, hidden in the tangle. Indeed, this has been my squash strategy for the past several years, due to the same insect. My only chance of squash and pumpkin harvest is to hide the plants in other vegetation and encourage (to the untrained eye) a wild profusion of growth that hides the plants from the borer. Otherwise, a seemingly lovely, healthy vine suddenly wilts, withers, and dies. The moth is very wasp-like, fast flying, and skilled at spotting squash vines. She descends to the close-to-ground stalk, lays an egg, and departs in the wink of an eye. The egg quickly hatches, and the tiny larva burrows into the vine, breathes a sigh of relief at now having a safe, edible haven, and begins to enlarge by munching along, inside the stem. Within a short time, the two-way flow of nutrients, water, and photosynthates is interrupted, just as the larva is ready to emerge. The plant goes into a tailspin and fatally crashes. For the six plants producing various types of winter squash in the garden now, another 18 were borer victims.

Evolutions

Long ago I released the idea of my being the

controller of this garden. What has evolved is my realization and subsequent inclusion as a part of this incredible, polycultural, permaculture ecosystem. My involvement feels to be the most important and fulfilling of my earthly actions.

Each morning I carry out my freshly roasted and brewed coffee to the garden's center: I call in the directions, then all the major players (such as water, soil, plants, and pollinators, including the unseen energies from elementals to angelic beings), and celebrate the lot with my first sip. Δ

Andrew Goodheart Brown is an admitted bio-phile and a self-declared friendly giant. In addition, he teaches, practices, and lives permaculture, while consulting internationally on sustainable agriculture projects; working as an endangered species observer; caretaking Barefoot Urban Permaculture Gardens; home-brewing stout, wine, and champagne; baking breads; and teaching gourmet natural cooking. <permaheart@earthlink.net>

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Hazelnut Permaculture Workers Cooperative

Bob Ewing

“EVERYBODY’S WORKING for the weekend,” is more than a catchy Loverboy song title. We do not work because it renews or invigorates us; we do not work because it gives us pleasure to do a job well; we do not work because we take pleasure in our craftsmanship—we work to earn money to buy stuff, so we can have fun on the weekend. All too often, the fun never comes. When it does, it is in small doses that readily disappear in the daily grind that resembles too many workplaces.

On the shores of Lake Superior

Hazelnut Permaculture in Thunder Bay, Ontario, is being developed to design and demonstrate ways of living that are sustainable. The members and associates are learning new skills, earning a living, and doing good work. They have chosen to do this cooperatively. Each of us is a teacher; each, a learner. Hazelnut members include an urban homesteader, a market gardener, and a herbalist among others.

Habitat restoration, brownfield remediation, and urban agriculture offer community-building opportunities, as well as a chance to earn, learn, and share. The educational model that we use requires hands-on, interactive techniques. The mess that humanity has made of our urban habitat and the impact on the land surrounding that sprawl has an upside: opportunity. There are unexplored niche and mainstream markets and enterprises sitting in our landfill sites and empty city spaces. It is time to experiment with theory, and practice and learn while we earn. I teach an Introduction to Permaculture course to the members and associates who wish to know more about permaculture. Some of them may go on to take a Permaculture Design Certificate course. The introductory course is held in conjunction with one of our projects. A community garden start-up, a market garden, and three urban habitat reclamation projects are among this year’s activities.

At present, most of the project is volunteer work. We are developing funding proposals and other income generation ideas to cover salaries and other costs. Meanwhile, the students exchange sweat equity for education and help develop a cash base for the future Cooperative. This is new territory for most of the people involved and offers a great educational opportunity.

The Introduction to Permaculture course also provides documentation which we can use to create educational materials.. All materials are property of the Cooperative and belong to all members. We have only just begun.

Creatively catalyzing change

“You must be the change you wish to see in the world.” (Gandhi)

Several of us have been talking for three or four years about issues such as right livelihood and sustainability. A workers’ cooperative provides the infrastructure within which we can make a contribution to our community, derive an income from our efforts, and teach others how to do the same.

“... society will become sustainable only when justice, environment, and economics are given equal weight while making decisions.”

What else do cooperatives have to offer? Workers cooperatives operate on the “one voice, one vote” principle. Each member has a voice and the right to use it. There is no boss—all hold equal status. Cooperatives encourage diversity. Each member of the cooperative brings his or her own skill set and a unique perspective to the problem, and everyone contributes to the solution. The cooperative allows individuals to come together and share skills while doing the work that they want to do. The whole is greater than the sum of the parts.

We have experience with natural landscaping and habitat restoration. Our goal is to build on that expertise to address the issues facing our society. Human behavior is at the root of much of what is wrong with our world, and much of that abnormal behavior is caused by the work we do to earn the money to buy the stuff we want. We have become a society of dependent consumers rather than responsible producers. Many skills have been lost: very few people can grow their own food, build their own house, or repair their cars or DVD players for that matter. Yet, each of us has our own skill set, developed—both knowingly and unknowingly—over the years.

It can take some time to realize all that you can do. Each of us

first listed our skills and then talked about our similarities and differences over several weekly potluck dinners. Process is important. We need to pay attention—to observe and interact—where we are. The weekly potluck provided a good setting for these discussions. We have a class for the first hour, then take a supper break, and finally settle into a chat about where we are, what we are doing and what we would like to do.

Each chat begins with an observation, something that one of us saw during the previous week: the first robin, the first dandelion—when, where did we see, hear it? Did we experience something unusual during our routine—for example, something that had been there all along, but never before noticed like signs, buildings, rocks, or trees? I encourage people to keep a journal and to record their observations. Get to know your backyard and immediate neighborhood.

We don't cover everything at any one meeting, but we keep in touch between meetings. We work on projects together or in smaller groups. The potluck is not our only contact. Clear communication is vital. Information is the lifeblood of any planning process. We have an e-mail list and a discussion forum, and we maintain telephone contact because not everyone has ready access to the Internet.

The skills range of our members is broad. We have a permaculture designer, social worker, teacher, sociologist, organic gardener, librarian, and community economic developer, all working together and learning from each other.

Hazelnut is committed to life-long learning and is particularly interested in helping others create sustainable livelihoods through good earth stewardship. We apply the ethics of permaculture in all that we do: care for the earth and care for people, taking responsibility for our own consumption and production and sharing the surplus.

We are building the community we want. When we apply David Holmgren's principles such as "Use slow and small solutions," or "Creatively use and respond to change," we are able to develop realistic expectations and to realize both short- and long-term goals. In this way we create an action plan that not only matches our resources but also helps us increase those resources while obtaining a yield.

We have conducted three workshops. One was on deep mulching. The garden that we installed during this workshop can be visited at Hyatt's Nursery in Thunder Bay. The second workshop was "Planning Your Perennial Garden—Going Organic," and the third focused on integrated pest management. Each workshop helped us obtain a small yield, provided a learning experience in event development and promotion, and created an opportunity to learn about companion planting, plant guilds, water, and soil.

Hazelnut believes society will become sustainable only when justice, environment, and economics are given equal weight while making decisions. This triple bottom line can be achieved when we work as a community to restore habitat and develop a sustainable community-based, locally owned, and locally controlled food supply.

Members of Hazelnut are involved in several of the community gardens in Thunder Bay. We are evaluating various ways (other than writing funding proposals and holding special

events) to generate funds to operate a garden. For example, we are conducting a market test this year to see which herbs sell best at the local Country Market. We will document the process and share the results.

We held several meetings after we obtained a copy of the recent report by Dr. David Suzuki: "Sustainability Within a Generation"; we agree with what Dr. Suzuki says. We want to reach out to the people living in Thunder Bay and show them that sustainable living is a reality, and we can do much to build the community we want. When we work together, all life benefits.

"Each member of the cooperative brings his or her own skill set and a unique perspective to the problem, and everyone contributes to the solution."

The Hazelnut Permaculture (Workers Co-operative) is being developed based upon the ethics and principles of permaculture as detailed by Holmgren and the co-op offers permaculture design, education, and communication services and workshops. In the longer term, Hazelnut intends to create a demonstration garden, a Resource Center, and an urban market garden. The cooperative plans to provide people with concrete evidence that sustainable living is possible, and that food (which includes plants and domestic fowl) can be grown in urban settings. The market garden and demonstration site will provide a location for prospective clients to see what Hazelnut does, ask questions, and take a workshop.

Learning is a lifelong experience. People learn best while doing; theory is essential, but it is theory in practice that creates the conditions where we develop the knowledge we need to design a sustainable society.

In *Permaculture Principles and Pathways: Beyond Sustainability*, David Holmgren has given us a rationale for applying the 12 principles now, so that we can find ways to survive the coming energy descent gracefully and build a vibrant future while doing so. That scenario of freezing in the dark does not have to come to pass—we can build the communities we want. Δ

Bob Ewing is a certified Permaculture Designer who lives and works in Thunder Bay, Ontario. In addition to running a permaculture design consultancy, Bob writes weekly columns on food security issues and offers online permaculture courses and information designed for the urban and suburban dweller.

Meditations on Energy Descent

Don Tipping

I RECENTLY HAD THE PLEASURE OF ATTENDING a 2-day Advanced Permaculture Principles course with David Holmgren in Portland, Oregon at the Portland Permaculture Institute. Being a farmer from a rural area, I typically didn't give much thought to urban permaculture, or cities in general, except perhaps as a market for my farm's produce, or a place to buy spare parts. To be entirely honest, if you were a fly on the wall amidst a conversation of Siskiyou area permies and farmers you might hear phrases such as, "That's the last place I'd want to be," or "I hope that they can grow/preserve/stash enough food" when discussing the implications of peak oil. A very common doomsday scenario topic around my locale is the hypothetical hordes of starving masses pouring into the countryside from the cities in search of food and water when they realize what has hit the fan.

My view was profoundly changed by my experience in Portland and I was pleased to realize that I had much to learn from my urban counterparts. For what urban areas lack in acreage of fields and forests they make up for with tonnages of human creativity and community collaboration. Through interacting with the other course participants who were predominately from the Portland area and experiencing the site of the hosts, Joe and Pam Leitch, I came to appreciate the many interwoven dynamic relationships, which make urban Permaculture so exciting. To name a few:

- Under utilized resources are abundant and readily available free or cheap (wood chips, information, building materials, recycled vegetable oil, yard waste).
- A rich and diverse cultural landscape (ethnic, artistic, and historical).
- Networking is constant and multi-dimensional (numerous events and groups working for positive change).
- Things can happen quickly because distances between people are short by rural standards.
- Leaders of social and cultural change movements frequent urban areas (Holmgren for instance).
- Small changes can have large results.
- An inherently smaller ecological footprint than the average ruralite due to resource/infrastructure sharing.

Among the participants in the course there were numerous parallel and overlapping focal points—natural building, permaculture, city repair, progressive education, garden agriculture, cohousing/ecovillages, appropriate technology, etc. In my area it is rare to get all the farmers and/or permies together

to exchange ideas or work together on a common project as we are generally consumed by our own mountains of personal projects. While there may be many people involved or initiating good projects, coordinating these efforts in a collaborative and cohesive fashion is logistically problematic. One factor, which undermines many rural renewal efforts, is that it is generally up to an individual or a family to maintain and steward extensive farms, forests, and projects. This is indicative of 80-acre minimum zoning laws, which restrict multiple dwellings, community, and cohousing. Despite many of the virtues and assets of country living there are some considerable challenges, many of which Toby Hemenway highlighted in his insightful article in the PCA #54 and updates in this issue.

Cities facilitate sustainability

Cities also serve to facilitate some features of our culture's modern interpretation of sustainability, which may be less appropriate in a rural setting. An obvious example is mass transit, public buses, and light rail. Another instance is making biodiesel with recycled/waste vegetable oil, which is easily obtainable from many sources in cities representing a genuine step to reduce ecological footprints. Having personally made biodiesel for a few years, driving over 50 miles each way to obtain the oil and methanol, I began to weigh out simply restructuring my life to drive less and spend my time doing more worthwhile and healthful things. I then looked into getting biodiesel delivered from town. Then I began to look into the energy return on energy invested, (or EROEI—a way to measure embedded energy): For biodiesel produced from conventionally grown oilseed crops (GMO soy), the biodiesel yields only 60% of the energy put into growing, producing, and transporting the fuel in the first place. New oil biodiesel is basically a shell game displacing the burden and effects of one's ecological footprint onto another ecosystem akin to a not-in-my-backyard paradox. Our current fossil fuel subsidy hides many of the embedded energy costs of many of our tech-no-logical fixes. Co-housing is a reach towards village life, which naturally overlays onto urban land use patterns easily. However, zoning, and cultural attitudes in rural communities thwart efforts to develop co-housing and ecovillages.

The Portland Permaculture Institute is a veritable cultural oasis/ lifeboat and proving grounds of permaculture principles in action and community locus able to incubate ideas into reality. This land was also a remarkable example of stewardship by the prior owners in that it was 1.6 acres of land in a neighborhood of otherwise high-density housing. Mature figs, black walnuts, cherry, apple, and other unique trees comprised a healthy scaffold

for the new stewards to develop into an extensive food forest. The acquisition of this land appeared to have contributed to galvanizing the local permaculture and city repair movements by providing an excellent demonstration site. Numerous outbuildings and outdoor rooms fostered a learning environment, which engaged participants with the land, elemental forces and each other in a harmonious way. Their website <portlandpermaculture.com> highlights the site and their programs.

While at the Holmgren permaculture principles course I had the delight of staying at Try/on Life Community Farm, a newly formed non-profit and established ecovillage on seven acres of land within a 670-acre Tryon State Park within the city limits of southwest Portland. Recently threatened with the sale of the property by the owner, who intended to subdivide and develop the land for luxury homes, Try/on Life Community Farm has risen like a phoenix from the ashes and is on the path to raising the funds to purchase the land and place it in a conservation easement. TLC Farm aims to serve the Portland Community through:

- Innovative approaches to sustainable urban growth
- Interdisciplinary hands-on educational program focused on food systems, permaculture, natural building, and other skills and theories of sustainability
- Publicly accessible demonstration projects, workshops and classes, land tours, and publications for school groups, organizations, and kids and adults of all ages
- Integration of social, ecological and economic sustainability
- Preservation of green space and restoration of native ecosystems

At the confluence of rural farm and native forest, in an urban center, TLC Farm is a place of cooperation and crossroads for a diversity of people.

Inspired by these two promising examples, I contemplated permaculture in the city. I was challenged to envision a new model of garden agriculture, where long rows of crops, orchard blocks, and farm ponds are supplanted by a mosaic of garden plots, heirloom fruit trees, roof-top greenhouses/nurseries, fruiting arbors, balcony burdock boxes, city park food forests, rainwater catchments, and recycled bathtub aquaculture.

During an inspired course tea-break rap session a few of us devised a scheme for an urban cooperative community supported agriculture program (CSA) in which a network of backyard (and front yard) gardeners would coordinate their plantings to ensure sufficient surplus to distribute to their neighbors. They could focus on a few specific crops for trade within the cooperative, enabling specialization and productive capacity. Others might forage for fruits and nuts amidst naturalized trees in the city, redistributing the surplus to co-op CSA members much like the typical model, except that deliveries would be made on foot or by bicycle. Neighborhood or regional seed growing/saving cooperatives might develop along similar lines to ensure a fresh supply of regionally adapted varieties. Limited urban arable land precludes full-blown market gardens (except in reclaimed park lawns). However, adding up the square footage of an entire neighborhood of yards might equal some considerable acreage. A

cooperative city-farm model might grow out of a plan in which a cooperative of gardeners and small livestock grazers develop a reticulated nutrient cycling/ rotation. In such a scheme, for example, a rabbit grower might use portable electric netting to mow lawns, exchanging fertility, meat, and pelts for forage, vegetables, and more. I see the pattern of this city farm akin to a rural farm with a lot of really big outbuildings, many roads, and a few pocket fields and many farmers.

“Being a farmer from a rural area, I typically didn’t give much thought to urban permaculture, or cities in general, except perhaps as a market for my farm’s produce or a place to buy spare parts.”

I was particularly empowered to see the extent to which Portland as a progressive city, albeit an atypical one, has fostered the development of many overlapping social movements. These spanned from ecovillages to the City Repair Project, social justice movements, progressive education, all displaying a general savvy and awareness of appropriate human relationships and the work necessary to achieve them. When I consider the dire condition of the biosphere, and the limits of our ability to repair it, my thoughts always move from tools and technical solutions back to social relationships. We all descend from village living peoples at some point in our ancestry but we have forgotten how to live in right relationship with one another and the other species of the planet. The hope is that we can “re-member” (or become a member again) of a village-like social fabric. I believe that this is key to re-establishing harmony with other species and the elemental forces.

Land use patterns need to change

From my perspective as a farmer, and projecting the implications of peak oil and energy descent, I see that the above city-farm model may well fall short of meeting the caloric needs of all urban residents. As fossil fuels become less available and more expensive, the transport of food from rural areas into cities will become more complicated. Farming implies surplus food in the countryside: towns and their markets have existed for almost as long as agriculture. The town by nature and design represents

the center for exchange of goods and services. But in the American landscape an unfortunate transformation has occurred through the development of the suburbs. City and country are now farther apart than they must be for a healthy relationship.

The pattern of urban settlement surrounded by a ring of intensive agriculture, then a ring of grazing lands, then forests can still be observed in many indigenous landscapes. Michael Ableman's book, *From the Good Earth* contains many beautiful pictures of this pattern. Suburban sprawl has developed and paved what were once the productive agrarian landscapes of the nation, while increasing the distance that food must be transported. Farms will be forced to change what they produce and how they market it as fossil fuels drive the cost of transport up, or we will need to begin de-paving the suburbs to facilitate food growing closer to town. I know that over the past decade we have focused more of our annual cropping towards vegetable, herb, and flower seed production for Seeds of Change, Fedco, and Turtle Tree Seeds. We also conserve carbon on our farm by returning the majority of the biomass back into the composting process, only having to transport a comparatively light and concentrated product (seeds) rather than heavy and bulky cases of fruits and vegetables.

Our family has grown the majority of its own food for a number years and over time I have learned how much land and resources are needed to grow enough vegetables, meat, eggs, dairy, grains, legumes, fruits, nuts, seeds, and oils for one person, assuming active food storage through drying, freezing, canning, and root cellaring. For instance, to grow enough potatoes for two people for a year requires about 800 square feet—a lot of space. Now take this sample and do it for carrots, flour corn, dry beans, winter squash, grains and so on. Although I see the beauty in, and I am personally pursuing a tree crop-based agriculture emphasizing forage crops, I see it exceedingly prudent to acknowledge that most Americans' diets (permissives included) are still predominately based upon annual crops and animals that eat annual crops. As Wes Jackson has pointed out, humans are essentially grass-eaters, pointing to our reliance on annual cereal crops for food and animal feed. Our models for a permaculture prairie savannah of oaks, chestnuts, hazels, ruminants, and ground birds stretching across the Midwest are alluring and well worth developing, however, their ability to feed the masses is some ways off, if it indeed it can work. While Cuba may be the poster child for urban agricultural renewal with 60% of the vegetables consumed in Havana being produced in the city, per capita caloric intake plunged after the collapse of the USSR. It has only returned to 80% of its former level.

Only imagination limits design

I challenge us all to take the notion that "the design is only limited by the imagination of the designer" to a higher level. My goal in highlighting the above points is not to raise the specter of doom, but rather to illuminate the critical linkage between rural and urban areas and to encourage rural renewal parallel to urban renewal. Just as urban areas need to remake themselves to become more interconnected, rural areas need to redefine their identity after centuries of abusive "boom and bust" land

practices. Many rural areas across the US are being rapidly depopulated through corporate consolidation of farmlands, failure of family farms, lack of economic opportunity, and unsustainable farming practices. Jeremy Rifkin speculated recently that the entire state of Iowa was very close to becoming 14 mega-farms. The demands of a growth-based economy plunder the cities and countryside equally with far reaching consequences.

"... my nightmare of the starving masses from the cities coming to loot our farm is a less likely scenario than hordes of eager permies coming to the countryside in droves to learn. . ."

The average age of the American farmer is 62 years. Stop and think about this for a moment: That means that there are statistically as many 82-year-old farmers as 42-year-olds and probably not very many 22-year-old farmers (nor 102 year old farmers for that matter!). Fortunately, I meet many young people interested in organic agriculture, biodynamics, and permaculture. I believe that my nightmare of the starving masses from the cities coming to loot our farm is a less likely scenario than hordes of eager permies coming to the countryside in droves to learn the lost arts of diverse, intensive natural farming to take back to their communities and start mini city-farms or suburban food forests. Ultimately the solution lies in rediscovering (or reinventing) a lost culture of garden agriculture, where food, fiber, and medicine are produced as close to the point of consumption as possible and surplus for trade is not done solely for economic purposes, but also to weave cultural traditions through the exchange of seeds, breeds, scions, spores, and knowledge. Δ

Don Tipping is a biodynamic farmer, shepherd, and activist who lives with his family in southwest Oregon's Siskiyou Mountains. His work with participatory plant breeding can be viewed at www.organicseedalliance.com. He is also a founder of the Siskiyou Sustainable Cooperative of farmers in the Applegate Valley, which manages a large cooperative CSA and is developing value-added businesses inspired by Basque Spain's Mondragon cooperative. Contact him at (541)846-9233 or sevenseedsfarm@yahoo.com.

REVIEWS

A Faith-based Dystopia

Review by John Wages

DERRICK JENSEN

www.derrickjensen.org

The Culture of Make Believe

Chelsea Green, White River Jct., VT
720 pp. softcover. \$25.

That the world is in denial comes as no surprise to permaculture activists or social scientists, but we should not underestimate the importance of books like Derrick Jensen's *The Culture of Make Believe* that face head-on the nature of our culture and tell its story for a mass audience. In the last ten years or so, a number of popular (as distinguished from scholarly) works have appeared by authors like Daniel Quinn, Jensen, Thom Hartmann, Chellis Glendennin, and other writers. These books go beyond ecological exposé to examining the fundamental reasons why our culture is so destructive, and they rehearse a familiar story from various perspectives: It is our culture, not humanity in general, that is sick. We tend to think of the prevalent world culture that is creating so many social and ecological problems as Western European with Greek and Judeo-Christian antecedents, but these authors have in mind a broader cultural definition as uncovered by the archaeology and anthropology of the past century. Their topic is the culture of domination that arose during the late Neolithic, a culture that eventually came to conquer the whole world. However, these authors write not of technology, for the question of whether or not domination could have arisen without technological developments like agriculture and domestication is a separate topic (one that is being steadily addressed by anthropology and

archaeology of the first Neolithic villages and by thinkers like Zerzan). While our inclination may be to move on to serious work (building ecovillages and

discovering new approaches to agriculture and housing), our best hope for a peaceful resolution to the experiment in alienation that is the last ten thousand years may lie in finding new ways to tell this story so that the masses who are not permaculturists or philosophers, will realize the long-standing nature and the magnitude of our error. For this reason, books like this one should be in every public library in America.

The author's ideas evoke social theorists like Harold Garfinkel whose documentary method holds that our culture is relative. Our common understandings, even the discretionary

aspects of our morality, are not written in stone. We change them as we use the past to define the present and continuously interpret the past to reformulate history (or, at least, the winners do). Derrick Jensen is writing about the reasons for our culture's particular values and how it got to this point, in keeping with the view (of Garfinkel and others) that social change does not come at the behest of sociologists, and social analysis is a job for everyone. Works that demolish institutional knowledge and replace it with something more experiential are essential if humanity is to reject once and for all the domination paradigm and move into a new way of thinking and being.

Much of this book consists of personal recollections and perspectives, written in a pleasing, conversational style. Its historical accounts are written with the detail only an accomplished creative writer could convey. Those accounts, from lynchings to more recent hate crimes, are well researched (the last 92 pages are notes and bibliography), but without such an artful admixture of historical and personal anecdote and the author's soul, bare accounts of the depravity of conquest and domination would not register as deeply and indelibly as they do. This is not a book you read once, then put on the shelf. It's filled with insights and ideas: I find myself going back to it again and again. Jensen's earlier book, *A Language Older Than Words*, was much the same.

The only thing that saved my original copy from destruction by repeated reading was the appearance of *Culture of Make Believe*. Many recent books have exposed the truth of first contact in the Americas. The centuries of genocide that followed there and elsewhere should, by now, be common knowledge. The significance to us is not the historical fact that such terrible events occurred. If these were events safely in the past, like natural disasters, we could build a monument, dedicate a park, and move on. For us, it is essential that we understand how such atrocities could occur, did occur, and continue to occur on a daily basis to the present time. The only way they can continue, from the author's perspective, is through our culture's remarkable ability to



make-believe. Every day, we make believe that indigenous people are not fully human, but that pine plantations are forests. We make believe technology will fix any problems that might arise with bioengineered crops or animals, find a way to store radioactive waste from power plants safely, and repair whatever environmental problems arise from our various economic activities. The list can go on to encompass very nearly every major problem humanity faces today. The popular viewpoint is that our

problems arise because we lack proper or accurate data for decisionmaking, and that progress will eventually give us the information we need. We have faith that technology will rise to every challenge and that ultimately, the world will be a better place. Instead, the author points out that we consistently ignore, misinterpret, or misuse the facts even when we have them. Indeed, the human animal has an enormous capacity for faith, perhaps too much. Hope is the positive pole of faith, and denial or self-delusion, its negative. Somewhere in the middle, when we have hope in what cannot and should not be and deny what is and should remain, lies the "make believe."

While we pride ourselves on being conscious beings, even naming our own species *Homo sapiens*, an act unsurpassed for hubris, denial of what our consciousness tells us is true is a hallmark of our culture. Jensen argues that there is a direct connection because it is only by pretending we are not destroying the things most precious to us that we are able to go on. The word denial, in terms of a negation of reality, carries only part of the meaning of make believe, which connotes a denial of reality to be sure, but something more. Not only does our culture deny that it is destroying the world of forests and prairies, it teaches us that it is building a new and better world of glass and steel. Not only does it deny that indigenous peoples still are being exterminated wherever their needs conflict with our economy, but it funds the organizations that make it possible for this genocide to continue. We do this in the name of development and progress toward utopia. Without the implicit belief in some sort of utopia to come—whether it be the technological dream of the educated classes who believe they have the power to create it, or the millennial paradise of the religious fundamentalists who believe we have no control over the outcome of history—we could not, as a society, continue to destroy the earth and ourselves.

Many people have read Jensen's interviews with various thinkers and activists in *The Sun*. The similarities between his work and that of Daniel Quinn are substantial. In fact, Quinn's *Great Forgetting*, in which our culture (not the entire human species) forgot its intrinsic biological links to, kinship with, and dependence on the rest of nature and began to believe and act as if it was somehow separate from the rest of the world, occurred prior to the denial explained and demonstrated in *The Culture of Make Believe*. Simply forgetting the biological connection was not enough. Every hour of every day, we run the risk of encountering nature and breaking the spell of the dominant culture. Every time we read about oppression and injustice, conscience threatens to break through. To prevent this, society has developed its sundry institutions, stories, philosophies, and religions whose common objective is to idealize the past and to make sure we believe the future will be pleasant. This cultural denial or "make-believe" ensures that the original Great Forgetting will be passed on to each new generation. Without ongoing denial, or a daily forgetting that is taught to each new generation, this dysfunctional, predatory society could never have continued for so long. Forgetting is an individual act or, at worst, an act of one society or one generation. Denial and cultural pretense that things are not as they seem consumes multiple generations over thousands of years. That, in a nutshell, is the thesis of this book, a unified theory of our predicament. Jensen does a humbling degree of personal remembering in these pages.

Probably every single human being alive today is aware at some level of loss. Remembering what humanity once knew and what each person knew innately in childhood is the Great Remembering. The world needs a thousand writers like Derrick Jensen to tell the story a thousand ways with so many irrefutable facts and causal connections to the present personal and global atrocities that it becomes impossible to overlook, ignore, or dismiss. Δ

DVD

Review by Lawrence Lewis

The End of Suburbia: Oil Depletion and the Collapse of the American Dream

The Electric Wallpaper Co.
Paris, Ontario, 2004.
\$28.50 US, \$36.00 CDN

The Canadian peak oil documentary, *The End of Suburbia: Oil Depletion and the Collapse of the American Dream* has begun to have a life in my non-suburban western Missouri home town, Osceola. In 2004, an Osceola part-timer (who is a peace and justice activist in her other, big city, home) arrived in town during deer season with a hot-off-the-press copy, saying, "You've got to see this." With a few friends at our house, my wife, Ruth Gilman Lewis projected this vision of the past, present, and future onto wall space above the ancestral square grand piano, an ancient instrument that survived the burning of Osceola by Kansans in 1861.

Immediately after, we sent a check to Canada to get our own copy of the DVD. It took a rest until this summer while we did other things. Now we've begun to show it and pass it around. "Time to get serious," as James Howard Kunstler says, towards the end of the film.

Exploring the Internet, I learned how the film was used in Willits, a non-suburban town in northern California. Quoting from somewhere in the depths of the Post Carbon Institute website: "Willits Economic Localization (WELL) started in late 2004 following a series of viewings of *The End of Suburbia* and hours of public dialogue about 'what to do.'" So *The End of Suburbia* was the catalyst to get folks organized to tackle "Economic Localization." Nice phrase. One we're likely to hear lots more in the days to come. I think enough people in Willits

saw the evidence pile up in the film and heard Kunstler say, "We're going to have to live more locally," and believed him.

The Canadian television journalist Barry Zwicker produced the film and narrates it, though only once did I detect a telltale Canadian vowel. *The End of Suburbia* begins with the history of suburbia, from the charming streetcar suburbs to the mass motoring suburbs of the "happy go spending world" of now, and points in between. All that the suburbs promise has become the American dream, but "Does the American dream have a future?" That the future involves "Collapse" is implied in the second half of the film's title and is relentlessly put forth

in the narration.

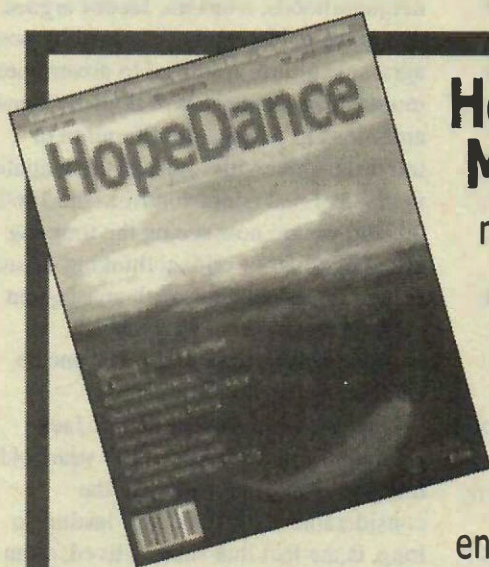
Suburbia, a product of "the greatest misallocation of resources in the history of the world," the "cartoon of country living" that has "no connection with living systems," will not survive the end of the fossil fuel spree that made it possible. M. King Hubbert, a Shell Oil scientist, saw in 1956 how oil exploration and production could be diagrammed in a bell curve. He predicted the U.S. production peak for 1970, and was ridiculed. In *The End of Suburbia*, the cherubic Republican investment banker Matthew Simmons, notes, with a big grin on his face, that in the 70's, Hubbert, "with his reputation in shambles," was proved right. The U.S. has

never produced more oil than it did in 1970. Now the world peak is at hand. The point is reinforced by clips from Richard Heinberg, author of *The Party's Over* (reviewed in *PcA* #51) and *Powerdown* (*PcA* #54) and an article in *PA* #57. The Post Carbon Institute's Julian Darley, *High Noon for Natural Gas* (*PcA* #55) discourages us from thinking that natural gas will solve our problems. Peak oil gurus and social commentators abound in this film, and in addition to the ones named, Peter Calthorpe, Michael Klare, Colin Campbell, Kenneth Deffeyes, Ali Samsam Bakhtiari and Steve Andrews all have their say. (Click on "cast" on the endofsuburbia.com website).

It's the predictions for the future in the last part of *The End of Suburbia* that stand out most vividly for me, given that I believe Kunstler when he says no combination of alternatives will permit us to continue what we're running now. And I believe Barry Zwicker when he says the political will to address depletion does not exist. A few people, like the new urbanist city planners, have good ideas for reconfiguring our cities and suburbs to make them more walkable and diverse, but all that's under the radar for most people. We wait for the gas price catastrophe that will put an end to "the 3000-mile Caesar salad." By the time we're finally jolted out of our addiction to fossil fuels, the resources needed for the reconfiguration will no longer be readily available. Kunstler foresees suburbs where more than one family will be living in a "McMansion," raising crops on what had been lawn. Michael Ruppert identifies positive tasks for the post-carbon era: reverse globalization, and learn how to become neighbors again.

Some critics fault *The End of Suburbia* for ignoring the role of "white flight" in the construction of post-WWII suburbs. I'd guess that if Barry Zwicker thought of it, he decided that was another story and this one was on the role of fossil fuels. It's true that all the guest commentators are white, and male, but where I live, I'm sure not too many people will notice, alas. What they are noticing is the content.

One person who watched *The End of Suburbia* early in August 2005 is a sparkplug in the Osceola Community



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- Ecovillages
- Natural Building
- Globalization
- Affordable Housing

"What a breath of fresh air," writes Barbara Kingslover.

Chamber of Commerce. She "got it," and the past couple of days has begun to walk through the grocery store with different eyes. "Where did these things come from?" she's asking now. The Chamber is a new group, with vision and planning as a task coming right up. Ruth and I are lending our copy of the film to her so she can show it to the Chamber. Her idea is that they will do well not to plan for things that will get yanked out from under them, or at least to develop a Plan B.

We're not Willits, California, but a few people are paying attention. Osceola survived destruction by Kansans, the end of Osage River commerce in the 19th century, and partial flooding from Truman Dam in the 20th. We're still rural, with intact networks of relationships, and people (including new Amish settlers) with a wide range of skills. It's time to add home-grown permaculturists and a few more bioregionalists to the mix. Of course we're just as fossil fuel-dependent as the rest of America right now, but along with the new gas prices, *The End of Suburbia* is beginning to cut into the denial. I count on it to help free us up to dream a new, more earth-related, more sustainable American dream. Δ

Larry Lewis is on the steering committee of the Crater Critter Community Council in Osceola, MO. The "Crater Critters" are budding bioregionalists in a community where the Farm Bureau and cattlemen dominate the ag scene.

Sooner or Later?

Review by Peter Bane

JANE JACOBS

Dark Age Ahead

Vintage Books. New York. 2005
241 pp. paper. \$13.

Jane Jacobs is a provocative, and as the cover blurbs on this book rightly suggest, legendary author. A consummate generalist, and therefore dear to this permaculturist's heart, she has made

lasting marks on our understanding of cities and the public space they nurture, championing in the process the power of inductive reasoning as a problem-solving methodology for complex natural systems (cities among them).

Always an insightful and trenchant critic of institutional folly, Ms. Jacobs here takes up the Cassandra role in respect of Western civilization—and specifically its North American branch, warning us against continuing the headlong plunge into oblivion that she fears our eroding civic culture may have little time left to correct.

The Dark Age to which the author would direct our attention is a pit of forgetfulness at the end of a long road of neglect for and decay of core cultural values and institutions. Lest there be any doubt, she sums up the core value of our civilization by quoting Lincoln, "that government of the people, by the people, and for the people shall not perish from the earth."

Among the many candidates for causation in the new decline of the West, she identifies five as structural supports for the larger edifice of a post-agrarian civilization, "community and family, higher education, the effective practice of science and science-based technology, taxes and governmental powers directly in touch with needs and possibilities, and self-policing by the learned professions." These she examines with a pith and verve undiminished since the publication of her landmark book, *The Death and Life of Great American Cities*, nearly a half century ago.

Jacobs' work has a journalistic freshness about it because she frames her arguments in terse, "follow the money" terms. Families, she argues, are coming unglued because for the past 25 years more and more of them have been unable to keep a roof over their heads, and because the larger communities into which they must inevitably be embedded if they are to succeed socially and psychologically, have been destroyed by a daft public obeisance to the automobile. The price of housing having been driven up by execrably foolish policies of land use, the nuclear family has been set up to fail. As it goes down, it takes with it nurturance of

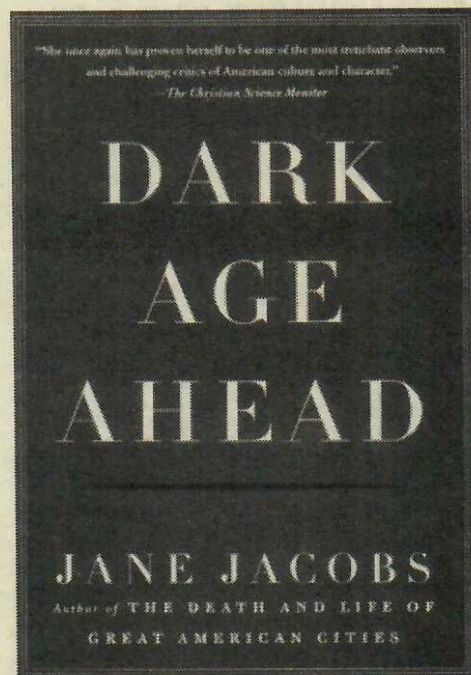
the young and the essential redundancy of skill-building and mentoring that must continually refresh the culture if it is to live on. She goes on to lay open the rot of education-become-credentialling and traces it to the Great Depression-generated consensus that a job for everyone was the purpose of national life. Civic leaders of the 1950s endorsed the building of the Interstate Highway System (ostensibly to enhance national security) in the tacit recognition that it would ensure plenty of good paying jobs across the country. The price of this indentured servitude to the automobile industry was greater than anyone imagined, for it guaranteed the destruction of many vital urban neighborhoods, a terrain, Jacobs argues, that is the golden goose of a healthy post-agrarian culture. Addicted to government money from the post-WWII GI Bill, and ambitious to please a proliferation of interests, universities pushed credentialism in place of real education from the 1960s on, and we are now seeing the time-lag effect of a loss of critical thinking capacity among the population, with consequent declines in key technology areas.

And so her arguments build one on another.

Jacobs is a contemporary of Jack Kennedy, which makes her 89 years old this year. More relevant than the considerable achievement of lasting so long, is the fact that she has lived, as an adult, through half the modern history of the nation, from the 1930s onward, and has had her eyes open the whole time. Just to let you know she's for real, she quotes her mother...and her grandmother! She has, as a consequence, a nearly unparalleled perspective on the roots of current problems. She can report that homelessness in the 1980s through the present day has its origins in the failure to maintain or build housing stock during the 15 years of the Great Depression and World War II. This now 60-75 year old housing would have been affordable, low-rent but serviceable dwellings for today's poor, immigrant, and lower middle class urban dwellers, but it doesn't exist. This revelation, and others like it, catch this "young" 50-something year old reader up short. What else don't I know because the story's been too little told?

Jacobs' definition of a Dark Age: forgetting what we knew, and then even forgetting what we have forgotten, has already cast its shadow over the present.

A deeper message comes with this insight, and she acknowledges it: war and depression echo through the generations, they do not end with the armistice or the return of spending. Homelessness in the 80s is an echo of the grief and loss of the 30s. Can we imagine what 2050 will look like?



In her introduction, Jacobs calls attention to Jared Diamond's 1999 work, *Guns, Germs, and Steel*, in which he attempts to explain historical clashes between cultures on an ecological basis, an effort he hoped would set history onto a truly scientific foundation. Jacobs praises Diamond's work and uses its focus on the conquest and subsequent destruction of cultures to frame her own question, "What doomed the losers?" She argues that Diamond's inquiry into what made some cultures prevail over others yielded a good set of answers for some cases but not others. The data appeared consistently to support his biogeographical theory of history in cases when cultures clashed, but failed to account for strange "internal" collapses, such as the decision by Chinese officials to scrap the vast and valuable knowledge of their 15th century treasure fleets. These armadas sailed the Indian and

Pacific Oceans for a few years around 1477 and gave China a distinct technological edge over all other cultures of that era, an advantage we know they abandoned. She believes this quirkiness of human behavior renders Diamond's "hard science" rather softer because geography fails to account for such random factors that lead one culture to dominate another. And by extension she sets the stage for her own inquiry into similar, potentially self-destructive behaviors growing out of cultural myth or seemingly ignorant policy choices in North America.

Jacobs has a point. But Diamond's biogeographic thesis may yet offer insights. Cultural myths have geographic origins too: the Middle Kingdom's myth of pristine supremacy in its privileged location at the center of the world allowed it to disdain naval supremacy; America's infatuation with the automobile reflects its origins as a rootless, refugee nation, moving, moving, ever Westward. Jacobs herself points out that Columbus finally found a patron for his transatlantic folly among Europe's quarrelsome nobility (after several failures), while the decision of one Chinese vice minister ended the world's greatest and most daring naval venture. The same plethora of competing politics in Europe that prompted Columbus to shop around for a patron grew directly from the region's diverse and strongly individuated geography, where China's long adherence to a centralized imperial state was equally a prudent response to its terrain, an isolated, undivided territory that made war between sub-regions devastating and therefore intolerable. Arguably, in the modern age of energy abundance, Europe has belatedly come to the same conclusion and is moving, however haltingly, toward unification.

But how does this fascinating if arcane argument about historical determinism bear on the prospects for collapse of North America's post-agrarian civilization, you may ask?

I believe Jacobs' argument for a potential resurgence of urban-based, democratic culture (she spends a number of pages laying out possible scenarios for intensification of land use in the suburbs with its prospects for renewal of

community) rests on the assumption that resources can continue to be mobilized for community investment—rehab, infill, new businesses, conversion of roads to boulevards, and more. She herself acknowledges the risk that war and depression may again knock the heart out of community by withdrawing economic support just as it did three generations ago; this time, she concedes, the blow would be permanent and fatal. Yet no view of present and future prospects for economy and society can ignore the impact of declining energy supplies. Charles Walters among others, has argued that America's farm sector was already in incipient collapse when the Depression set in and that the economy has been in real decline since 1933, masked by repeated doses of military Keynesianism, while Holmgren, Heinberg, and others have pointed out that only the vast boom in East Texas oil in the 30s enabled America to dig its way out of economic collapse.

Jacobs, in the manner of Adam Smith, posits that intellectual creativity and innovation since about 1600 have driven the rise to dominance of the urban, post-agrarian civilization we know as the West. She goes on to argue that this same capacity for innovation can yet renew North America. Holmgren, on the other hand, argues that innovation is a fruit of energy abundance, and that this cultural trait, so antithetical to low-energy societies, may in the longer historical perspective be seen as an aberration of our unique energy-rich period. Arguably energy began to flood into Europe from the discovery of the New World in the form of gold, silver, timber, and new crops. By 1600 this flow was substantial and from 1700 onward fossil fuels further expanded the energy supply in a boom that has continued with only minor interruptions ever since. The Industrial Revolution and the growth of popular democracy that the market economy required were enabled by continuously expanding energy supplies. We know that to be changing imminently.

Whether you hope, as Jacobs does, that decay at the cultural core can be arrested by timely action and the still massive energy reserves in the ground used to reconfigure our infrastructure, or fear as

many do, that deranged and corrupt elites will continue to push us toward unwinnable war and social desolation, this book will challenge your thinking. If there is a way out of the fate of a *Dark Age Ahead*, it will be, as Jacobs foresees, through restoration of community by increasing intensity of settlement in our hollow suburbs. Gloomier commentators (Kunstler, *The End of Suburbia*), have foreseen pauperized families piled into gutted McMansions on the suburban fringe as an apocalyptic vision of America's future. Jacobs could remind them pertly that this is (potentially) just the beginning phase of unslumming, and that we should give the neighborhood a little time to sort itself out. Δ

Review by David Wheeler

STARHAWK

Webs of Power: Notes from the Global Uprising

New Society Publishers, 2002
288 pp. \$17.95

Within the last ten years, we in the United States have been witness to a rapid consolidation of corporate and political power. Multinational companies with economies larger than small countries no longer make a show of maintaining any national allegiances, but move about the world. The corruption of our system has become obvious as lobbyists write government policy and politicians hardly bother to hide their status as servitors of corporate interest. International economic treaties and an international governing organization, the World Trade Organization, now supersede national laws and regulations. The World Bank and the International Monetary Fund dictate economic policy for a good part of the developing world. The country is presently mired in a vicious war based upon lies with no just or honorable end in sight. And the list goes on...

The result is a rigid, interlocking pyramid of global domination that Starhawk describes in her book *Webs of Power: Notes from the Global Uprising*. This structure is designed to move wealth to the top and commands obedience by the use of fear and force.

For 25 years Starhawk has stood against this leviathan. She embodies the diversity of an alternative culture that is at once an economic/political movement and a way of life. It is based on shifting networks built on contacts such as friendships, Internet connections, work crews, non-profit volunteering, and tenuous political alliances. Interweaving webs: "webs of power."

"A web implies a pattern of connections that are complex and flexible in ways that a branching pattern is not," says Starhawk. "In a classic spider web, spokes radiate out from a central point, linked by a spiral of sticky thread. A web can also concentrate information: any point on the web can communicate with the center. But it can also communicate with other points on the periphery."

The web pattern allows the development of "the power within" all people and encourages the free expression of their full potential.

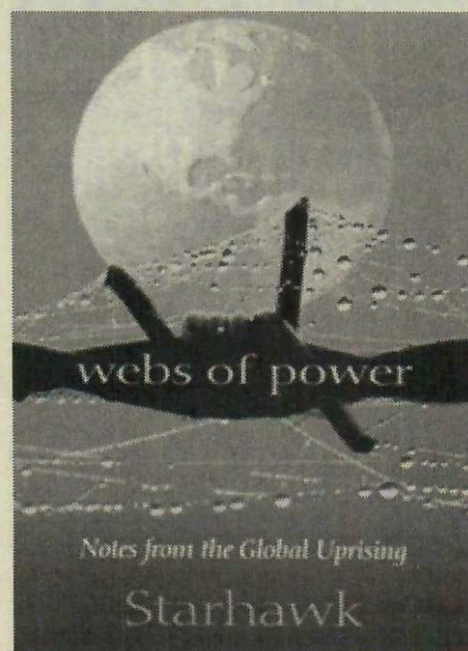
Against the mighty agglomeration of wealth and military force available to the powers of corporate/political domination, this opposition appears weak and insubstantial. But it is full of promise and possibility. "Look!" declares Starhawk, "A new force is rising up in the world, so creative, so full of life and passion and freedom that no system of control can withstand it. And you can be part of it. Yes, you'll face great risks and danger, but you will have friends with you, amazing, wonderful, mythical, magical comrades all around the globe. And you will be part of creating the most amazing transformation the world has ever seen."

To Starhawk, the culmination and the most powerful expression of the energies of opposition are in direct street confrontations against meetings of the power brokers. She sees these as the most effective means of destabilizing and delegitimizing the rule of the global elite, and the first half of *Webs of Power* is essentially field notes from the most

notable street actions of the last 15 years.

These actions are dramatic and visible. They attract the media. In the past they have actually interfered with meetings and forestalled some bad decisions. But they are like the whitecaps on breaking waves: they are beautiful and dynamic, but the deep current that drives them is slow, powerful, and below the surface.

Sometimes it is hard to imagine that banging nails on a construction crew, sharing a night of passionate love, or digging potatoes for the tailgate market would create repercussions that could be felt in the corridors of power. But it is simple actions like these that build the



backing that gives power and meaning to direct action. What we create in daily lives lived with purpose are the alternative structures that will support us through the changes to come and be the models for a new society that will emerge if we are to make it through to the other side.

Starhawk has these in mind always as she writes, but she does not deal with this aspect of movement building until the second half of *Webs of Power*. Here is where she talks about our relationship with nature; the practice of direct democracy; building diversity, values, and alternative economies; and celebrations of the sacred.

At present, street actions are "sound and fury," very effective at expressing our outrage at what we are against. But they

will effect real transfers of power only when people are marching for positive changes, rather than reacting to the agenda of the economic elite. The most meaningful chapters of the book are at the very end, starting with the poetically titled "Many Roads to Morning."

In the spirit of Gandhi and Abbie Hoffman, Starhawk feels that the most effective way to bring about change is to live the future vision in the present. She first gives qualities that people are willing to march, alter their daily lives, even die, for. These are intuitively felt qualities like empowerment; life, body, and

connectedness; dialogue, inclusiveness, hope, and others—qualities that would also form the foundations of a possible new social order.

She presents an economic program, not as a series of inevitable laws, but as a set of possible agreements undertaken to sustain natural ecosystems, fulfill human needs (but also go beyond to offer opportunities for creativity and joy), and keep power as decentralized as possible.

One of the strongest aspects of Starhawk's teaching is that she always presents our lives and actions as inseparable from the sacred Mystery at the

heart of all things. Few economists would include the assertion that "A realm of the sacred exists... which must be respected" as a principle of economics! Starhawk does, and follows this with a final chapter on "Spirit and Action."

"My connection to the earth," she says, "helps me believe that loss can lead to transformation, that decay can be food for something new, that all energy moves in cycles, that the universe is filled with immense creativity which is stronger than violence, and that hate is ultimately not as powerful as love." Δ

From the Regions

Free Tree Seeds Available

New Forests Project: World Seed Program 2005

Washington, DC

The New Forests Project (NFP) is a people-to-people, direct-action program established in 1982 by the International Center in an effort to curb deforestation in developing countries. Since 1982, we have assisted more than 4400 villages in over 120 countries.

NFP offers packets of tree seeds, technical information and training materials free of charge to groups of small farmers and civil society groups worldwide who are interested in starting reforestation projects with fast-growing, nitrogen-fixing trees.

Available for immediate distribution are high-quality seeds of 16 tree species. They can be used for firewood, charcoal, furniture, and shipbuilding. They can also provide fodder, and are used as a living barrier against shifting soil. Among the 16 species are some leguminous tree species, which are better suited for temperate climates and higher elevations, and which have nitrogen-fixing capabilities that make them extremely useful for alley cropping.

Available for immediate distribution are high quality seeds of:

1. *Acacia auriculiformis*
2. *Acacia mearnsii* (Black wattle, tan wattle)
3. *Acacia nilotica* (Egyptian thorn, red-

heat, barbar)

4. *Acacia tortilis* (Umbrella thorn, Israeli babool, seyal)
5. *Albizia lebbek* (East India walnut, kokko, woman's tongue)
6. *Cajanus cajan* (pigeon pea, gandul)
7. *Cassia siamea* (Bombay blackwood, yellow cassia)
8. *Dalbergia sissoo* (sisu, nelkar, shewa, yette)
9. *Grevillea robusta* (Silky Oak, Silver Oak)
10. *Gliricidia sepium* (Madre de cacao)
11. *Gleditsia tricanthos inermis* (honey locust)
12. *Leucaena leucocephala* (ipil-ipil, leadtree)
13. *Prosopis juliflora* (mesquite)

14. *Robinia pseudoacacia* (black locust)
15. *Sesbania sesban* (Sesban, Egyptian rattle pod, suriminta)
16. *Moringa oleifera*

For more information or to receive a reforestation packet, contact:

The New Forests Project
731 Eighth Street, SE
Washington, DC 20003 USA

TEL: 1+202-547-3800, ext 110

FAX: 1+202-546-4784

e-mail: WSP@newforestsproject.com

www.newforestsproject.com

Please provide an environmental description of your area, including elevation, average annual rainfall, length of rainy and dry seasons, average temperatures, and how you intend to use the trees (fuelwood, lumber, forage, soil conservation, soil enhancement, etc). Δ

Pacific Basin

Resources in Tropical Agriculture

Michael Howden

Our beginning point carries within itself the possibilities before us. It is imperative in Permaculture work that we, as designers, are familiar with foundational texts and other materials relevant to our areas of concentration and endeavor. Presumption and a glib adherence to narrow points of view cannot

serve an enduring function. I would like to share with the reader source materials that I have found useful in the practice and design of permaculture in tropical and subtropical areas.

Originally published in 1920 and reprinted in 1974, Wilson Popenoe's *Manual Of Tropical And Subtropical*

Fruits, Excluding the Banana, Coconut, Pineapple, Citrus Fruits, Olive, and Fig, was one of the pioneering works in English on tropical agriculture, focusing primarily on fruits, but touching throughout on traditional practices, as well as culture and linguistics. It is a continual joy to read and re-read. Though dated with respect to contemporary cultivars, it is a valuable sourcebook on older and perhaps more reliable and flavorful varieties that are now rare or unknown. At the time of its writing, Popenoe had worked for seven years as an Agricultural Explorer for the US Department of Agriculture, a position created by the well-known David Fairchild. He writes with a passion and depth of understanding that I find compelling.

Designed as a textbook in tropical agriculture, the two volumes of *Tropical And Subtropical Agriculture*, published in 1961, by J.J. Ochse, M.J. Soule, M.J. Dijkman, and C. Wehlburg, run to more than 1,400 pages, and deal with plants then considered to be of economic importance. The range of plants discussed is considerable, and, more importantly, the emphasis is largely on small-scale production methods, methods smaller communities may still find useful-down to earth, straightforward, and very useful.

J.W. Purseglove has published two volumes: *Tropical Crops: Monocotyledons and Tropical Crops: Dicotyledons*. Purseglove worked for more than 30 years as an economic botanist in the tropics of Africa, the Far East, and "the New World." He was also Director of the Singapore Botanic Gardens and has taught Tropical Agriculture at Cambridge University and elsewhere. Out of his vast practical and academic experience, the author presents an exhaustive discussion of plants important, as he notes, "on a world scale." These volumes are not simply more dry academic reporting; as Purseglove writes, "Many of the tree crops, and others, are of a horticultural nature. The distinction made between agricultural and horticultural crops in some temperate countries is difficult to apply in the tropics. It has been ignored in the present work."

Another book, representative of a growing (if you will) appreciation of

tropical crops as part of an integrated and complex landscape, is *Tropical Forests And Their Crops* by Nigel J.H. Smith, D.L. Plucknett, and J.T. Williams, published by Cornell University Press in 1992. The book addresses many familiar fruits, vegetables, oils, and spices, as well as commodities such as tropical hardwoods and rubber, but also discusses "the history of their domestication, their uses today, and the known extent of their

gene pools, both domesticated and wild." This well illustrated work contains much useful information, presented with intelligence and compassion.

Some books in native agriculture and related fields seem to be addressed only to a regional population or diehard ethnobotanists; some of these go far beyond a narrowly local scope and inform us of traditional horticultural practices of wide application. Such a work is *Native*

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Planters in Old Hawaii, Their Life, Lore, And Environment, by E. S. Handy and Elizabeth Green Handy with Mary Kawena Pukui (Bulletin 233, Bishop Museum Press, Honolulu, 1972). Much of its cultural information could only have come from native informants, primary among them the "collaborator," Mary Kawena Pukui, revered in Hawaii today as a carrier of many cultural traditions that otherwise would have been lost through the European cultural domination that followed the overthrow of the Hawaiian monarchy. The emphasis on the unique qualities of each place, the respectful humility toward the gods, and the ability to endure, make this book exceptional as we return to a better sense of place.

I will turn now to publications from various organizations. The hallmarks of numerous European-published works on sustainable agriculture are simplicity, a straightforward quality, and the fundamental nature of the technical information they present. Such a book is *Farming For the Future, An Introduction To Low-External-Input And Sustainable Agriculture*, by Coen Reijntjes, et al, published in 1992 by ILEIA (Information Centre for Low-External-Input and Sustainable Agriculture, ETC Foundation, PO Box 64, NL-3830 AB Leusden, Netherlands). The book is useful in every way, not the least of which is Appendix C, "Useful Contacts and Sources of Further Information"—contrary to our common cultural insularity, we permaculturists are not alone. ILEIA publishes a quarterly newsletter, and its *The Land And Life* series is published by Macmillan.

ICRAF (Intl. Center for Research in Agroforestry, PO Box 30677, Nairobi, Kenya) has also published quality work, including *Agroforestry In Dryland Africa*, that describes in clear technical terms ideas for drylands. The book itself is stylistically dry and sometimes redundant, but highly informative and worth reviewing.

The BOSTID Reports from the Board on Science and Technology for International Development (Office of International Affairs, JH-217D, National Research Council, 2101 Constitution Avenue, Washington, DC 20418) cover energy, technology options for developing

countries, plants, innovations in tropical reforestation, and management of tropical animal resources. Copies are free to "institutionally affiliated recipients (in government, education, or research) upon written request on your organization's letterhead." My present favorite is *Underexploited Tropical Plants with Promising Economic Value*.

Cultural Survival Quarterly (www.culturalsurvival.org/publications/csq/) has been called "the conscience of anthropology," by *Newsweek*. It's heavy—I had to cancel my subscription, simply because it caused me too much pain to know...but it tells you what's happening in ways you won't find elsewhere. "Indigenous Peoples And Tropical Forests: Models of Land Use and Management from Latin America," by Jason W. Clay (Report No. 27, Cultural Survival, Inc., 215 Prospect St.,

Cambridge, MA 02139) is representative of some of their better work.

Lastly, the Agriculture Handbooks of the Agricultural Research Service of the USDA, can be very useful, especially anything by Franklin Martin. *Techniques And Plants For The Tropical Subsistence Farm* is indicative of Martin's work, as is *Perennial Edible Fruits of the Tropics: An Inventory*, and the series of three: *Tropical Yams and Their Potential*, *Cultivation of Neglected Tropical Fruits with Promise and Vegetables for the Hot, Humid Tropics*. Δ

Michael Howden was originally trained in permaculture by Bill Mollison and runs Pacific Basin Permaculture Design, concentrating on subtropical agriculture in the Pacific Basin. He is also a licensed acupuncturist and specialist in the traditional Hawaiian healing arts.

Los Angeles

Fruit : From Fallen to Food

Free food is available year round on the streets of Los Angeles, according to Fallen Fruit, an organization begun as an artist's project for *The Journal of Aesthetics and Protest*. Members believe that fruit planted on public property and on private land that overhangs public space should be public property. So Fallen Fruit created a project to encourage people to plant and to harvest public fruit. Initially, the group began by mapping all public fruit in its Silverlake neighborhood as a response to acceleration of urbanization and the loss of people's capacity to produce their own food, as well as around issue of grassroots community activism, social welfare and social responsibility.

The group says, "The utopian vision of California always pictured orange trees with snow-capped mountains in the distance. The new California should have oranges planed between buildings and bananas in parking lots." One particularly productive site is the parking lots of famed outdoor concert venue the Hollywood Bowl, where guavas are planted between the rows of parking stalls and would otherwise go to waste without people gleaning them. "We call upon the city and urban planning groups to begin plantings that yield edible goods to be shared by the city's citizens."

For more information about Fallen Fruit, visit www.fallenfruit.org/. Δ

Visit Us on the Web at
PermacultureActivist.net
for more features, links, and resources

Networks and Resources

American Livestock Breeds Conservancy Expands Mission to Include Rabbits

It is not everyday that a national, non-profit organization changes its mission, especially when it is the only one of its kind, and has over three decades of outstanding performance as a leader in the conservation of biodiversity. The American Livestock Breeds Conservancy (ALBC), an organization dedicated to the conservation and promotion of endangered breeds of livestock and poultry, has expanded its mission to include an entire species: rabbits.

The addition of rabbits is unique not only as an expansion in the number of species ALBC monitors and promotes, but also for the conservation challenges and opportunities that only rabbits can present. Rabbits are a form of livestock that are clean, quiet, and small enough to be easily handled. Rabbits have a well-documented history in American agriculture. Yet they offer urban dwellers the opportunity to effectively participate in an important conservation activity. Today many rabbit breeds are threatened with extinction and in great need of support if they are to continue to exist. The loss of these breeds would only further erode the rich agricultural heritage that is our legacy to future generations.

For more information, contact: The American Livestock Breeds Conservancy, P.O. Box 477, Pittsboro, NC 27312, (919) 542-5704, editor@albc-usa.org, www.albc-usa.org.

Renewing Food Traditions

Renewing America's Food Traditions (RAFT) is a coalition focused on rescuing more than 700 uniquely North American plant and animal foods which are at risk of extinction.

The Raft coalition is launching its national campaign with a book, also called *Renewing America's Food Traditions*, that includes the first "redlist" of America's Endangered Foods. This list is available at www.environment.nau.edu.

Raft hopes to pull these foods back from the edge of extinction through assisting family farmers, fisherfolks, foragers, and ranchers to revive the production of these foods.

Contact RAFT at Sustainable Environments, Northern Arizona University, PO Box 5765, Flagstaff, AZ 86011-5765. 928-523-6726.

garv.nabhan@nau.edu or ashley.road@nau.edu.

16 Tree Species Available for Distribution

New Forests Project, as part of its World Seed Program is offering packets of high-quality tree seeds, technical information, and training materials free of charge to groups of small farmers and civil society groups worldwide who are interested in starting reforestation projects with fast-growing, nitrogen-fixing trees.

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4. *Acacia tortilis* (Umbrella thorn, Israeli babool, seyal)
5. *Albizia lebbek* (East India walnut, kokko)
6. *Cajanus cajan* (pigeon pea, gandul)
7. *Cassia siamea* (Bombay blackwood, yellow cassia)
8. *Dalbergia sissoo* (sisu, nelkar, shewa, yette)
9. *Grevillea robusta* (Silky Oak, Silver Oak)
10. *Gliricidia sepium* (Madre de cacao)
11. *Gleditsia tricanthos inermis* (honey locust)
12. *Leucaena leucocephala* (ipil-ipil, leadtree)
13. *Prosopis juliflora* (mesquite)
14. *Robinia pseudoacacia* (black locust)
15. *Sesbania sesban* (Sesban, Egyptian rattle pod)
16. *Moringa oleifera*

Contact The New Forest Project, 731 Eighth Street, SE, Washington, DC 20003. 202-547-3800 x10, fx-546-4784.

www.newforestsproject.com,

wsp@newforestsproject.com.

From the Regions New Jersey Shines

New Jersey now has the highest level of state governmental support for solar energy in the country. The state recently added RECs, Renewable Energy Certificates, which will be given to each homeowner that is generating clean renewable solar or wind energy in NJ. These certificates can be sold to the local power company which needs to have evidence of solar or wind energy in their generation mix. New Jersey home and business owners who have installed solar electric systems on their roofs and have already reaped the generous 60-70% installation rebates from the state, are now able to receive payment for selling their RECs at auction or privately. In addition to receiving free energy from the sun, New Jersey residents can now get "free money" each year from this new program.

For more information contact Bob Simpson, CNNJ Board Member and consultant for Brother Sun Solar at 973-835-2594.

EVENTS

Advanced Permaculture Design Mexico

Dates: November 11-20

Location: Huamantla, in highlands Mexico, 2 hours east of Mexico City.

Description: This course is an intensive design process for Permaculture Design Course graduates. Participants will work on designing portions of the restoration of the 16th century Hacienda Santa Barbara in rural Mexico to become an eco-inn, permaculture center, and elementary school for the neighboring area. The restoration process is funded and has begun, but there is much design work that needs to be completed, presenting an opportunity for participants to gain in-depth design experience on the "ground floor" of a real-time, multi-faceted permaculture design. There will be two all-day field trips to neighboring historic, permaculture, and natural building sites.

Instructors: Scott Horton, Sebastien Bacharach, and guests.

Cost: \$900 includes lodging, meals, field trips, and all course materials.

Contact: Scott Horton
San Jacinto Mountains
Permaculture Institute
P.O. Box 1762
Idyllwild, CA 92549
951-659-5362

LaSemillaBesada@hotmail.com

Natural Building and Ecological Living Highland Mexico

Dates: November 22-December 3

Location: East of Mexico City

Description: Learn about the design of natural buildings, soil conservation, sustainable agriculture, reforestation, and erosion control while you practice working with natural building materials (cob, strawbale, lightclay, adobe, rammed earth, bamboo, roundwood and wastewood, thatch, natural floors, earth and lime plasters, natural paints). Workshop income contributes to a local alternative grade school emphasizing ecology and culturally-appropriate education.

Instructors: Alejandra Caballero, Paco Gomez, and others.

Cost: \$1200 includes meals, lodging, and field trips.

Contact: The Cob Cottage
541-942-2005
www.cobcottage.com

Learning Spanish in Community South America

Dates: December 5-17

Location: Gaia Ecovillage, Navarro,
Buenos Aires, Argentina

Description: This immersion Spanish course offers a unique opportunity to learn and practice Spanish while experiencing life in a pioneer eco-village in South America. This course is suitable for absolute beginners as well as people with a high intermediate mastery of the Spanish language.

Instructors: Prof. María Marta Suárez

Cost: \$600 includes tuition, course materials, lodging and meals. 50% deposit to confirm. Application form required.

Contact: Argentine Permaculture Institute - Asociación GAIA
+54-2272-492072
Fx+54-11-47522197
www.gaia.org.ar
gaia@gaia.org.ar

Permaculture Design Course South America

Dates: February 3-15, 2006

Description: Course is taught in Spanish.

Location: Gaia Ecovillage, Navarro,
Buenos Aires, Argentina

Contact: Asociación GAIA
see above

Learning and Exploring Sustainable Life Principles South America

Dates: March 3-12, 2006

Location: Gaia Ecovillage, Navarro,
Buenos Aires, Argentina

Description: This course is for students looking for practical skills in sustainability that college can not offer. Opportunities to see and participate in permaculture living systems in different development stages, and be involved in the work.

Contact: Asociación GAIA
see above

Permaculture Garden Design Central America

Dates: February 27-March 3, 2006

Location: Costa Rica

Description: Join us for five days of intensive planning and design at Red Sunset of Guanacaste, Fine Inn and Spa. This course will focus on applying permaculture design to create gardens and functional landscaping for the Inn. Intensive gardens will be designed to supply fruits, herbs, and vegetables for the Inn.

Cost: \$1500

Contact: 724-376-2797
defrey@bioshelter.com
www.bioshelter.com

Permaculture Design Course Central America

Dates: February 6-19, 2006

Location: Toledo, Belize

Description: Join us at Maya Mountain Research Farm, a family homestead on 70 acres of tropical ecosystems with seven acres of stacked polycultures and hundreds of species of food, fiber, and medicinal plants. Learn the principles that make ecosystems self-sustaining and apply them to your designs for integrated homes and gardens, energy and water systems, thriving communities, economies, and global political movements. Applicable to both tropical and temperate climates.

Instructors: Toby Hemenway, Penny Livingston-Stark, and local guests.

Cost: \$1200 includes indoor lodging and meals. \$100 non-refundable deposit due upon registration.

Contact: Dawn Dean
ddean@numfbz.org

Permaculture Design Course Central America

Dates: February 10-27, 2006

Location: Ometepe, Nicaragua

Description: Join our fully bilingual, simultaneously translated, 100-hour Certificated Permaculture Design Course. Participants will be living and learning in a rural setting where most folk are subsistence farmers. Learn permaculture design in a fully tropical climate located on a volcanic island. Participate in our community projects as well as interact with local farmers and their cultivated landscapes.

Cost: \$1450

Contact: Chris Shanks
ch_shanks@hotmail.com
www.islandschool.org
www.permaculturenow.com

Permaculture Design Course Central America

Dates: February 2-16, 2006

Location: Mastatal, Costa Rica

Description: This curriculum is especially designed for the deaf, hard of hearing, deaf educators, ASL interpreters, and any student interested in learning permaculture in an ASL/English setting. Deaf and hearing families welcome! Join us for a creative 14-day hands-on intensive!

Cost: \$1450 includes meals and does not include airfare. Deadline to apply is December 15. \$350 non-refundable deposit required. Space limited to 20 students.

Contact: Jenny Pell
jennyeverywhere@yahoo.com

Permaculture Design Course Island of Hawai'i

Dates: January 5-17, 2006

Location: Pahoia, Hawai'i

Description: Taught at a mature 20-acre tropical food forest on the Big Island of Hawai'i, this certification course will cover design methods, observation skills, annual and perennial food production, waste and water management, energy and shelter, village design, sustainable economics and much more. Strategies and methods will be applicable to both temperate and tropical climates.

Instructors: Toby Hemenway, Jude Hobbs, and local guests.

Cost: \$1300-1450 includes indoor lodging and meals. \$300 deposit upon registration.

Contact: Biko, 808-443-4076
bikobikook@hotmail.com
www.permaculture-hawaii.com

Permaculture Design Course Hawai'i

Dates: December 2-16

Location: Puna, HI

Description: Our 72-hour Certificated Permaculture Design Course offers a unique opportunity to learn the theory, principles, and practice of permaculture in a tropical, rural, agricultural community, as well as learn from local Hawai'ian farmers and educators.

Instructors: Douglas Bullock, Lonnie Gamble, Sean Canetta, Sarah Sullivan, and other local guests.

Cost: \$1400

Contact: Jamie Mulligan-Smith
mulligoon@hotmail.com
415-298-0915

Permaculture Design Course Bahamas

Dates: January 5-22, 2006

Location: Cape Eleuthera, Bahamas

Description: Our 100-hour Certificated Permaculture Design Course is an opportunity to learn and experience permaculture at the Island School, an institution committed to a sustainability and place-based curriculum. Participants will experience the beauty and challenge of our site as well as be part of the design process as the Island School continues to evolve.

Instructors: Sam Bullock, Chris Shanks, Jack Kenworthy, and local Bahamians.

Cost: \$1700. Apply by 11/15.

Contact: Chris Shanks
ch_shanks@hotmail.com
www.islandschool.org
www.permaculturenow.com

Permaculture Design Course Sonoma County, California

Dates: March 11-24, 2006

Location: Occidental, CA

Description: This is a two-week certificate course in land-use design based on the sustainable living philosophy of permaculture. Topics to be covered include permaculture theory, food diversity, soil enrichment, water use, erosion control, natural building, organic gardening, forest farming.

Instructors: Brock Dolman and Penny Livingston.

Cost: \$1350 including lodging and meals. \$1250 with two-weeks advance reg.

Contact: Occidental Arts & Ecology
15290 Coleman Valley Rd.
Occidental, CA 95465
707-874-1557 x.201
707-874-1558

oaec@oaec.org

www.oaec.org

Four Season Permaculture Design Course Northern California

Dates: January 2006

Location: Bolinas, CA

Description: This permaculture certificate course kicks off with an intensive weekend on January 28/29 and then meets one Saturday per month for one year! The curriculum and the hands-on activities will be integrated into the seasons and provide participants the experiences of winter pruning, spring planting, summer and fall harvesting, food preservation and other activities that relate to the seasons.

Instructors: Penny Livingston and guests.

Cost: \$1200 includes indoor lodging and meals. \$100 non-refundable deposit due upon registration.

Contact: Regenerative Design Institute
Permaculture Institute of
Northern California
415-663-9090

info@permacultureinstitute.com

www.permacultureinstitute.com

Permaculture Design Course Upstate New York

Dates: November 18, 2005-
March 25, 2006

Location: Ithaca, NY

Description: We will learn through lectures, films, and field trips, but mostly through hands-on, interactive work as a learning community. Our course runs alternate weekends beginning in November with a special three day intensive introduction with renowned permaculturalist Geoff Lawton. Students can sign up as full time, complete the

Permaculture Design Course Western Oregon

Dates: November 27-December 11

Location: Dexter, OR

Description: This fourteenth winter course, offers the PDC curriculum with diverse teaching modes and a thoroughly facilitated design practicum which builds through the standard subjects. There will be particular emphasis on urban situations and ecovillage design in a course which promotes participants' abilities in functional teams. We have fun while learning together. College credit can be arranged in advance. Limited to 23 students.

Instructors: Rick Valley, Jude Hobbs, Marisha Auerbach, Marc Tobin, and Michael Pilarski.

Cost: \$1050-\$1250 sliding scale.

Contact: Lost Valley Educational Ctr.
541-937-3351

www.lostvalley.org

Permaculture Design Course New Mexico

Dates: March 24-April 7, 2006

June 23-July 7, 2006

August 4-August 18, 2006

Location: Santa Fe, NM

Description: Students learn the basics of site assessment and design, as well as the many topics and techniques used by permaculture practitioners worldwide. Scott Pittman, senior teacher, long-time collaborator with Bill Mollison, and internationally acclaimed permaculture designer has taught or consulted in over 25 countries on five continents. He shares his impressive portfolio of stories and examples of projects ranging from backyards to thousand-acre farms all over the world.

Instructors: Scott Pittman

Cost: \$1200 includes indoor lodging and meals. \$100 non-refundable deposit due upon registration.

Contact: EcoVersity
505-424-9797 extn. 10

www.ecoversity.org

info@ecoversity.org

100+ hours of instruction, and receive a certificate or as part time and mix and match as many courses as they like. We will use the backdrop of the Finger Lakes Bioregion to explore important local issues of energy use, water catchment, year-round gardening, and food preservation.

Instructors: Geoff Lawton, Steve Gabriel, Karryn Olson-Ramanujan and guests.

Cost: \$800 for certificate.

Individual course packages available.

Contact: Finger Lakes Pci Institute
607-227-0316

www.flpci.org

plant_this_seed@yahoo.com

20th Annual Permaculture Design Course Colorado Rocky Mountains

Dates: August 6-18, 2006

Location: Basalt, CO

Description: At 7200' elevation in the Roaring Fork Valley, CRMPI's 25-year old site features maturing forest gardens, commercial greenhouses, small livestock, and a useful plants nursery. Excellent organic food, a superb site, and an all-Colorado teaching team make this a unique experience. Learn practical permaculture from Colorado's most experienced designers.

Instructors: Jerome Osentowski, John Cruickshank, and Becky Elder.

Cost: \$1100 includes meals and camping, \$100 discount for early registration or for signing up with a friend.

Contact: Central Rocky Mountain
Permaculture Institute
POB 631, Basalt, CO 81621
970-927-4158

www.crmipi.org

jerome@crmipi.org

Advanced Design Course Colorado Rocky Mountains

Dates: August 21-25, 2006

Location: Basalt, CO

Description: Provides a professional orientation to permaculture design work for graduates of the 72-hour course. Participants will deepen their land analysis, learn to read and interpret maps, and learn how to design earthworks and manage equipment for bioengineering. We will examine typical design challenges and responses across a range of landscape scales and types of projects, emphasizing core principles and pattern language literacy. The course will prepare designers to select and focus their work strategically, adopt appropriate tools, and market their skills.

Instructors: Peter Bane, Andrew Goodheart Brown, and guests.

Contact: Central Rocky Mountain
Permaculture Institute
see above

Permaculture Teacher Training Colorado Rocky Mountains

Dates: August 28-September 1, 2006

Location: Basalt, CO

Description: Full course description in #59.

Instructors: Peter Bane, Andrew Goodheart Brown, and guests.

Contact: Central Rocky Mountain
Permaculture Institute
see above

CALENDAR

November 11-13. Occidental, CA. Introduction to Permaculture. Occidental Arts & Ecology Center. 707-874-1557. www.oaec.org, oaec@oaec.org.

November 11-20. MEXICO. Advanced Permaculture Design. Scott Horton, San Jacinto Mountains Permaculture Institute. P.O. Box 1762, Idyllwild, CA 92549. 951-659-5362. LaSemillaBesada@hotmail.com.

November 12-14. AUSTRALIA. 2nd International Ecovillage Designers Conference. EcoLogical Solutions. 59 Crystal Waters, 65 Kilcoy Lane, Conondale Qld 4552, Australia. +61 (0)7 5494 4741, Fax: +61 (0)7 5494 4578. info@ecologicalsolutions.com.au, www.ecologicalsolutions.com.au.

November 16-26. INDIA. Permaculture Design Course. 505-586-1269. richard@lamafoundation.org. <http://www.urbanpermacultureguild.org/india-1-flyer2005.pdf>.

November 17-18. Charlotte, NC. National Conference on Urban Ecosystems. Donna Tschiffely. 703-904-7508. donna@amfor.org.

November 21-December 2. SRI LANKA. Permaculture Design Certificate Course & Cultural Immersion. EcoLogical Solutions. Australia. +61 (0)7 5494 4741, Fx-4578. info@ecologicalsolutions.com.au, www.ecologicalsolutions.com.au.

November 22-December 3. MEXICO. Natural Building and Ecological Living. Cob Cottage Company. 541-942-2005. www.cobcottage.com.

November 27-December 11. Dexter, OR. Permaculture Design Course. Lost Valley Educational Center. 81868 Lost Valley Lane, Dexter, OR 97431. 541-937-3351. www.lostvalley.org.

December 2-16. Puna, HI. Permaculture Design Course. Jamie Mulligan-Smith. mulligoon@hotmail.com. 415-298-0915.

December 2-5. Occidental, CA. Starting and Sustaining Watershed Groups. Occidental Arts & Ecology Center. 707-874-1557. www.oaec.org, oaec@oaec.org.

December 5-17. ARGENTINA. Learning Spanish in Community. Argentine Permaculture Institute - Asociación GAIA. 54-2272-492072, Fx-54-11-47522197. www.gaia.org.ar, gaia@gaia.org.ar.

December 5-15. INDIA. Permaculture Design Certificate Course & Cultural Immersion. EcoLogical Solutions. Australia. +61 (0)7 5494 4741, Fx-4578. info@ecologicalsolutions.com.au, www.ecologicalsolutions.com.au.

January 5-17, 2006. Pahoehoe, HI. Permaculture Design Course. Biko, 808-443-4076. bikobikook@hotmail.com.

January 5-22, 2006. BAHAMAS. Permaculture Design Course. Chris Shanks, ch_shanks@hotmail.com. www.islandschool.org, www.permaculturenow.com.

January 25-28, 2006. Pacific Grove, CA. Ecological Farming Conference. Ecological Farming Assoc. 831-763-2111. www.eco-farm.org.

January 28-29, 2006. Bolinas, CA. Four Season Permaculture Design Course. Regenerative Design Institute. Permaculture Institute of Northern California. PO Box 341, Point Reyes Station, CA 94956. 415-663-9090. info@permacultureinstitute.com, www.permacultureinstitute.com.

February 3-15, 2006. ARGENTINA. Permaculture Design Course (in Spanish). Argentine Permaculture Institute - Asociación GAIA. www.gaia.org.ar, gaia@gaia.org.ar.

February 6-19, 2006. BELIZE. Permaculture Design Course. Dawn Dean, ddean@mmrfbz.org.

February 2-16, 2006. COSTA RICA. Permaculture Design Course. Jenny Pell, jennyeverywhere@yahoo.com.

February 10-27, 2006. NICARAGUA. Permaculture Design Course. Chris Shanks, ch_shanks@hotmail.com. www.islandschool.org, www.permaculturenow.com.

February 27-March 3, 2006. COSTA RICA. Permaculture Design Course. 724-376-2797. deffrey@bioshelter.com, www.bioshelter.com.

March 3-12, 2006. ARGENTINA. Learning and Exploring Sustainable Life Principles. Argentine Permaculture Institute - Asociación GAIA. www.gaia.org.ar, gaia@gaia.org.ar.

March 11-14, 2006. Occidental, CA. Permaculture Design Course. Occidental Arts & Ecology. 15290 Coleman Valley Rd., Occidental, CA 95465. 707-874-1557 x.201, 707-874-1558. oaec@oaec.org, www.oaec.org.

March 24-April 7, 2006. New Mexico. Permaculture Design Course. Ecoversity. 505-424-9797 x10. www.ecoversity.org, info@ecoversity.org.

March 26-27, 2006. Flagstaff, AZ. Ancient Pathways, Southwest Semester. Ancient Pathways, LLC. 1931 E. Andes, Flagstaff, AZ 86004. 928-774-7522. info@apathways.com, www.southwestsemester.com.

June 16-25, 2006. Summertown, TN. Permaculture Fundamentals. Ecovillage Training Center at The Farm. PO Box 90 Summertown, TN 38483-0090. 931-964-4474. ecovillage@thefarm.org.

June 23-July 7, 2006. New Mexico. Permaculture Design Course. Ecoversity. 505-424-9797 x10. www.ecoversity.org, info@ecoversity.org.

July 22-28, 2006. Summertown, TN. Permaculture Practicum. Ecovillage Training Center at The Farm. ecovillage@thefarm.org.

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Internships

Ten-week sustainable living skills internship. Organic gardening, sustainable forestry, appropriate technology, permaculture. Aprovecho Research Center. 541-942-8198. www.aprovecho.net. -58

Help Wanted

Perennial & annual gardeners: Job opportunities available at D Acres Organic Farm & Educational Homestead, NH. www.dacres.org. -58

Long-established Permaculture CSA on the Hawaiian island of Molokai, with diverse tropical fruit trees and vegetable gardens, seeks long-term farm help, potentially leading to managerial position. Housing provided. Helpful skills include common sense, people skills, flexibility, creativity, carpentry, irrigation. For information call Robin or Dano 808-558-8306. -58

Resorts

Stillpoint Retreat Center. Healthy Planet, Healthy Body. Northern California. 707-829-2737. -58

August 4-August 18, 2006. New Mexico. Permaculture Design Course. Ecoversity. 505-424-9797 x10. www.ecoversity.org, info@ecoversity.org.

August 6-18, 2006. Basalt, CO. Permaculture Design Course. Central Rocky Mountain Permaculture Institute. PO Box 631, Basalt, CO 8162. 970-927-4158. www.crmipi.org, jerome@crmipi.org.

August 19-20, 2006. Basalt, CO. CRMPI Reunion. Central Rocky Mountain Permaculture Institute. 970-927-4158. www.crmipi.org, jerome@crmipi.org.

August 21-25, 2006. Basalt, CO. Advanced Permaculture Design Course. Central Rocky Mountain Permaculture Institute. 970-927-4158. www.crmipi.org, jerome@crmipi.org.

August 27-October 28, 2006. Flagstaff, AZ. Ancient Pathways, Southwest Semester. Ancient Pathways, LLC. info@apathways.com, www.southwestsemester.com.

September 16-22, 2006. CANADA. Permaculture Design Practicum. Russell Scott, Ecology Retreat Centre, RR#1, Orangeville, ON L9W 2Y8. 1-800-486-5460. bookings@ecologyretreatcentre.ca, www.ecologyretreatcentre.ca.

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- I, 1 July '85 Permaculture In Oz
II, 1 Feb. '86 Garden Design
II, 3 Aug. '86 2nd Int'l PC Conf.
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 Domin. 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 Market 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'n'y Dsgn. LETS, Industry, Strawbale/Timber-frame Bldgs.
#29/30* July '93 Networks: Special Media Rvw, Rural Reconstr'n, Leaf Conc., Comm'n'y Food Initiatives, Pc in Palestine, Do-Nothing Educ., Feng Shui, Pc Acad.
#31* May '94 Forest Gdng: Energy & Pc, Mushrm Cultvn, Robt. Hart's F.G., Spp for N. Cal., Alders, Agroforestry in Belize & China, Honeylocust, N-fixers.
#32 April '95 Animals & Aquaculture: Animal Polyculture, Small-scale Cattle, Goat Dairy, Keyline, Feral Chickens, Bee Plants, Constructed Wetlands
#33 Dec. '95 Cities & Their Regions: Green Cities, LA Eco-Village, MAGIC Gardens, CoHousing, Micro-Enterprise Lending, Suburban Conversion.
#34 June '96 Useful Plants: Bamboo Polyculture, Medicinals, Pest Control, Root Crops, Oaks. R. Hart's For. Gdn, Russian Plants, Regl. Plants, Sources
#35 Nov. '96 Village Design: Pattern Language, Consensus Democracy, Conflict, Historic & New Villages, Planning for Tribe, Vill. Economics
#36 Mar. '97 Climate & Microclimate: Climate Change, Windbreaks, Low-Tech Sun Locator, Drylands, Cool Slopes, Straw-Clay Bldg, Round Beehive, Water Catch.
#37 Sept. '97 Tools & Appropriate Technology: Dowsing, Workbikes, New Energy, Scythes, Japanese Saws, Nursery, Ferrocement, Greywater, A-frame & Bunyip Levels, Ram Pump, Solar Toilet, Log Yoke, Cookstoves...
#38* Feb. '98 Economic Transformation: Speculative Economy, No Middle Class Worker-Owned Coops, WWOOF, No Money!, Global Warming, What Profits?, Holistic Financial Planning, Land Use, Adopt-A-Hive
#39 July '98 Knowledge, Pattern & Design: Pc: A Way of Seeing, Sand Dunes, Native Conservation., Language Worldview & Gender, Patterning as Process, Land-Use Planning, Teaching Pc, Vietnam, Holmgren on Pc
#40 Dec. '98 New Forestry: Regl. Devlpmt., Horseloggng, Menominee Reserv'n, Forest Investing, Restoration. Old Growth, Homestead Tenure, Forest Soils, Forest Farming, Woody Agric., Rainforests, Windbreaks, Coppice
#41* May '99 Natural Building: Oregon Coh, Cordwood, Bamboo, Thatch, Ethics, High Winds, Origins of Conflict, Greenhouses, Ponds, Adobe, Road-Building, MicroHydro, Bldgs. That Live, Under \$20K Houses, Dreams
#42 Dec. '99 Self-Reliance & Community Cooperation: Co-Intelligence & Self-Orgn., Archetype Design, Sovereignty, Samoa, Mondragon, Natural Housing, Comm. Gdns., Zone Zero, Solar Electric Tractor, Beekeeping
#43 June '00 Food & Fiber: Hunger, Ferments, Seasons Salads, Heirlooms, Fencing, Self-Fertile Gdns, Rice Revolution, Cold-climate Food, Edible Insects, Chilies, Food Origins, Garlic, Ethnobotany, Wild Food, Bamboo, Hemp
#44 Nov. '00 Earthworks & Energy: Spreader Drain, Horse Swales, Earth Dams, Machinery, Carpet-lined Ponds, Constr. Wetlands, Biogas, Windmills...
#45 Mar. '01 Medicine & Health: World & Self, Healthy Home, Designing Care, Ayurveda, Agents of Decay, Comm. Health Centres, Women Trad. Med 4th World Apothecary, Healing Weeds, Medicinal Crops, Hawaiian Bot'ls.
#46 July '01 Good Work & Right Livelihood: Pc Golf Course, Downsize Cost of Living, New Forest Economy, Energy Currency, Buddhist Mktng., End Wage Slavery, What's Surplus?, Urban Community, Enterprise Facili'n.
#47 June '02 Watersheds: Water as Commodity, Basins of Relations, Beavers Watershed Development, Skywater Center, Urban Stormwater Gabions, Conservation Investments, Peat Bogs, Rabbits.
#48 Sept. '02 Making Changes: Co-Intelligent Activism, Webs of Power, Urban Food, How to Change, Teaching for Change, Global Transformation, City Repair, Escaping the Job Trap, Argentine Recovery, Costa Rica Pc
#49 Dec. '02 Where is Permaculture? Land-Rent Reform; 10 N. American sites plus Cuban Agric.; Beauty+Sustainability in NZ: Cacti/Succulent Plants; Animal Self-Medication; Challenge to Pc Movement
#50 May '03 Ecosystems: Holmgren on Pc Mvmt; E. Hazelip & Synrg. Agric. Chestnuts/Pigeons; Oak Savannas; Root Crop Polycults.; Alders Fungal Ecos.; Humans & Wildn; Indoor Ecos.; Humid Tropics.
#51 Jan '04 Traditional Knowledge & Regeneration: Bates on Cataclysm & Collective Memory; Shepard's Wisdom of the Genome; Waru Waru; Biosculpture; Inuit Medicine; Fermented Stimulants.
#52 May '04 Aquaculture: Ecological Aquaculture; Fish for Health; Dowsing; Designing Ponds; Greywater Biotreatment; N. Amer. Polyculture; Managing for Native Species; Integrated Village Fisheries; Vietnam.
#53 Aug. '04 Education: Life-long Learning; Edge-uation; The Albany Free School; Indigenous Education & Ecology; Ecocentric Pedagogy; School Gdn and Dances; Ecology of Learning; Brain Gym.
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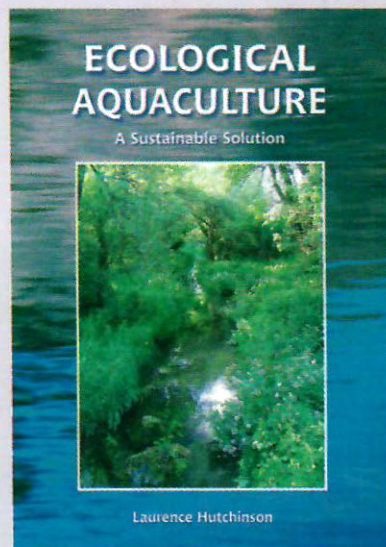
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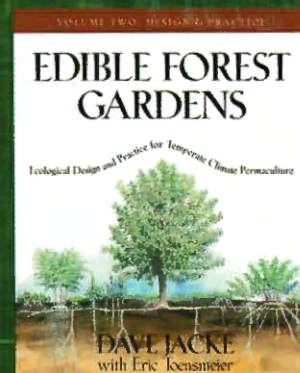
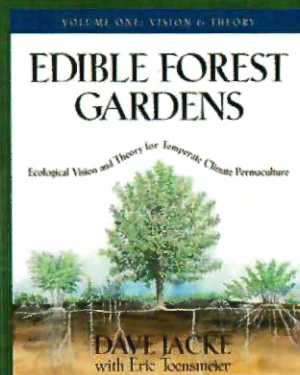
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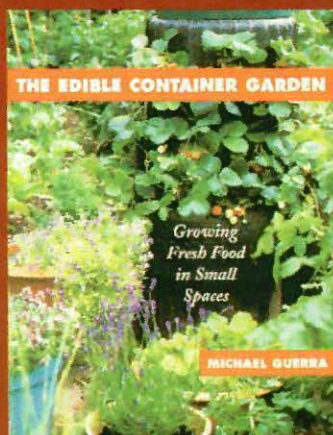
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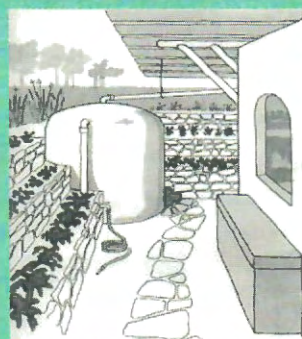


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