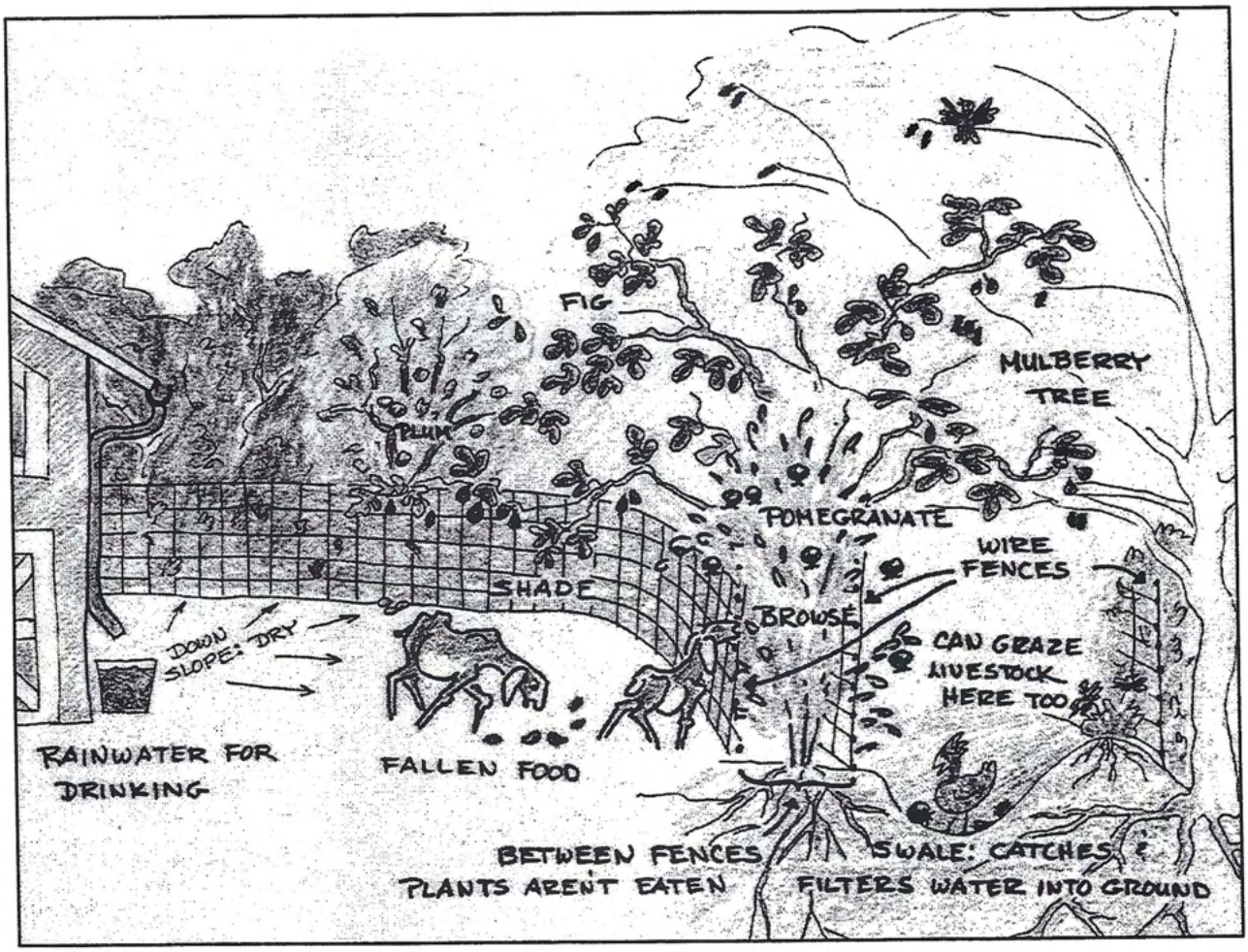
PERMACULTURE DRYLANDS JOURNAL



On the Principle of Stacking Functions

Applying the permaculture principle that elements of life designs serve multiple functions to:

Land & Ecosystems • Structures • Organizations • Economics
The Permaculture Movement • Institutions • The Personal Realm • Lifestyles •

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Permaculture is a design system and a way of life rooted in the science of ecology and a system of ethics. A grassroots movement among diverse peoples on every continent, it seeks to reconcile the needs of human communities with the ecological imperatives of a living planet. Permaculture uses natural patterns as the basis for designing socially, economically and ecologically sustainable lands, homes, neighborhoods, communities, economies and personal relationships.

The Permaculture Drylands Institute (PDI) is a nonprofit educational organization dedicated to promoting permaculture as a way of living and working in arid ecosystems. All course listings appear on its website or by calling the teaching teams at the numbers above.

Cover: Drawing of Harmony Farm's goat habitat at the Phoenix Zoo by Brandy Winters (see article page 22).

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This issue is the final issue of Permaculture Drylands Journal *to be published by Permaculture Drylands Institute. A new version of the publication, by a new publisher, may emerge in the future.*

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A Stack Full of Functions

by Michael Kramer, Guest Editor

Permaculture, as a design methodology, examines the relationships between elements in a living system. One of the key guiding principles permaculturists utilize in order to create ethical, productive, and sustainable systems is the principle of functional design, what some refer to as the principle of multiple or stacking functions.

Why is this principle important? As consumers of energy resources, human beings have a vested interest in maximizing our ability to harness the greatest amount of energy as possible from the world around us. For one thing, this satisfies some of our own basic survival needs, such as food, water, heat, clothing, and mobility. On another level, our ability to generate a surplus of resources fosters various forms of wealth in the world: cash, time, goods, energy, love, food, and water. Permaculturists, of course, design to incorporate such surpluses into a systemic design so that such resources are reused and not wasted.

One quality of life that this principle elucidates is efficiency. If a system functions efficiently - if roofwater is caught before it flows into the sewers - then it can be used to support numerous life functions. This is efficient because of the direct relationship between the water being caught and its uses on the land in the immediate proximity. No pollution-causing work is required to secure this resource, and no waste product leaves the site for others to deal with.

Efficiency is an interesting quality. Machines, for example, can be very efficient in terms of their speed and consistency. They are not alive, and as such, are very simple and linear in their functioning, but they are productive. So what's wrong with machines?

The key problem lies not in the fact that machines can only degenerate into a heap of waste, although this is indeed true; rather, the problem with machines is that they cannot, by their design, regenerate anything. They convert resources into energy, but there is always a waste product produced. As such, machines can be productive, but not be truly efficient.

The ability of a system to stack functions with its resources is also based on reciprocity. There must, in other words, be some sense of mutual benefit between elements in a system. For a healthy system to flourish, energy and support must flow freely and intently to nourish each element. There must be an equal exchange of resources (e.g., economic value, soil nutrients, love, or other forms of support) in order for the system to act in a regenerative manner. Resources which flow in one direction exclusively will be consumed without reciprocal benefits and eventually drain the energy of one or more elements; this is not sustainable.

This is why permaculturists often design to facilitate cyclical functioning. This takes the "ends" away from the system and instead replaces them with a "process" through which resources may grow and build upon one another. Growth cannot occur in machines because the energy they use dissipates or is wasted through its own functioning. Growth can occur when resources cycle within a given system (e.g., the water cycle with trees, the circulation of community loan fund dollars, representative democratic decision-making models, and the ways in which love and affection gradually grows and deepens between people).

> This issue of the *Journal* asks us: "What are appropriate ways to design a system in order to maximize the effectiveness of the functions in such a system?"

An implicit component of growth is the notion of productivity. In order for an element to have any surplus which it might then share with another element, it must be productive enough as a whole to afford the loss of its own surplus. Asking someone who is anemic to donate blood is not a good idea, nor is a business which is just breaking even a good candidate for philanthropy.

In other words, there must be some evidence of an element's ability to self-maintain in order for it to survive and flourish. Clear-cut forests will not regenerate well due to soil erosion. Community economies cannot be sustainable if profits are leaking out of the community.

One of the desirable features of a self-maintaining system is its ability to generate little or no waste. If everything is used, as in natural systems, then perhaps there will be sustainable human settlements. For example, communities which involve young people in community affairs, through such initiatives as community service, Board membership, apprenticeships, and political decision-making, see lower rates of youth violence and self-destructiveness (all forms of waste). This support feeds self-esteem, which is the cornerstone of one's ability to self-maintain.

The relationship between elements is another critical design issue associated with this principle. How items in a system are placed often determines their functional effectiveness. Communities which produce their own food or are situated very near to such bioregions are likely to have greater access to produce at a lower price. Chickens that live near a garden can easily eat pests, provide manure, and aerate soil. A stove placed strategically can be used to cook in the kitchen while providing heat to living spaces.

For systems to be regenerative, they must be efficient, reciprocal, cyclical, growing, productive, and properly placed. This issue of *Permaculture Drylands Journal* provides numerous examples of systems which are or are attempting to become regenerative in this manner.

Peter Cooke and Ingrid Kelley's article examines the modern lifestyle and provides suggestions on how people can become healthier.

Jan-Willem Jansens presents the forest ecosystem as a model example of stacking functions, and he offers management techniques which can create sustainable forests.

Marci Tarne and Brad Lancaster share the story of how an organic community garden can provide food and revitalize a Tucson neighborhood in so many ways.

Josie Plaut, a student at Fort Lewis College, writes about an exciting and ecologically-minded Student Life Center about to be constructed at this college in Durango.

Christopher Peck interviews Jeff Lahl of the Real Goods Institute for Solar Living and examines the relationship between for-profit and non-profit sustainability organizations.

John Irwin, author of the *American Permaculture Directory*, examines the new permaculture website *Permaculture.Net*, and explains how the site serves numerous functions.

Catherine Wanek, publisher of *The Last Straw*, examines the ways in which natural building materials facilitate efficiencies.

Barbara Gerber writes about Santa Fe's only locally-owned natural foods store, The MarketPlace and how its practice of purchasing organic produce from local procuers grows the local economy.

Jo Miller shares the amazing success story of introducing permaculture to the Phoenix Zoo. This collaborative design effort has given permaculture high visibility in a very important way.

Finally, I offer some insights on stacking functions in one's personal life, by looking at the relationship between work and love.

All in all, this issue covers a wide array of topics, from the very personal realm to buildings, businesses, neighborhoods, forests, organizations, tourist attractions, economies, and cyberspace.

It is important that we provide diverse examples of permaculture for all to see. Through these efforts we shall create sustainable culture.

Michael Kramer recently completed a term as Executive Director of Permaculture Drylands Institute.

Destacking and Restacking in the Duelennium

by Peter Cooke and Ingrid Kelley

The only alternative left for mankind is discpline. Discipline is the only deterrent. But by discipline I don't mean harsh routines. I don't mean waking up every morning at five-thirty and throwing cold water on yourself until you're blue. Sorcerers understand discipline as the capacity to face with serenity odds that are not included in our expectations. For them, discpline is an art: the art of forcning infinity without flinching, not because they are strong and tough but because they are filled with awe.

-Don Juan Matus
from *The Active Side of Infinity*
by Carlos Castanada

Living permaculturally in the First World is a tremendous challenge. We have adapted ourselves to a system that opposes tha natural order, and even becoming aware of its destructiveness does not free us from its influence on our lives. We live in the Grid; it provides what we have come to know as sustenance, and we havelearned to give it our energy so that it will continue to do so. It makes demands on our time and sets our priorities. Its presence is so vast we don't even see it. We are in the Grid and the Grid is in us.

Therefore, if we decide to apply permaculture principles to the way we live, the design process must start before we consider our site. We must go back to Zone Zero, ourselves, and peel away layers of negative habits and expectations we have taken for granted in our First World culture, and replace them with patterns more suited to the natural order. In other words, as preparation for creatin a truly permacultural site design, we must destack and restack ourselves.

When we think of "stacking functions" in permaculture, we think of how we can arrange our design elements to serve multiple functions in our permacultural system, so as to assure interdependence and efficiency. The idea is to mimic these traits as expressed in nature, and to achieve a similar result: continual recharging abundance, and minimal waste. Stacking in the permacultural sense appeals to us because of its elegant, natural efficiency.

Stacking functions is a natural process for humans, and we've always done it, but our First World transformation over the last 50 years to an economically globalized culture has altered our perception of the concept. We have learned to stack our functions for the Grid, and before we can get back to natural elegance, we must understand what that means.

> "Under the guise of making our lives easier, the Grid is in the process of unstacking our natural selves, cluttering our lives with useless and wasteful priorities."

Ironically, efficiency is the clarion call of those who globalize. Their idea is to make more money, with less effort, for themselves. Big Money spin doctors have convinced us they are making us personally more efficient in the process as well, by helping us to spend money in order to save money. They offer us buying convenience, two-for-one specials, the all-in-one tool (that never does anything particularly well), frequent flier miles, and cell phones and sound systems that are easier to use while we drink our coffee and drive the car. But the turth is that the Grid makes us less efficient, because it makes us less self-sufficient.

When we start from Zone Zero, we can see that we are each a stack which serves many functions within the system. There are our personal, family and community functions, our professional functions, and the functions implicit in our skills and experience. We are not only zone and sector, we are the key element in our own design - the core stack.

Many of the functions in our core stack, however, are functions we've learned in order to serve the Grod, in order to partake of its benefits. We have taken on Grid distribution and marketing functions when we drive our cars, watch television, and surf the Net. We perform administrative functions like filling out medical insurance forms and managing or stock portfolios and personal retirement funds. We find we must have the proper equipment to perform these functions, such as a computer, fax machine, and Internet connection.

We define ourselves in Grid roles and by Grid standards of success, where self-sufficiency is defined by personal wealth. Our new functions do not support our own life functions, but rather thelife functions of consumerism. Under the guise of making our lives easier, the Grid is in the process of unstacking our natural selves, cluttering our lives with useless and wasteful priorities, and causing us to lose functions that connect is to the rest of humanity and to nature itself.

Globalization is happening, and the Grid is what we will know for the foreseeable future. This complex mega-pattern will evolve quickly under its own head of steam, and in ways we cannot predict. That is what makes this a unique moment in the evolution of the human species, and what lends the underlying uneasiness is the Y2K computer glitch. Our response to these circumstances, as First World permaculturists, requires that we take responsibility not only forwhat we do, but also for being fully aware of this pattern and our part in its perpetuation.

Destacking the Grid and restacking the human core is the process of analyzing Zone Zero. there are natural patterns of wisdom we can use when we do this. First, we remember that Zone Zero exists within time and space. We acknowledge that unlike the Grid, which demands instant gratification in pursuit of "progress", nature cannot change

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everything everywhere immediately. The process will require us to examine our needs and wants, and learn to discern between the two. And finally, we must know our intent; what example do we intend to leave behind?

Underlying these judgements is the wisdom we have inherited from the past. The only tools we have to design our future are those we have already acquired. We must examine these in the light of oncoming uncertainty and assess their value to us. Our Zone Zero assessment includes reestablishing our relationship with some ancient touchstones of human wisdom: the four elements of earth, air, fire, and water; the five ways we sense the world: sight, sound, smell, touch, taste; and the essential interplay of opposties in ourselves as in nature. From this we gain the perspective we need to destack and restack our core, and to regain our faith in nature to sustain us.

ZONE ZERO:

There are zones in the discpline of permaculture which help us conceive our life as functional. Zone Zero, in its simplest definition, is us. If we go from Zone 0 through 6, we get from us to the wilderness and back again. There is deep space and there is blood which rushes through our veins, the pattern is the same.

We are Zone Zero, the center of the action, directing all aspects of the design. Zone Zero is where we live, and from where we begin. Each person inhabits his or her own Zone Zero with habits, expectations, preferences, and experiences expressing form through the personal living and working situation.

Zone Zero is also a sector - a source of energy that moves across and impacts the site - perhaps the most powerful sector of all. Becoming aware of ourselves as possessors of this power is the essential purpose of assessing Zone Zero.

TIME AND SPACE

The practice of permaculture has been very successful in Third World countries where people remain closer to the time/space continuum. But in the First World, permaculture has been forcefully focused in the present, creating an elite and isolationist core of publishers, designers, and landscapers, and a coterie of self-conscious intentional communities.

We take ourselves far too seriously in the present. We think we must solve it all now. From past wisdom (both Judeo-Christian and indigenous ideologies) we inherit the concept of considerating changes over seven generations. To begin realigning with this, let us look at ourselves as the fourth generation. Doing this provides us with perspective on both past and future. We then can become the necessary stepping stones within the continuum of our natural humanity. By seeing ourselves within continuing time and space, we gain a realistic view of our own contribution, and faith in the contributions of others, present, past and future.

However, we can use permaculture to squeeze time and space. When we build a gabion in an arroyo, we don't wait for nature to create water catchment. Planting a guild inoculates nature to act more quickly than when it is unaided by the human. And, consciously restacking Zone Zero squeezes the time and space of our awareness.

NEEDS AND WANTS

Living in the comfort zone of the First World, we confuse our frivolous wants with our true needs. To struggle for heat, food, water and lodging is sometimes very painful. Many Third World people experience this on a daily basis. In the hedonistic First World, discomfort (to one of our five senses) and/or inconvenience (to our egos) is unconsciously regarded as pain. there is a great preoccupation with avoiding these annoyances.

Beginning by using a scientific approach, we can analyze our habits by gathering data on how and why we spend our time and money. This will tell us a lot about Zone Zero, and make our own patterns clear to us. This dispassionate scientific approach also allows us to observe the Grid around us - at the supermarket, on the tube, in traffic - in order to decode the messages we are constantly receiving about what we should want. What we really need will begin to emerge.

OPPOSITES IN NATURE

Nature is composed of intimately interrelated opposites: hot and cold; dark and light; noise and silence; life and death. We cannot remove one to favor the other, as they are irreducible elements in the pattern of the system.

The discpline of permaculture involves the two opposites of science and religion. Science is the system of gathering knowledge and condensing it into testable principles. Religion, the relinking, gives us the confidence to acknowledge cause, nature, and purpose. Both arise from the consciousness of the human brain.

The braing has two hemispheres, left and right. The former provides the functions of analysis, logic and language, and the latter provides intuition, imagination, and creativity. The anatomic structure which joins these two hemispheres is the corpus collosum, across which our thinking and learning process is in constant flux. This organ facilitates their joining in specific ratios of influence. These vascillating ratios are not equal, but rather more resemble the divine proportion.

Unfortunately, because of the aggressive impingement of the digital Grid for Boomers, Gen-Xers and now the Nth Generation, logic is favored at the expense of intuition and creativity. Because we have lost our respect for the interplay of opposites, First World thinking is retarded and disadvantaged. We are "dumbed down", and as permaculturists, we must overcome this limitation by actively favoring and exercising our creativity. When we analyze ourselves or practive site assessment, we must have confidence in our senses and intuition for the real knowledge rather than relying on lists and instructions of the professional teachers and designers.

INTENT

Intent comes from the soul. We can

imagine ourselves coming from the imperceivable vibrations of the unknown in deep, black space, then moving to the soul, to intent, to ego, to will, to character. The intent of a permaculturist is to be effective in a regenerativeprocess within the earth. The Grid version of intent is a well-filled day-planner.

In the First World, we have been fooled into thinking we are separate individuals. This has taught us to focus on ourselves rather than to view to the big picture. It's not whether we watch PBS or HBO, because we're still watching television. Whatever we drive (or don't drive), we are all trapped within the motor vehicle Grid.

Our intent creates our ego's self-concept. If the nature of our intent is regenerative, we will operate in this manner, dropping wastefull and defensive functions from the core stack.

THE FOUR ELEMENTS AND THE FIVE SENSES

Prayer, from the intuitive side of our consciousness, is simply an exercise i nbeing aware of the things around us and then being appreciative. This process alone, done daily, clears the mind of a lot of confusion. One way is to become aware of our connection to the four elements of fire, earth, air and water. Being sentient beings, we use our five senses to achieve this awareness.

A Native American sunrise ceremony is a good example in practice. At the coldest time of dawn, just before sunrise, a small fire is lit and the awakening of awareness starts the day. The fire is the connection, the flux between the rising sun and the spark of our hearts. As Thomas Banyanca, a Hopi elder, explains, "We pray with our eyes and ears open, not with our heads bowed and eyes closed. The cold, damp air touches our skin, we can hear the fire burning, our eyes and lungs open with the smell and taste of the medicinal cedar smoke. We begin to feel all the creatures moving around us who want in on that fire - the spark in our heart". And Banyanca cautions, "If we don't share it, they will eat us!"

Instead of being awakened by a clock radio, rushing into a shower, throwing on some clothes, grabbing a bagel and coffee,jumping into the carand rushing into traffic while talking on the cell phone and combing our hair (a Grid stack), we can use our intuitive clock and become aware of the real living elements around us, using our senses, which better prepares us for the day. It doesn't matter whether we do a morning coffee ceremony or a morning dog walk ceremony, as long as we awaken ourselves consciously to the day. Doing a personal sunrise ceremony gives us a chance for silence, awareness, and awe.

DESTACKING AND RESTACKING WITHIN THE GRID

Don't run away from the Grid, observe it. Look to see what's missing (what do we need that we're not getting?), and look to see the wastefull nonessentials (what are the fantasies, the desires *du jour*?). Make creativity the intent of your work. Is the function you perform to support yourself a function that belongs in your core stack? Seek out and respect your natural rhythms and those of others around you. Do you really function optimally between 8:00 am and 5:00 pm? Time and space are yours. Try doggie aerobics - when your dog stretches, you stretch. Give yourself a project to do, and do it. Start the destacking/restacking process with a simple project to focus yourself. Remember, permaculture design is antithetical to the Grid. Its principles are as good a guide as any to transcendence.

DEFINING THE GRID

Even though this term is generally used to refer to the electrical power distribution system, we use The Grid to represent the Globalization Sector, the many energy, transportation, communication, and economic networks that have grown during the last century in the First World. they have served us well in many ways but now, on the brink of the duellenium, we perceive their combined power as transforming itself from servant to master.

What began as creating a better life through technology has become the relentlessly mutating phenomenon known as economic globalization, where the best things in life are considered externalities, from environmental quality to diversity of species, to respect for each other as humans.

Globalization goes beyond individual multinational corporations. It springs from the interests of international Big Money, whose technological and monetary resources are now so immense as to be evolutionary. Globalization takes capitalism from the unfortunate 20th century idea of exploiting markets to the terrifying 21st century phenomenon of creating one big market. This is ultimate economic power and efficiency, and total disaster for the human species.

For further reading:

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Forest Management in Permaculture: How Far Are We From Home?

by Jan-Willem Jansens

A few years ago, I hiked with a friend, who studied forest ecology at the University of Washington in Seattle, through some of the last majestic old-growth forests in the Pacific Northwest. At a certain moment, as we paused, my friend wondered why it is that we humans are so bold to think we can and should manage forests. Forests have "managed themselves" for millenia without our management plans and best management practices.

Last summer, I did a survey in northern New Mexico for the purpose of mapping local people's attitudes towards and values regarding the forest. Some respondents were reluctant to map their values and uses of the forest, as they perceived it as an acknowledgment of the way the U.S. Forest Service designates specific functins or uses to areas in the forest. These local people, who have been makinga living in the forest for many generations, felt that the forest should be open to all uses depending on the ever-changing potential of the forest landscape and people's seasonal needs. They were very opposed to limiting recreation, wilderness, logging, grazing, and firewood harvesting to specifically designated areas.

Today, these two memories come together when I reference the authoritative book *Permaculture*, by Bill Mollison. What role do forests have in permaculture? They seem to be reserved for a fringe position in Zone V, and with some active management, their presence is acknowledged in Zone IV. Closer to home, forests have made places for tree farming, agroforestry, and intensive gardening practices directly around the house.

It occurs to me that people relate differently to trees, and thus to forest landscapes, as a function of the distance between their homes and the forest, as is suggested by the permaculture zoning design. If we live far from the forest, we tend to manage it less and use just what it offers to us. However, if we live closer to or even in a forest, we have developed a much more intensive relationship with the forest land, which allows us to discern a variety of uses throughout the year at distinct locations. The more frequent and intensive uses such as gardening, herding animals and collecting herbs will occur closer to home, while logging will occur at greater distance. For less intensive, seasonal uses such as hunting and hiking trips, these people will go to the remotest corners of the forest.

The Menominee tribal forest management tradition is a working model of sustainable ecological management and economic development.

This proximity phenomenon may explain why urbanites typically perceive forest landscapes as a Zone V, with exclusive functions in the realm of wilderness, back-country recreation, and occasional mushroom gathering, wildlife watching, and turkey hunting. The urban interests are subsequently translated into management decisions that use the designation of areas for specific functions in order to avoid confrontations between user groups. However, the people who live closer to the forest see this landscape in all its seasons, during its entire path of growth and succession, and have developed a much more refined idea of function based on opportunity in time and space and in relation to the proximity to their homes. For them the designation of special use areas is too crude a management tool which does not recognize the diversity the forest offers in time and space. For them, management from the outside does not recognize the refined and ever-changing patterns they see in the diversity of possible functions related to a place in the forestm the time of year, and the time in the forest's succession. They would, and do, suggest much more subtle management practices that allow for the most diverse uses over time throughout the forest.

My friend from Seattle hit upon something crucial for our thinking about forests. First of all, her thoughts imply that it is really for ourselves that we manage forests. Second, it is the permanent presence of tree cover and the diversity in species and spatial forms that allows the forest landscape to be resilient to major natural impacts. It is this permanent tree cover and diversity in form and species that can also be found at the foundation of permaculture, which makes an unmanaged and sustainable forest landscape a valuable model for permaculture design. Both the natural forest and the permaculture

landscape exist with a minimum of human management interference, while they produce an optimal form to satisfy human needs. This is based on the provision that the human user has learned to understand what nature can give and what humans have to leave or return to the forest environment.

However, my respondents in northern New Mexico teach us something valuable, too. They show us how we, according to our proximity to the forest, develop our own specific way of valuing our surroundings and attributing meaning to them. The better we will get to know the forest, the more we will discover what bounty it can provide and how little we actually have to do to receive it. We will "only" have to learn what diversity of species, spatial composition, natural processes and possible functions exist in a healthy forest. In addition, we will have to realize how important the permanent cover and multi-layered structure of the trees are in providing this diversity.

Unfortunately, most of us are taight to perceive forest landscapes as a source of natural products of "natural resources" that can beput to use to satisfy our needs. After categorizing the usefulness of the forest's bounty, we designate specific uses or "functions", if you will, to better manage the forest from the safe

> "Forests include many indicators of educational, informational, and scientific meaning and value."

distance of our offices or homes. Because we have not fully understood the forest's dynamics and diversity, we begin to manipulate the growth of the forest ecosystem to achieve the most optimal performance of only a few desired forest functions. This rational, or perhaps narrow, focus leads most people to only consider the trees as the major source of forest functioning. And of the trees, we only consider the wood, and of the wood, only thatof the stem, and of the stem, only that part which produces the best lumber. The subsequent manipulation of the ecosystem to produce the desired, single most important function or product is called management, and the practices that most effectively and efficiently achieve the desired future condition of the forest are called, euphemistically, the "best management practices".

People have set goals and targets for the expected uses of the forest and the resulting products, services, functions, and design management practices to make sure that the forest delivers what is expected. Best management practices help forest managersensure that maximum and optimum generation of expected benefits from the forest for a pre-determined period, which often corresponds with the economically optimal totation (life cycle) of the trees. People have tried over time to develop management practices that create a stable or even systematically growing yield level, which is often called a sustained yield. However, sustained yield is something completely different than sustainable forest management.

Generally, with current forest management practices, we have lost sight of the natural diversity of the forest landscape and its inherent functions of resilience and regeneration. Conventional forest management practices call typically for the removal of all trees of a certain age or diameter category exclusively because of the marketable value of the timber at that moment. Consequently, the trees which replace the ones that were harvested are all of the same age, which makes future harvesting easier. This form of forest management has turned into a conventional agricultural method as well, with crop rotation cycles that include fallow, replanting, growing, and harvesting land. This method creates monocultural agriculture in forests creates even-ages stands of trees. Because of the lost resilience against diseases and natural calamities, these tree crops have to be maintained with fertilizers, pesticides, and other intensive management methods. Ultimately, these landscapes have nothing to do with forests, nor with permaculture. These landscapes are nothing more than tree farms.

Several international organizations help to ensure that forest resources are harvested in a sustainable manner.

STACKING FUNCTIONS IN FORESTS

In forests and permaculture, trees are a permanent component of the landscape, where the diversity of species and their spatial interaction in time is considered tha basis for our human interaction with a place. This allows us to distinguish many different functions of any single place at one time, and even more functions as time progresses. Forest functions in Zone IV or V of permaculture landscapes includes those related to products as well as "services" and "information". Forest products are, for example, logs for construction purposes and crafts, fiber for pulp, and enginerred wood products such as particle board, but also simple products such as firewood and walking sticks. In addition, from some trees we can use the bark or the roots for medicinal purposes. Leaves can be used for fodder, shelter, mulch, and decoration. But apart from the trees, forests offer many other products, such as water, pottery clay, fish, wildlife, herbs, mushrooms, tubers, fruit, grasses, and much more. In addition, forests offer "services" such as shelter from wind and sun, privacy for solitude, inspiring views, lovely smells, and relaxing and interesting sounds.

These characteristics together provide tha analytical human a wide variety of forms and processes that can be coded and interpreted as signs of information that indicate certain conditions of the landscape. As such, forests include many indicators of educational, informational, and scientific meaning and value. For example, if we have learned how to read the landscape, we can learn from the forest what season it is, where we are in the watershed, how much water there

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is in the soil, and how big and strong (or perhaps small and weak) we humans truly are.

If we spend a long time in the forest landscape, we will gradually develop a relationship with the forest ecosystem. If we are mindful enough to learn from the forest, we may discover its intricacies and miracles, and begin to see its life cycle as an "organism". We may attribute spiritual, religious, historical, and personal-emotional values and meanings to the forest based on all the human experiences we have had with the forest. Together, these functions make a forest extremely rich and diverse.

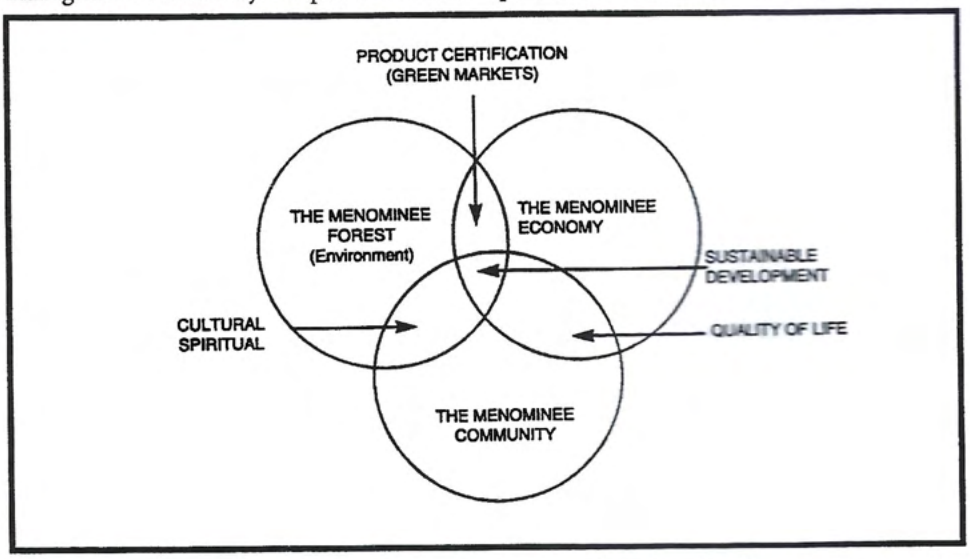
It is not surprising that some individual forest managers have begun to realize that a forest is much more than trees,and that forest management is extremely complex. In the last few decades, more and more people worldwide have come to recognize that we should adopt selective, time- and site-specific forest management practices that respect and maintain the diversity of biological and physical conditions and processes that create the forest ecosystem. These people recognize that permanent forest cover and perpetuated natural forest functions contribute to a stable or even growing diversity of species. They also recognize that the presence of humans and the useof the forest by humans should only add people to the landscape, and should not cause any disappearance of other life forms or internal forest diversity. This approach to forest management can be called sustainable forestry, and this is what permaculture envisions for Zones IV and V.

SUSTAINABLE FORESTRY

The art of sustainable forestry is still being developed in the West. Individuals are accumulating experiential knowledge on sustainable forestr management, and some organizations have made attempts to formalize these findings in standards and guidelines for the encouragement or appraisal of forest managers striving for sustainability. For example, the Forest Stewardship Council, based in Oaxaca, Mexico, is a non-profit organization with a worldwide membership of organizations and countries and which oversees international principles for the promotion of sustainable forestry. In the U.S., the Forest Stewards Guild, with its secretariat in Santa Fe, is an important promoter of such forestry as well. The Guild helps organize forest managers who practice sustainable forest management and exemplifies their forests as models of non-conventional but economically viable and environmentally responsible forest management.

In sustainable forest management practices, the main principle is that natual conditions and processes design the forest. Form is determined by these natural factors. We humans need to listen to the forest and watch the forest in order to understand the human niche and rediscover in humility what bounty the forest landscape can give. In turn, we have to learn, too, what we have to give back to the forest. Only then can we take the gift of the forest and put it to its best use. Our giving relates to gifts such as soil and water conservation work, selective thinning (to help other trees survive and grow in periods of stress), managed grazing, rest, and occasional small fires. In some cases, inoculating the soil with fungi, microorganisms, worms or insects may be part of this approach as well. In other cases, it might be tree planting, reseeding, and wildlife reintroduction.

In all these cases of interaction with the forest, be it as the receiver of products or the facilitator of forest regeneration, our proximity to the forest will determine what we can do, when we do it, and how much we should do. In return, we will discover what the forest can offer, when it will offer, and how much. Our openness to the ever changing diversity of the forest will make us realize that permaculture zones are not fixed in forest landscapes, but will move with the changes of the forest's natural functions as well as the functions that we discover and rediscover in its ever-changing and recurring diversity.



The Menominee forest-based community sustainable development initiative successfully integrates the environment, community and economy.

For further reading:

Camp, Orville (1984). *The Forest Farmer's Handbook.* A guide to natural selection forest management. Sky River Press.

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Casting Seed and Deepening Roots: How One Community Garden is Growing More Than Vegetables

by Marci Tarne and Brad Lancaster

Digging in the sandy banks of the dry wash that once was the Rillito (river), I stumbled upon some roots. They were parched and weathered like the faces of the elders, and their stories were just as strong.

Water. We drank it.
We struggled, we grew.
We danced, we lived.
We died, we made the seeds.
They scattered in the wind.
We will always return, always return.

Beneath the dust of every place, beneath every neighborhood, every highway, every parking lot, every garbage dump, every hobo camp, every bank, office suite, skyscraper, and pile of broken glass, there are roots; and they are strong. Roots sprout from the seeds of life. Today, our roots are growing again.

- Leith B. Kahl, Dunbar/Spring neighborhood youth

Passers by can't help but notice the changes in the once-vacant lot on University Blvd. "Looks good", some say. Others yell out "thank you","gracias", or "how can I participate?" Kids point to giant sunflowers or swallowtail butterflies, and ask to go in and play. Often a particular aspect of the garden will spark the memories of grandparents walking by: native plants they used to collect from the desert now growing in the mini-nature park, and an horno like their mother had, young people planting seeds. Eyes light up, and knowledge told as stories wells up in the hearts of these elders. Their stories, and the depth of information and emotion they contain, add an essential dimension to the Dunbar/Spring community garden. Not only has the project turned a vacant ball field into a thriving fruit and vegetable garden, it has brought neighbors of differing cultures, languages, economic and educational backgrounds together to share responsibility, recipes, garden tips, resources, and stories.

Some of the history and stories of the neighborhood are woven together in a beautiful mural painted at the community garden. The mural was a project of a local arts/ community development group called the Arts Brigade. Eight youth, including poet Leith, interviewed elders from our neighborhood and added their own insight about what makes this community especially wonderful.

Bordering this mural and our neighborhood are the railroad tracks to the south and west whose arrival in the late 1800s sparked the formation of the neighborhood with new businesses and residents. To the north and east are the ever-widening roads that divide and destroy existing neighborhoods and communities. In the center of the mural and neighborhood is the old Dunbar school and our community garden that is the ground for new seeds and rebirth in the hood.

Our garden is just over a year old, but its roots already run deep into the fertile history of Dunbar School. The garden was created in what had been the old school's softball field. Both school and field had sat abandoned since the early 1970s. Built in 1913 as the "colored school" Dunbar became the focal point and name of a strong, predominantly African American neighborhood.

Led by principle Morgan Maxwell, Sr. the faculty and alumni of Dunbar school joined other civil rights advocates to persistently strive for equality, and in 1951 saw the Arizona legislature repeal the school segregation laws. Shortly thereafter, John Spring Jr. High School was added to the site (years later the neighborhood became known as Dunbar/Spring). In 1971 theTucson Unified School District closed the school, and all appeared abandoned until 1994 when the Dunbar School Alumni, Tucson Urban League, the Juneteenth Festival Committee, and the rotecting against stray basketballs (from the court to the north), and microclimates for greater growing possibilities. The orchard was also sunken and well mulched to harvest and conserve rainwater. While individual garden plots were to be reserved for those leasing them, the orchard and all understory goodies (garlic, herbs, squash, chiles, etc.) would be open to the entire community.

Picnic and gathering spots were designed throughout the garden so it would act as a central outdoor gathering place for both gardeners and non gardeners alike - a garden for the entire community.

A sign board would be erected to post garden rules and regulations along

continued on page 10

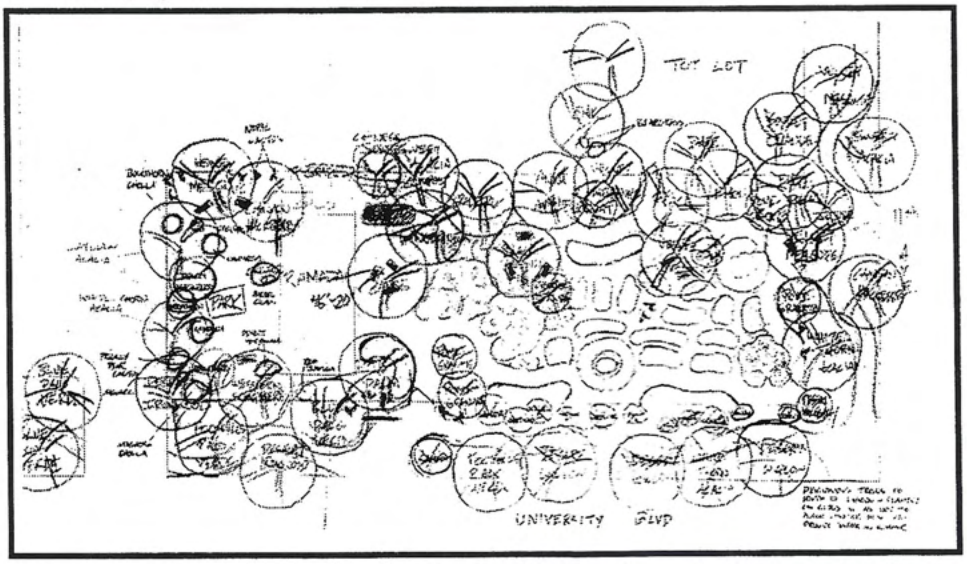
continued from page 9

with planting times, planting advice, neighborhood announcements, newsletters, and a neighborhood directory - listing skills, materials, interests, and produce neighbors are willing to trade or share (look to your neighbor before the store). The gardens would also act as an ideal workshop site for classes and demonstrations led for the most part by neighborhood residents on organic gardening, composting, water harvesting, solar cooking, seed saving, food preparation, permaculture, etc.

As design continued the Dunbar Coalition was finalizing plans for the Dunbar Project's grounds. Space allocated for the community garden/mini-orchard was increased, and an area was set aside for a mini-park. The garden committee, excited by the idea of more space, adapted its design to the larger area and offered to design and create the mini-park. Throughout the design process more residents were encouraged to participate through meeting announcements, notices in the neighborhood newsletter, and word of mouth.

The mini-park was designed to be a mini-nature park demonstrating plants native to Tucson and its surrounding area - those that naturally do well here. The nature park would create wildlife habitat, a peaceful and welcoming gathering space, demonstration of water harvesting (sunken, mulched basins), and opportunities for learning about the vegetation of the lower Sonoran desert as plants would be marked with signs listing names (in Latin, English, and Spanish), elevation (where they're naturally found), and uses (edible, medicinal, wildlife habitat, dye producing, etc). We wanted folks to learn from the nature park what native plants they could plant in their own yards, and that we can harvest not just from the garden, but from the desert and the landscape too. The neighborhood association applied for a State Land Department Urban Forestry Grant for creation of the mini-nature park. We received $2130 for materials!

A ramada was planned between the garden and mini-nature park to create more useable space for neighborhood, garden, and/or family gatherings. The ramada would also house a storage shed for garden tools and a potential neighborhood tool library. A larger community bulletin board would be erected under the ramada, and the idea of hosting a farmers' market was raised. The ramada is the only element of the design we haven't yet implemented, but we're still working on it.



The permaculture design for the Dunbar/Spring Organic Community Garden integrates numerous functional elements to ensure perennial production.

Drawing by Brad Lancaster

Ground was broken in early 1998. Tucson Parks and Recreation donated $900 of organic compost and broke the soil up to a depth of 2' with teeth pulled by a grader. The Dunbar Coalition put up a three foot high fence to keep out wandering dogs and vehicles. We placed the gates facing the sidewalks and a planned playground, NOT the parking lot. We wanted to encourage people to enjoy their neighborhood as they walked or rode bikes to the garden rather than driving. We opened the gates, and the volunteers poured in. Over 30 neighborhood residents deepened their community roots by coming out on various weekends to hand dig and amend all the garden beds! The garden could not have happened without this help. About 30 additional people (including Americorps volunteers and other community garden groups) from the broader community also helped out over the next six months.

Two cement-stabilized adobe raised beds were built along with one made from old concrete chunks salvaged on-site. With all the beds built, the irrigation system was installed. It is run by a solar powered timer. A rain sensor was wired into the timer so no ground water would be used when the soil was still moist from a rain. This saves tens of thousands of gallons of water each year, and reduces salt build up that comes with ground water irrigation.

Neighbors Pat and Marie generously agreed to take care of treasurer duties in leasing out our plots, and folks began leasing and gardening. A variety of gardening styles are represented in our eclectic pool of gardeners. Some have chosen common varieties of plants and kept them in neat, weeded rows. Others have expressed a wilder side, encouraging plants to twist and twine around one another, providing a lush over and understory rich with life. In either case, life within the garden beds is not limited to vegetation.Birds, lizards, spiders, horned toads, and insects abound. We are encouraging beneficial insects such as native solitary bees by constructing agave flower stalk fences and hanging hand-made bee boxes. These solitary bees are essential pollinators for some Sonoran desert plants and effective pollinators for many others - including our fruit trees. The diversity of insects in the garden not only serve the delicate "balance of life", but serve the needs of a gardener and graduate student studying the insects of the Sonoran desert.

Meanwhile back at the orchard, Tucson Water donated backhoes and operators to dig water harvesting basins, then neighbor and Dunbar school alumni Velton "the human backhoe" Lyles and volunteer labor and augers from Tucson Electric Power dug the tree holes. The orchard was planted and mulched with donated compost, aged manure (surplus from local stables), and tree bark (from local firewood distributors). All orchard trees were labeled so folks could familiarize themselves

with the various trees and know what varieties to look for and how to plant them if they were to plant fruit trees in their own yards (garden and knowledge expansion).

Throughout the garden and its creation we tried to conserve resources by using found or recycled materials. If we couldn't salvage what we needed then we'd go to neighborhood and nearby businesses to support them with our purchases. Resident craftsman Bill Moeller was hired to make a sign, bulletin board, and sun dial built from salvaged wood and bicycle parts for the garden. Neighborhood based non-profit BICAS (Bicycle Inter-Community Action and Salvage) an innovative group training all ages (though mostly youth) how to rebuild or transform thrown away bikes into awesome bicycles, bike racks, toys, art, and more made us two bicycle racks, a security cage for the irrigation timer, base for a sun dial, stakes for our plant identification signs, and a gate - all out of salvaged metal and thrown away bicycle parts!

> Over 30 neighborhood residents deepened their community roots by coming out on various weekends to hand dig and amend all the garden beds! The garden couldn't have happened without this help.

With the garden going we started to form and plant the mini-nature park. Tucson Water again dug out the water harvesting basins and Tucson Electric Power dug the tree holes. Plants were donated from local nurseries, including some hard to find specimens. Nurseryman and plant connoisseur Jared Shortman donated two Texas Mulberries with the agreement that we'd take care of them and he could return for cuttings to propagate more. Native wildflower seed was sown. Along with the intended flowers came "weeds"such as pigweed, lamb's-quarter, purslane, and malva. With these plants came interest from folks on their way to mass at the old church next door. Some of the elders would comment on the vigor of these volunteer plants and then relate their use and preparation as food and medicine.

> The garden is a reflection of the neighborhood, past and present; a neighborhood which has sown the seeds of its stories so all can grow.

At this point a county grant managed by the Tucson Urban League funded a youth program in the neighborhood. Supervised by local artist Gavin Troy, neighborhood youth: David Colores, Alan Mendez, John Hutzler, Charlie Seymour, Travis Fox Lupo, Amtul-Noor Qureshi, Saquib Qureshi, Ulliya Qureshi, and Rachel Crook helped plant the mini-nature park, mulch the park and fruit tree orchard, prepared the pathways, created signs from found metal for the garden and park, built compost bins from salvaged telephone poles and wooden pallets, erected benches with salvaged-tile mosaics, planted a garden, painted the BICAS gate, weeded, and placed rock and boulders in the park to delineate pathways and provide for more wildlife habitat. Neighbors gave the youth a taste of regional earth building and cooking by helping them build and use a wonderful adobe oven (horno)! The youth strengthened their ties to the garden and neighborhood while accomplishing an incredible amount and infusing the garden project with new energy.

That energy surged again when the Arts Brigade mural project was funded by another grant. Youth with the project began interviewing some of our elders to rediscover our histories and illustrate them on the garden wall. To announce the mural's birth, celebrate our community's diversity, welcome more people into the garden, and dance a little everyone from the community was invited to make masks, costumes, and music for a wonderfully eclectic and informal parade. The parade wound through the neighborhood and then ended up at the garden where it had begun. There, neighbors played instruments and shared food. Youth who painted the mural spoke of their experiences interviewing long-time residents. Some read poems. Poems of birth and rebirth; cycles of life; establishing roots and setting fruit. It became clear that the garden and its community already offered a source of inspiration, a sense of belonging and a glimpse of the future. The garden is a reflection of the neighborhood, past and present; a neighborhood which has sown the seeds of its stories so all can grow.

A lush oasis in the desert, the Dunbar/Spring Organic Community Garden provides food while fostering the spirit of neighboorhood cooperation. Photo by Brad Lancaster

Marci Taure is an excellent cook and a graduate student in entemology at the University of Arizona. She has integrated these two passions as she is studying insects eaten by indigenous cultures of thr Southwest.

When not in the garden, Brad Lancaster works as a permaculture designer, consultant, and teacher with an emphasis in rainwater harvesting and tasty edibles. Brad serves on the Tucson Teaching Team of Permaculture Drylands Institute.

Creating an Ecological Institutional Building

by Josie Platt

HISTORICAL OVERVIEW

The Student Life Center that is currently in the final design phase at Fort Lewis College in Durango, Colorado is the most ecologically successful building ever designed for the campus. The motivating force that put environmental issues on the building's agenda came directly from the student body. Surveys suggested that students were more likely to vote to approve the additional fees necessary to construct the facility if there was a commitment to incorporate the concepts of sustainability. Once the building was approved by the student body, a subsequent random survey showed that sustainability was the top priority for students, above all other functions of the building. Because, unlike most campus facilities, funding for the building comes directly from student fees, students were given the rare opportunity to voice their concerns and directly influence the design process.

THE DESIGNERS

Specialists from many disciplines have been brought in to help the students make more educated and ecologically responsible choices. Theprimary architects for the project have been from Sink Combs Dethlefs. Kelly Karmel of Design Balance was chosen to provide expertise in sustainable design and construction. She has helped to oversee the design process and has offered valuable knowledge, especially in the area of materials selection. Engineers from Gordon Gumeson & Associates worked very hard at reducing the building's energy demands. Energy simulation models done by the Architectural Energy Corporation helped to identify which evergy saving measures would be the most effective. These models projected energy savings, payback periods, and financial savings for various options. Along with energy efficiency and building materials, students expressed a strong concern about the land surrounding the building. Michael Kramer from Permaculture Drylands Institute served as a consultant to landscape architect Axel Bishop from Design Concepts in creatinga permaculture-based site design and landscape plan. While regulations and old habits from campus maintenance create some resistance to some of these concepts, permaculture concepts will be incorporated in the project. Bringing in professional from many areas of the design process has strengthened the integrity of the building while creating new professional relationships and helping to break down old paradigms.

THE DESIGN PROCESS

The creation of the facility has been a rewarding experience for everyone involved. Students, administrators, and professionals have been developing a tripod type of relationship that does not typically exist in campus building projects. This unique relationships has created a more stable and balanced design process through which numerous and sometimes competing views are presented for consideration. This has made the experience a learning process for all who participated.

> The energy simulations for the Student Life Center project 15% lower utility expense than other buildings on campus.

Beside the obvious intent of creating a recreational facility, adminstrators, students, and professionals have the opportunity to learn how ecologically sound building principles can be incorporated into campus construction. This has afforded students and administrators the unique opportunity to work together and develop understanding and supportive relationships, while perhaps starting a new construction trend on campus.

THE BUILDING

As designed, the building produces significant environmental benefits. In comparison the other buildings on the Fort Lewis campus, the Student Life Center will create less waste, use fewer natural resources, and be responsible for creating less pollution during its construction and use.

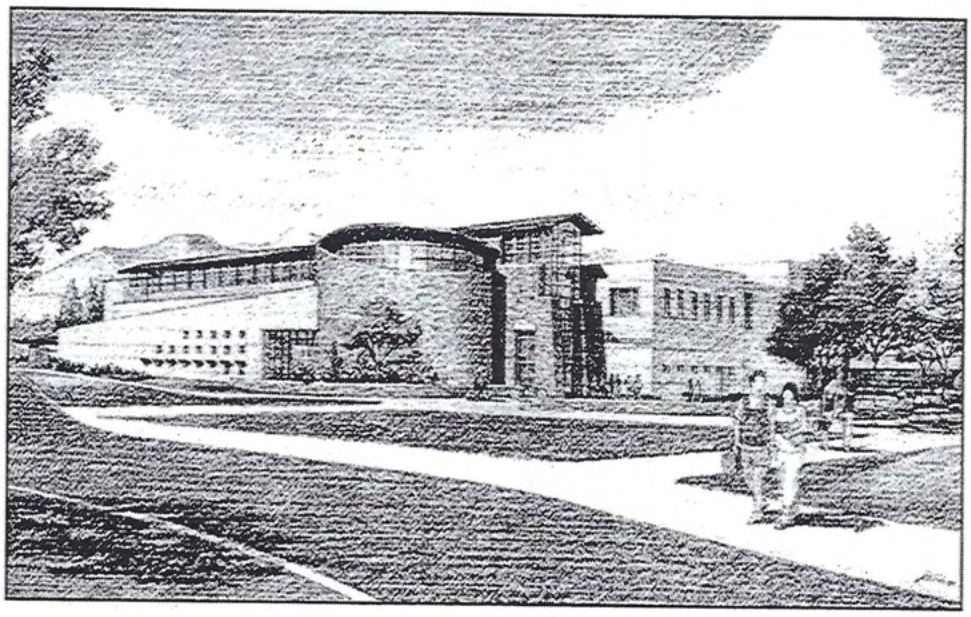
The materials selected play a significant role in improving the environmental scorecard for the building. WIth the assistance of Design Balance, the specifications for the building materials were examined with a fine-toothed comb. What resulted was a list of specifications which included materials that are low in toxicity, high in recycled content, and that are recyclable or reusable. Most of the the materials are also readily available at little or no additional cost to the consumer.

Not only is this an improvement for the environment and for the workers who manufacture such products, but the building's indoor air quality will be improved greatly, ensuring the health of the students who use the facility.

Much of the wood for the building, especially the maple gym and aerobics room floors, are certified as sustainably harvested, whicih protects old growth forests and wildlife. In addition, a construction management plan is in place to encourage the construction company to minimize waste and recycle whenever possible.

Because the building has yet to be built, the actual energy savings are not yet available. However, it is possible to look at many of the building's qualities through its design. First, the building is sited appropriately with the topography of the land, thus minimizing excavation and foundation work and expense.

Second, energy conservation measures within the building include super insulation, high e-windows, direct evaporative cooling, daylighting, automatic dimmers, and occupancy sensors. These measures reduce the demand for electricity and natural gas by utilizing free sunlight and reducing the size of mechanical equipment. the energy simulations for the Student Life Center project 15% lower utility expense per square foot than other buildings on campus. This is



The proposed Student Life Center at Fort Lewis College in Durango, Colorado.
Drawing by Christopher Kastelic of Sink Combs Dethlefs

particularly impressive considering that new Fort Lewis College buildings meet Ashrae 90.1 specifications, and that high activity areas like this recreation facility typically have higher demand for space conditioning.

The designs are becoming more refined and the groundbreaking is expected this Summer. The building should be completed by the Fall of 2000. Interior displays will demonstrate the materials selected and energy efficient systems in use, which will educate those who use the facility about the building's cost savings over its lifetime and its relationship to the environment.

FUNCTIONS WITHIN AND OUTSIDE THE BUILDING

The space within the building is designed for multiple types of use. In addition to the primary athletic functions, there is also a café, pool table, club office space, a multipurpose meeting room, and provisions for art in the main gallery of the building. Students will also work with faculty in the building at the control desks, on the climbing wall, and as administrative assistants. During summer months, when most college students are on vacation, portions of the building will be rented out to summer youth camps. Not only will this generate immediate revenue for the building, but it will also make more people aware of Fort Lewis College and may help to increase future enrollment.

The space outside the building is designed to serve many purposes. Most frequently it will serve as a gathering place, both for large groups during events like graduation, and for small student conversation and study groups. Edible plants and trees which are native to the area will also be incorporated into the landscape. Biology students can use these installations for academic applications, and there will also be space where horticulture students can set up intensive permaculture research gardens, which also applies permaculture classroom knowledge to real life situations.

ELEMENTS WHICH SUPPORT MANY FUNCTIONS

Every element of the facility is conected to the functioning of the whole system. perhaps the biggest example of this is simply bringing sustainable design concepts into the building process. The process has educated students, administrators, teachers, and the architects about what is possible in terms of ecological building approaches and materials.

The environmental approach affects the economy by increasing the demand for products of environmental integrity and by supporting local producers and distributors of such materials. The facility will, therefore, reduce pollution and toxic waste from the manufacturing throught the construction and use phases of the life of the building.

The use of less toxic materials will improve the indoor air quality of the facility, which will significantly reduce the potential negative health effects on students who use the building. In addition to keeping people healthy, this will of course reduce health care costs throughout the next century.

The building saves money. While it might cost a little more to construct initially (then again, it might not), the financial savings over the life cycle of the building and its equipment is very significant. Reduced annual maintenance budgets means that money can be invested in other campus priorities.

There are numerous educational functions which are possible because of this facility, and many ways in which the design and construction methods and materials can be incorporated into academic curricula such as economics, construction, technology, horticulture, agriculture, and health. This, combined with the educational exhibits in the building, create a unique facility which can properly serve its users and the community at large. As a model building, it may generate positive publicity that could influence institutional construction practices at campuses in towns across the country.

It is truly amazing how many ripples are made from dropping a single stone in a pond. In a pond as big and far-reaching as a college, we are only beginning to understand the first waves being caused by this environmental stone. The project could change the face of construction on the Fort Lewis campus, thus influencing the thousands of students who attend the college. These students will in turn leave the campus with at least a little more environmental awareness than they arrived with, and they will hopefully take this knowledge into their lives and careers. The project stacks an important function - it teaches by its own example simply as a created environment. Such an example may teach as much, if not more, than courses and textbooks, because buildings and landscapes are a direct representation of our values and our ability to think clearly about the relationship between elements and functions.

Josie Plaut is a student and a planning committee member for the Student Life Center at Fort Lewis College.

Combining Natural Building Materials for Energy Efficiency

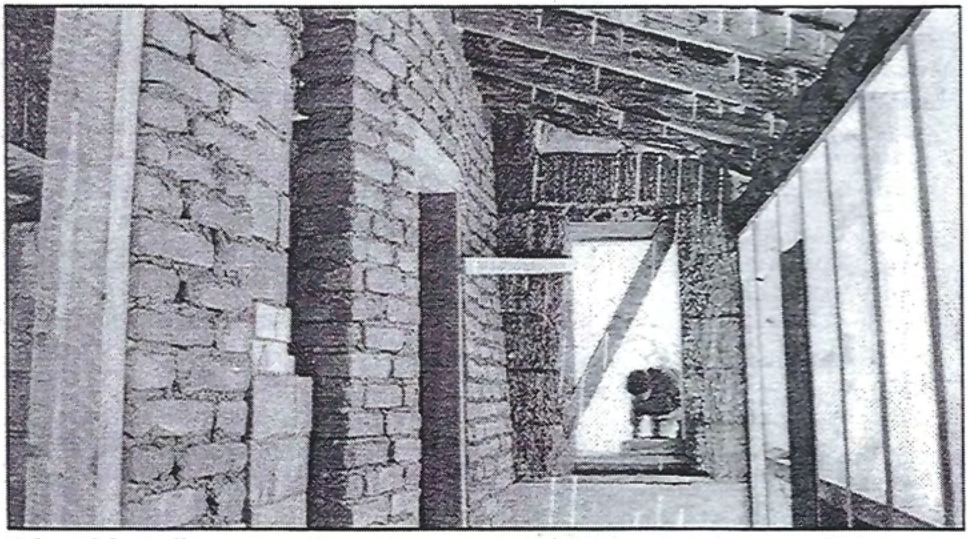
by Catherine Wanek

It's a natural inclination for Permaculturists to use available, on-site materials in building our homes. Doing so conserves energy and resources - our own and planetary. But understanding the specific qualities of our on-site resources and how they can be combined allows us to create the most efficient and elegant homes. This is important because we want to design and build homes which require the least energy input while returning the greatest comfort.

Beginning always with the selection of a building site, two of the most effective strategies foe energy-efficiency are solar orientation and earth-coupling. By simply designing window placement to capture the winter sun, a major part of our heating needs can be accomplished with minimal effort. If the site happens to be on a hillside, coupling the home with the constant year-round temperature of the earth below the frost line (about 55-65 degrees) will keep indoor temperatures within a few degrees of the human comfort zone. Combining earth-coupling and passive solar design enhances the effectiveness of both - which is the basic concept that structures like the Michael Reynolds Earthships are built upon. This, however, requires fine-tuning to local climactic conditions, for one must be careful of overheating in certain seasons and one must also make sure there is adequate day-long sun in the winter months.

Relatively few sites are sun-facing hillsides, so in what ways should we compensate for such circumstances? Common to nearly every building is earth. To build a sturdy foundation, it's generally necessary to excavate, and after the topsoil is stockpiled for garden use, the sub-soil must be dealt with properly. Very often it can be combined with other natural materials, such as sand, sticks, and straw, to form load-bearing or non-structural wall systems, including adobe, cob, straw-clay, rammed earth, and wattle-and-daub. Other materials often found on-site and that can be used in construction are stones and timber, both of which may need to cleared from garden areas or building sites anyway. But to utilize natural building materials most effectively, it's essential to understand their properties.

By simply designing window placement to capture the winter sun, a major part of our heating needs can be accomplished with minimal effort.



This adobe wall serves as a thermal mass wall, and will receive winter sun from the south-facing windows. It is wrapped with straw bales for insulation, and a masonry stove will heat the walls. This strcuture sites at 8000', and was built during Build Here Now, *the permaculture and natural building convergence, held in June, 1999.*

Photo by Catherine Wanek

Timber is dryland bioregions is generally a precious resource, given watersheds' propensity to soil erosion if trees are removed, but it still can be harvested sustainably. Timber has great structural strength, rigidity, and beauty, but it lacks insulation value, which is important in the colder climates. Thus, a log home in such climates is not the most appropriate use of this resource. However, selectively harvesting logs for a roof system could be a good use of on-site timber.

Types of trees not generally chosen for building can also be great assets. The regionally ubiquitous juniper tree, for example, grows slowly and in organic shapes, hence it s not well-suited to roof structures. However, this scorned tree is a member of the cedar family, so it is extremely rot-resistant and strong. It makes good structural posts, sills and trim wood, and left in its organic shapes can be amazingly beautiful. Willow, maple, and other saplings that often need to be thinned can also be used for pinning straw-bale wall systems or in wattle and daub walls (instead of buying and using rebar).

Stone and earth are also strong and can be utilized as structural materials. Their density makes them good thermal mass, which

The exterior straw bale wall of this Build Here Now *structure is held together with bamboo (rather than rebar) on both sides of the wall, which are tied together throguh the bales. This wall is being prepared for mud plastering.*

Photo by Catherine Wanek

means that they absorb heat or cold from the air temperature around them. But thermal mass materials absorb heat most effectively when the sun strikes it directly. As the air temperature changes, a thermal mass will slowly equalize to match it, releasing the heat or cold stored within the material. used well, this can help to both warm and cool our homes, but misundertsood it can be an energy drain or cause discomfort. The desert cities of Arizona, for instance, soak up the summer sun during the day, which means they often stay hot all night long from the heat stored in their concrete structures, sidewalks, and streets.

> Good insulation in walls and ceilings protects indoor environments from daily andseasonal temperature swings, providing the greatest comfort for the least energy input.

Not often found on site, but cheap and available in nearly every region of the United States, is straw, the stalk of many cereal grains. Since humans first began to build shelters, straw or grass has been used in combination with earth in bricks, walls, and floors. When the bailing machine was invented, it became possible to multiply straw's efficacy by turning it into large building blocks. In bale form straw can be used structurally, and it provides something few natural materials can - excellent insulation. It is the dead air space contained within the hollowed stalk of straw that makes it such a good insulator, so it is most efficient if bale walls are sealed with a plaster to prevent air convection.

Good insulation in walls and ceilings protects indoor environments from daily andseasonal temperature swings, providing the greatest comfort for the least energy input, which is why I favor straw bales for exterior wall systems in most situations. But bales take up a lot of floor space, so they are less suited as interior partitions, where insulation isn't needed anyway. For inside walls, athermal mass material is most useful, where it serves to moderate temperature. Earth and straw combinations such as cob, adobe, or straw-clay offer good thermal mass, and add infinite possibilities for creating interior spaces and sculpting built-in furniture. For example, earthen seats, shelves, fireplaces, and tables can make the perfect natural addition to a home.

> By simply orienting our homes to the sun and using an insulating thermal mass, comfortable shelter can be created primarily from natural materials.

More reasons to use earthen materials inside the home are their abilities to absorb sound, odors, and moisture. Water vapor from bathing and cooking an build up and provide an environment for mold and fungal growth, but earthen walls and plaster have an enormous capacity to moderate humidity. Also, straw bales finished with plaster, or in combination with straw-clay walls, are virtually fire-proof. Used to create floors, earth provides thermal mass for direct solar gain and a surface to walk on that is easy on the body.

While the cost of using on-site natural materials is often "dirt-cheap", techniques vary in how much work they take in order to use. Even using machinery, such materials as cob, straw-clay, adobe and rammed earth walls are very labor intensive. But building with bales can go very quickly, as it's basically the stacking of giant building blocks without mortar - although people *can* make it more complicated. So using bales for exterior walls and clay-straw techniques for interior walls is consistent with conserving both fossil fuels and human energy resources in our buildings.

By simply orienting our homes to the sun and using an insulating thermal mass, comfortable shelter can be created primarily from natural materials. Understanding their properties and how they can complement each other will lead to the most energy-efficient combinations without limiting creativity. The natural home, then, is an extension of a permacultural landscape, functioning as a healthy sustainable environment that nurtures human life while using primarily regenerative resources.

Catherine Wanek is Managing Editor of The Last Straw, *the grassroots journal of straw-bale and natural building. Producer/Director of the* Building With Straw *series of videos, her most recent video is titled* Urban Permaculture. *She and her husband Pete Fust operate the Black Range Lodge in Kingston, New Mexico, which they are developing as a demonstration center for sustainable living. Catherine was a key organizer of the* Build Here Now *convergence. She can be reached via e-mail at* <blackrange@zianet.com>.

Organizational Structures That Stack Functions

by Christopher Peck

The following is an interview with Jeff Lahl, Executive Director of the Real Goods Institute for Solar Living, a new non-profit educational organization associated with the Real Goods Trading Corporation.

Christopher: *Jeff, could you tell us a little about your role at the Institute for Solar Living and the mission of the Institute?*

Jeff: The Real Goods Institute for Solar Living (RGISL) was created by John Schaeffer in 1998 to continue an expand the educational programs initiated by Real Good Trading Corporation (Real Goods), a publicly-owned company also founded by John. Real Goods is one of the oldest and largest U.S. companies selling products and information that promote renewable energy and "eco-friendly" living, The mission of the new non-profit is "promoting sustainable living through inspirational environmental education". John, as Chairman of the Board of Real Goods and President of the Institute, provides direction, creative input, and hard work in building a strong Board of Directors. As Executive Director, I manage the day-to-day functions of the organization with the assistance of Karen Hensley, public relations and education coordinator, Jason Miller, site manager for the Solar Living Center (SLC) in Hopland, California, and two landscapers.

I've come to this position from a background in various solar energy-related endeavors ranging from designing and building passive solar homes, developing and teaching solar technology classes at a community college, to managing photovoltaic electrification projects in the South Pacific as a Peace Corps volunteer, and working ads a renewable energy system designer and salesperson. My current position brings together my experiences with renewable energy and education, while being in at the beginning of a new non-profit satisfies my need for creative and meaningful work.

C: *What are some of the ways that RGSL has focused and applied its mission? What projects and work is it undertaking?*

J: The Institute focuses its mission into three program areas. Our oldest and most well-established program is the Institute for Solar Workshop series, which was initiated by Real Goods eight years ago. This year, we are offering around 30 day-long workshops on topics ranging from photovoltaic system design, strawbale construction, and sustainable waste water design to passive solar design and more. Approximately 400-500 people take these course each year, which are held at the Solar Living Center.

The SLC is also the venue for SolFest, our annual summer solstice celebration and learning event. In thepast, the event has attracted as many as 6,000 people for a weekend of workshops, speakers such as Ralph Nader and Amory Lovins, and electric vehicle parade, and exhibits of green products. This year, our program featured Dr. Helen Caldicott, Scott Sklar, Denis Hayes and John Trudell, as well as a concert by Leo Kottke. We also doubled the amount of workshops to around 40.

Our third program area is to continue the development of the SLC into a major regional learning and demonstration center for sustainable living technologies and practices. The 12-acre site features working renewable energy systems (photovoltaic and wind), ecological building design, creatve uses of recycled and reused materials, and sustainable horticulture. We also have started a program of developing interactive learning exhibits dealing with renewable energy technologies, recycling, bioremediation, and solar cooking, to name a few, that are focused on school-age children. We already get dozens of school groups visiting our site who find their way here with no promotionon our part. As we receive grants, build more exhibits, and actively promote the SLC, we see tremendous potential to reach hundreds of Northern California schools. It is particularly exciting to be able to reach these young minds before they are entrenched in the destructively consumptive lifestyle patterns, which are so slow to change among adults.

Our long-term vision for the SLC includes the development of a food service and classroom/conference building that will enable us to expand the types and number of learning evens we host at the site. In terms of bio-development, we would like to become a truer example of a site developed according to permaculture principles. We havemany of the elements already, but they are not arranged in the most efficient and cohesive patterns.

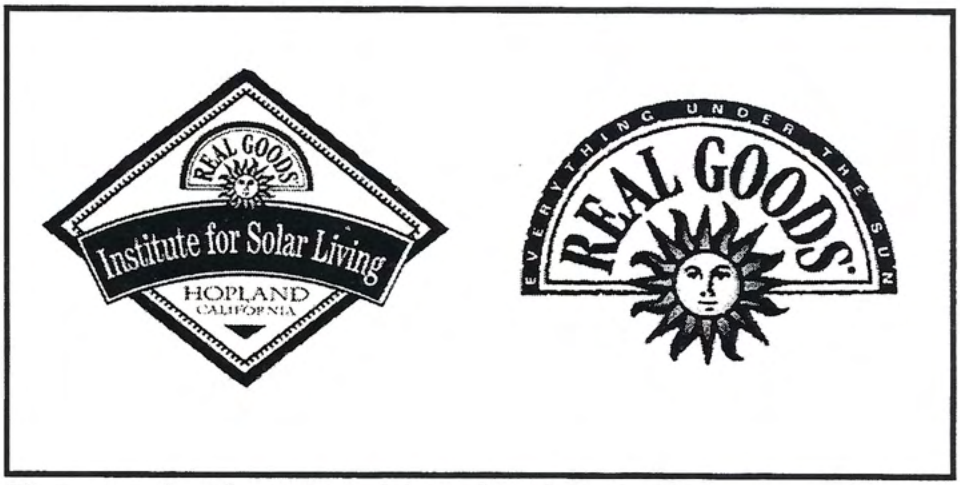
C: *What is RGISL's relationship with Real Goods?*

J: The Institute is an independent 501(c)(3) non-profit organization that nonetheless has a close, symbiotic relationship with Real Goods. To begin with, our three program areas were all initiated by Real Goods. We have taken them over for expansion and further development. We are directly supported by Real Goods in terms of leasing the SLC at a very low rate, and by receiving low- or no-cost promotion in catalogs and other Real Goods publications. We also share administrative services such as accounting and graphics, most of which we pay for. We are borrowing some of our initial operating funds at no interest from Real Goods until we further develop our own fund raising resources. therre are also numerous informal connections in which Real Goods personnel help out on a personal level, as teachers for our workshops to volunteers at SolFest.

C: *How does the physical presence of RGISL at the Real Goods store site at Hopland affect its mission and work?*

J: First of all, we see the SLC as being the Institute's site that has a Real Goods store present instead of the other way around. Of course, this is a matter of perception, but our view is that the SLC is essentially a demonstration site and the store is similar to a shop in a museum that supports many of our educational goals. I'm sure quite the opposite view presides at Real Goods!

Also, because the store has such a dramatic physical presence, has an interesting array of products, and is just plain fun to visit, it tends to dominate the experience of many visitors. Accordingly, we have our work cut



The Institute for Solar Living and the Real Goods Trading Corporation are developing a synergistic relationship which enhances the purposes of each organization.

out for us in our tours and focused communications to delineate the differences between the two organizations. We expect this to be a continuous challenge for another year or two as we establish our own identity. The up side of having the store on site is that it alone attracts many of our visitors, who we can then expose to our educational programs. Fortunately, the store itself is an educational device, with its strawbale construction, passive heating and cooling systems, and solar rainbow clock. We spend quite bit of time on our tours showing off the innovative eco-design featuresof the building, which has won numerous national design awards.

C: *With the permaculture principle of stacking functions in mind, could you reflect on how RGISL and Real Goods manifest this princple?*

J: This is an interesting question, and there are many examples. A major one can be constructed around our workshop program. As previously mentioned, Real Goods advertises our workshops in catalogs, which have a large national distribution. This exposure brings the Institute many students, while at the same time Real Goods, through association, maintains its long-standing position as a company that promotes environmental education.

Multiple benefits continue as students show up at the SLC for the workshops. During lunch breaks or after class, students often visit the store to purchase books or tools that pertain to the subject matter they are studying. Cross-promotion also happens in the on-site Real Goods store, as people coming to browse or buy see the Institute informational displays inside the store and end up registering for one of our workshops. A similar process happens at SolFest.

From the customers'/students' point of view, a trip to SLC can fulfill several needs. They can partake in a high-quality learning experience, buy follow-up reference materials and gifts for the family, keep the kids busy in an interactive play area, and picnic on the grounds. In essence, having both the store and the Institute present provides more reasons for people to come here, which makes the SLC a "destination" that is worth the drive from the greater San Francisco Bay area, the main source of our visitors. The combination of the Institute and Real Goods at the SLC offers the visitor much more than either organization could offer on its own.

C: *How does the combination of non-profit and for-profit organizations work?*

J: For the most part, it works well. Again, the major challenge is to establish our own identity and to make sure we are not seen as just a sales promotion are of Real Goods. To be sure, in the ways outlined above, Real Goods does benefit from Institute activities, but the Institute also stands alone as a well-established and growing provider of environmental education. Sharing the "Real Goods" part of our names has been both a benefit and a liability in terms of fund solicitation. On the one hand, as I've been soliciting sponsors for SolFest, major players from the renewable energy industry have signed on because of the Real Goods name and their business relationships with Real Goods. On the other hand, some potential sponsors outside the industry hear the words "Real Goods", can't separate the two organizations in their minds, and can't see why they should donate money to a company. In addition, because John is so heavily associated by most people with Real Goods, it's hard for many to realize he's wearing a different hat when he's communicating about the Institute.

Some of the ways we are forging ourown identity are by reaching out and establishing relationships with kindred organizations, and by looking for ways to network and cross-promote each other's programs. As we do this, we become mroe "polycultural", and are known by our many relationships instead of by just a "monocultural" relationships with Real Goods. In addition, this year we opened up SolFest by inviting competitors of Real Goods to come and have booths. Our vision fot his event is to have it evolve into a more general northern California environmental fair rather than it being only a Real Goods event.

In spite of the identity issue, there are overwhelming benefits to the Institute's association with Real Goods. Without this relationships, we would not be starting out with a fully developed 12-acre demonstration site, we would not have national and international name recognition, and we would not have low-cost promotional access to the hundreds of thousands of people on the Real Goods mailing list.

I can't speak for Real Goods, but I imagine that on a plane above the business level, the Institute represents the expansion of the mission of the company, which I know for many employees is the "heart and soul" reason for being a part of the company. We know that in this respect, we represent the vision and commitment present in both organizations.

In the end, our identity will be established by the history of our actions and by communicating what these actions are to the public, which is essentially education. We're getting better at and are learning to do this better all the time.

Christopher Peck is a long-time teacher and current Curriculum Director of Permaculture Drylands Institute. He is also the owner of Holistic Solutions, a consulting company. He can be reached at ctopherp@aol.com.

When Not-for-Profit Organizations Join Forces

by Jim Brooks

The New Mexico Organic Growers Association (NMOGA) was formed 23 years ago in 1976. According to the Articles of Association, Article 2 states that the purposes of the Association are to:

A. Promote interest in ecology and conservation of the soil;

B. Sponsor such activities as the landscaping and cultivation of plants, flowers, herbs, fruits, and vegetables, using the organic (natural) or biological method of growing; and

C. Disseminate information on organic gardening and farming subjects through public lectures, publications and Association meetings.

At the time NMOGA was formed, there was no organized local (Albuquerque) group addressing the problems or the possible alternatives to chemically intensive gardening. As such, NMOGA began to publish a monthly newsletter called the *Southwest Organic News*. This publication became a major focus of the Association, and it featured articles written by local gardeners and other experts about organic gardening and farming in the desert Southwest. The Association also became a member of the Albuquerque Council of Garden Clubs. This membership provided a permanent site for monthly membership meetings and gave NMOGA the opportunity to participate in many Council-sponsored events. The combination of these two elements gave the Association a great deal of exposure in the community.

The members of the NMOGA have, over the years, written articles, hosted garden tours, participated in fairs, manned booths, and sponsored educational events for schools and other venues, all of which gave the organic community recognition. Many of the folks who organized these activities and dedicated their resources to it are the same ones who have been doing it since the 70's; that's a long time to be planting seeds. But the payoff has been substantial. The membership has grown to over 350 people, which provided adequate finances to support the volunteer outreach efforts. However, the number of active members remained small.

In 1993, I was elected as President for a two-year term (those two years are still not over!), and one the responsibilties of the office is to increase member participation. I had been and still am active in the areas of permaculture, particularly soil conservation and composting. I have always perceived a clear link between those activities and organic gardening. In keeping with the permaculture principles of making beneficial connections and stacking functions, I began to encourage people I knew to attend th monthly NMOGA meetings and serve as guest speakers on occasion. As such, we began to see a great increase in attendance.

> "(We discovered that) activities could be stacked in order to improve the quality of outreach while reducing the workload of existing volunteers."

Not surprising, many of the new members of NMOGA were also active in the permaculture field, organic methods of food production being a basic tenet of permaculture design. In April 1998, Bert Lopez made a presentation to the NMOGA about permaculture about the 200-member Albuquerque Permaculture Guild (APG).

The Guild had emerged out of a Basic Permaculture Design Course sponsored by Permaculture Drylands Institute (PDI). The Institute had invested financial resources in Albuquerque as part of the profit-sharing plan for organizing the course, and this catalyzed the formation of the Guild. Officially, the Guild remains part of PDI, but it functions autonomously in terms of its activities. It has used its resources to publish a regular newsletter about permaculture in the Albuquerque area, and it has sponsored monthly meetings and breakfasts, educational presentations and events, workshops, and school projects. The APG has also continued to promote and organize PDI's Basic Permaculture Design Course held annually in Albuquerque, sharing in course profits.

In becoming aware of the purpose and activities of APG, it became clear to NMOGA that there was beginning to be some duplication of efforts between the two entities, which elucidates an opportunity to share resources. Both organizations were publishing newsletters, organizing booths, and sponsoring workshops and presentations.

Another similarity between the groups was that a few people were doing most of the work, which had been the case for many years, despite the pleas for help. It became clear that a synergistic relationship might be warranted. While both APG and NMOGA were trying to accomplsh very similar goals, similar activities could be stacked in order to improve the quality of outreach while reducing the workload of existing volunteers. From NMOGA's perspective, it could offer membership in the Council, an established meeting place and time, an experienced newsletter committee and editor, and a large membership which would undoubtedly be interested in the permaculture perspective.

During meetings over the next several months, APG and NMOGA initiated a collaborative effort to reduce volunteer burn-out while improving the effectiveness of both groups. The groups thought that this alliance would bring fresh blood into both organizations.

Currently, the newsletter continues under a new name which reflects the relationship between the two organizations. Members from both groups contribute articles and announcements, and the joint newsletter reaches a much wider audience.

New people have joined the steering committees for each organization, giving those long-time volunteers a chance to breathe. New plans for activity are emerging, and only time will tell how this great synergy will evolve.

Jim Brooks is President of the New Mexico Organic Growers Association and a teacher with Permaculture Drylands Institute. He owns Soilutions, a compost company in Albuquerque.

www.Permaculture.Net

by John Irwin and Greg Peterson

Simple. Easy to remember. That was what PDI member and Phoenix resident Greg Peterson had in mind when he obtained the rights to *www.Permaculture.Net* for a new web site. He didn't even know how he was going to use it, except to network and promote permaculture in some way. When he became the publisher and distributor of the American Permaculture Directory, and put the web site online, the vision began to take shape.

The site performs many functions. One can learn about permaculture by viewing definitions extracted from the Directory, check Directory listings, order single or multiple copies, fill out forms for free personal, business, and class listings, list a permaculture course, or ask for information from the Directory database but not in print.

Earlier this year, a site section was added for Permaculture Drylands Institute. Initially, the site featured information about permaculture, the Institute's mission and goals, membership categories, course listings and descriptions, and sample publications. (Given PDI's restructuring, the web page will be narrowed in focus to feature only course information, community contacts, and *Permaculture Drylands Journal* back issue ordering information).

> "I would like to see Permaculture.Net as a collaborative website with different communities contributing to the whole of it."

Permaculture.Net also provides a listing of national and international permaculture apprenticeship and internship opportunities, which is particularly useful for individuals looking to gain hands-on experience after taking a design course.

These functions are only the beginning of what will be a very comprehensive website. There is a good chance that the Canadian Permaculture Network and the Eastern Permaculture Network will be added in the near future, and that organizations like these may offer members a web page as part of the package. Greg has enlisted interns such as Jason Bavington to work on the presentation and mechanics of the site.

Greg: I would like to see Permaculture.Net as a collaborative website with different permaculture communities contributing to the whole of it. Perhaps each group could take responsibility for sourcing a particular part of the site, and one person could manage the site and make sure linkages are operating properly.

I would like to see a comprehensive and interactive site as well, including class schedules and outlines, internship information, demonstration site listings, books, and book reviews.

I would like to see the site become sustainable (a novel idea, I know) through the sale of web space, e-mail addresses @ Permaculture.Net, and perhaps a permaculture bookstore.

At the moment, one of the things I am very clear about is I can't and don't want to do this project on my own. While I am willing to source, co-create, visualize, and write code for the start-up phase of the project, I need help in the forms of visioning, inspiration, hard work, money, research, and good ideas.

Anyone is welcome to check out the site, offer suggestions, and vounteer creative contributions. I see this as a two step process. The first step is to act as a collection point for permaculture data, including information on classes, course graduates, other websites, and permaculture businesses and demonstrations. This information could be provided to the end users in a very limited way with the limited resources currently available.

The second step is to make the site interactive, which would allow users to type in questions and receive answers from the interactive database, which has yet to be constructed. I have recently initiated a dialogue with a friend who designs web databases, and there is much to consider. For example, how can we make this tool most useful for you and the permaculture community? How can we make it most useful for the non-permaculture community, and how do we draw in those people? What data should we track?

Finally, it will important to think about how to make the whole web site sustainable. This is important for several reasons: nothing survives on volunteer energy alone, and it would be great to generate sufficient financial resources to reinvest in the permacultural services offered through the site.

John: This website is clearly in the beginning evolutionary phase. It is, in permaculture language, a small scale trial. The site is being used, and without any promotion. Once it is fully operational with the appropriate design elements, it can be properly promoted and linked to other relevant web sites.

> "I would like to see the site become sustainable through the sale of web space, e-mail addresses @ Permaculture.Net, and perhaps a permaculture bookstore."

Clearly, the site as we all see it will serve multiple functions. It has the potential to be a place where people learn, network, list calendar items, check out upcoming events, access businesses, demonstration sites and internship opportunities, purchase materials, comment on pertinent issues, and use the database to find people and information.

At the moment, it is clear that the site can serve many functions. What remains to be seen is how the function of developing the site will be supported by many elements, namely those of us in the permaculture field.

So check out the site, and if you are so inspired, get involved and help in the ongoing collaboration to make Permaculture.Net reflect permaculture principles in its design and operation.

John Irwin is the author of the American Permaculture Directory. He can be reached at: jwirwin@Permaculture.Net. Greg Peterson is the publisher of the American Permaculture Directory and the designer of Permaculture.Net. If you're interested in a Directory, web site or e-mail address, contact him at: greg@ Permaculture.Net .

Supporting Local Growers Fosters Economic and Agricultural Sustainability

by Barbara Gerber

In an increasingly complex world, some of our simplest tendencies are lost. Even when we make decisions about our most basic need — food — the benefits of living simply, with a true sense of place, must be consciously relearned.

The MarketPlace Natural Grocery, a small, independent retailer in Santa Fe, New Mexico, is intimately involved with this phenomenon. The company has discovered that the only way it can buy and sell a substantial amount of locally grown produce is to constantly educate its customers as to its benefits, while steadily working to initiate and nurture relationships with individual farmers. It is as if the instinct to be part of a community, beginning with simple proximity, lays buried within us and must be repeatedly stimulated.

From the element of proximity comes the simple act of buying and eating that which grows around us, and with this comes many benefits: consumers get the freshest food available; less resources and fuel are used in transporting food to market; money stays in the local economy; local growers are supported, and are thus more likely to stay connected to their land and utilize their water rights; and the relationships created among growers, buyers and consumers strengthen the bonds of community.

So what could possibly be the problem with buying local, and largely organic, food? Why should it require so much extra effort on the part of the retailer? What obstacles must be overcome? The answer is simple: food from small local growers usually costs more than that grown on large, corporate farms.

"Consumer education is an ongoing challenge," says Richelle Elder, produce department manager at The MarketPlace. "If it drops off, sales of local produce also drop off."

Richelle explains that The MarketPlace uses a multipronged approach to consumer education. Signs in the produce department tell customers where a product was grown (with farm name and location) and by what method (certified organic, non-certified organic, transitional, hydroponic or conventional). A dry erase board announces what local produce can be found in the store on that day and includes any other pertinent information, such as shortages due to drought or freezing.

Consumer education also comes from Richelle's firsthand knowledge, which she passes on to her employees and customers. "I try to visit as many farms as I can, to develop a rapport with the farmers," she says. "Especially those who don't get certified — I feel I need to visit these farms as an added reassurance, to have more than their word on how they grow."

> "It's more work to buy local, it's more work to market organic produce. We do it because we believe it's the right thing to do."
>
> *-Doc Sedlow, co-owner, The MarketPlace*

For several years, the marketing department at The MarketPlace has created weekly newspaper ads featuring individual farmers, with each ad containing quotes from the farmer, a photo and information on the farmer's growing methods. The ads run from May through October, and are also reproduced and displayed in the store.

Richelle reports, however, that one year, when there were no active ad campaigns, customer support for local produce flagged and sales dropped. "I was being told that I was too high-priced," she says. "But through educating the customer and working with the farmers on price, I saw that customers were willing to pay a little more."

The 1998 "Miles to Market" campaign particularly targeted the element of proximity. Ads and item signs told the number of miles the food had traveled from field to table — for example, a bunch of California chard traveled 1,420 miles, while a bunch of locally grown chard traveled 26— and a map of the state showed the location of every farm from which The MarketPlace purchased produce, meat, dairy and grocery products.

"That campaign really brought it home for people, that they should know where and how their food is grown," says Richelle.

"Marketing is the key to the success of both local and out-of-state organic food," says Doc Sedlow, co-owner of The MarketPlace. "Farmers can grow organic forever and ever, but if nobody buys it it's not going to work." But while educating consumers about the benefits of buying organic has been a huge effort worldwide for at least 20 years, it is still a struggle.

The issue here, again, is price. When a customer balks at the price of, say, an organic pepper, that resistance is rarely due to ignorance. That no pesticides, herbicides, fungicides or fumigants were released into the soil, air or groundwater to grow the pepper, that the farm workers were not endangered by those harmful chemicals, that the food is more vital, that future generations will benefit from the fact that this pepper was grown organically — all of this can fall away in the face of an item sign that may read "$5.89 per pound."

"All you can do is give people information and they'll take it in when they're ready," says Jill Markstein, founder and co-owner of The MarketPlace. "You can't try to scare them into it or shame them into it or be elitist about it. Money concerns are real for people."

Since price is such an issue for many

customers, Richelle has to remain flexible with pricing local produce. "I go a lot by feel. I use the California market price as a guide and also work back from the retail price that (the grower) gets at the farmers' market. I never go below California prices and I often go 10 to 15 percent higher. On some items, like salad mix, I'll take a lower markup, because it's so labor intensive for the farmer. We work together to arrive at a fair price."

And while it is a whole lot easier for a buyer to pick up the phone and order case lots from a distributor, to receive deliveries at a set time, to store well-labeled uniform boxes and to pay few invoices, The MarketPlace is committed to buying local produce over out-of-state produce whenever it is available.

To make this work, Richelle goes to the farmers' market twice a week to order directly from the growers, makes sure she or another buyer is available at the store during market days to maximize a grower's trip to town, accepts deliveries in irregular boxes, crates and bushels (and then recycles them back to other farmers), and spends a lot of time chasing down check-signers in the store to pay tiny invoices.

"It's a ton of work," she says. "There are so many personalities to deal with. It can be emotionally draining, like when a grower delivers inferior quality product, or has, say, 200 pounds of tomatoes and I can only sell 100."

This year The MarketPlace has, on a small scale, begun contracting with local growers for product, thus adding a whole new dimension of support for the farming community. "This is a trial season," says Richelle. "We're only working with one or two growers and will slowly expand it if it works."

In what essentially amounts to prepayment of product, The MarketPlace extends an interest-free loan to a trusted grower in exchange for guaranteed product. The loan is extended in the spring, when a farm's expenses are at their highest and its income is at its lowest. During the season, until the loan is paid off, The MarketPlace pays only 80 percent of that farmer's invoices, while 20 percent is applied to the loan.

"It's a community service," says Richelle. "It's helping the farmer get through a tough part of the year....We're guaranteed product, but we also run the risk of crop failure." Richelle explains that once product becomes unavailable, either because the season has ended or a crop has failed, any balance left on the loan must be paid off within six months.

"The loans are small enough that we fully expect them to be paid off by the end of the season," says Sedlow.

Despite this arrangement, a contracted farmer still controls what he or she grows. "If they ask me what I need, what we're lacking, I'll tell them," says Richelle. "People should grow what they like to grow, and what grows well in their area."

Richelle runs the produce department at The MarketPlace with permaculture principles in mind. (She has completed a Basic Permaculture Design Course, has interned at Central Rocky Mountain Permaculture Institute, and coordinated and attended a 1995 CRMPI tour of permaculture sites in the Southwest and Mexico.) Personnel management, for example, is not linear..

"Everyone knows every function," Richelle explains. "Everybody knows how to price, how to order, how to receive, how to program the registers, how to display. It's an information loop....I have to get information to them, they have to get that information to the customer and I need to get the customer's feedback. It's not sustainable for me to be the sole controller."

There is also no such thing as waste in the department. "What comes in the door beginning to wrinkle, the MarketPlace deli or kitchen will try to use it. If there is too much for the deli the produce goes to Kitchen Angels, a feeding program associated with a local food bank. Finally, what is inappropriate for any of these uses gets combined with trimmings and rotten produce and is given away for animal feed or compost to anyone who wants it.

"It's more work to operate sustainably," says Sedlow. "It's more work to grow organically, it's more work to buy local, it's more work to market organic produce. We do it because we believe it's the right thing to do. Organic benefits us now and leaves a healthy legacy for the seventh generation."

Jill Markstein, founder and co-owner of The MarketPlace adds, "This is our community — it's up to each of us try to nourish and strengthen it."

Richelle Elder examines some of the fresh organic produce brought into The MarketPlace by Don Bustos of Santa Cruz Farms. Photo by Barbara Gerber

Barbara Gerber is a Santa Fe writer and editor who writes frequently about sustainable agriculture and food safety issues. She can be reached by e-mail at <bgerber @swcp.com>.

Living Together: The Weaving of Events

by Jo Miller

Stacking functions facilitates a web of connections and a weaving of events. The connecting processes vital to designing a system with stacked functions can also facilitate the creative energy of a group.

In July of 1997, the Director of the Phoenix Zoo approached me about providing a permaculture consultation for the renovation of the children's farm area now called Harmony Farm. I enlisted the help of five other permaculturists in Phoenix. Scott Frische, Marc DiMaggio, Debra Capponi, Greg Peterson, Brandy Winters, and I make up the permaculture team here in Phoenix. This consultation would be the first time we would work together on a project as a group. The zoo accepted my proposal to complete a permaculture assessment and gave us a deadline less than three months away. I had estimated the project to take 4 to 6 months.

At times we were all amazed at how the project seemed to fall into place. In retrospect the group process that emerged was very similar to the process of making connections between components, a necessary and mostly invisible link in creating stacked functions. Bill Mollison, in Permaculture: A Designer's Manual, identifies key concepts in this process as follows:

(1) Relative placement - putting components where they can serve each other to encourage self regulation.

(2) Finding the right placement - placement of a component in a nurturing environment it can thrive in.

(3) Arrange some connections - identify when intervention/assistance is necessary.

(4) Observe and regulate - observe what has been done and determine when and how to and guide the system to self-regulation.

Interestingly, our group dynamics often paralleled the key concepts used to design stacked functions. The following are some examples of how our group process related to the key concepts:

(1) Relative placement - putting components where they can serve each other to encourage self-regulation. At the first meeting we identified the unique talents and gifts each person had to share and discussed our limitations. Each person was encouraged to look at their comfort level in regard to time commitments and level of involvement. A trust was fostered in the group that we all fit together, that the work we would do individually would naturally integrate.

(2) Finding the right placement - placement of a component in a nurturing environment it can thrive in. Each person was encouraged to choose work assignments that would follow their bliss. We each gained more and more confidence as we witnessed the accomplished work and enthusiasm of the others.

> The story that emerged in producing this site assessment was living together, of finding appropriate ways to live with plants, animals, and each other.

(3) Arrange some connections - identify when intervention/assistance is necessary. Our permaculture team met weekly to identify tasks needing to be completed and to provide mutual support. If there was work that no one claimed as their own, we would discuss the use of outside resources such as other permaculturists, local resource people, and employees at the zoo.

(4) Observe and regulate - observe what has been done and determine when and how to guide the system to self-regulation. We had four people working on individual writing assignments that we would eventually integrate into one assessment. Very few expectations or directives were attached to these assignments. Each assignment was presented to the group for review. Diverse writing styles and perspectives emerged. The trust fostered from the first meeting and nurtured throughout the process allowed the work to grow without anyone becoming too anxious or controlling about the outcome. We would discuss the placement and relationship of the work presented, but for the most part, given a little time and room to grow, the created works just fit into place.

Although I have listed the key concepts and outlined examples, this experience really happened in a very nonlinear, spontaneous fashion. Right action and process evolved. What occurs naturally in living systems and what is inherent in a functional design also occurred in our group experience. A connection, a synergistic energy, an organic growth weaved itself into our experience, and the work took on a life of its own. This is the part of functional design that may even touch upon creation itself. What an exhilarating feeling to be a part of such a creative group work effort!

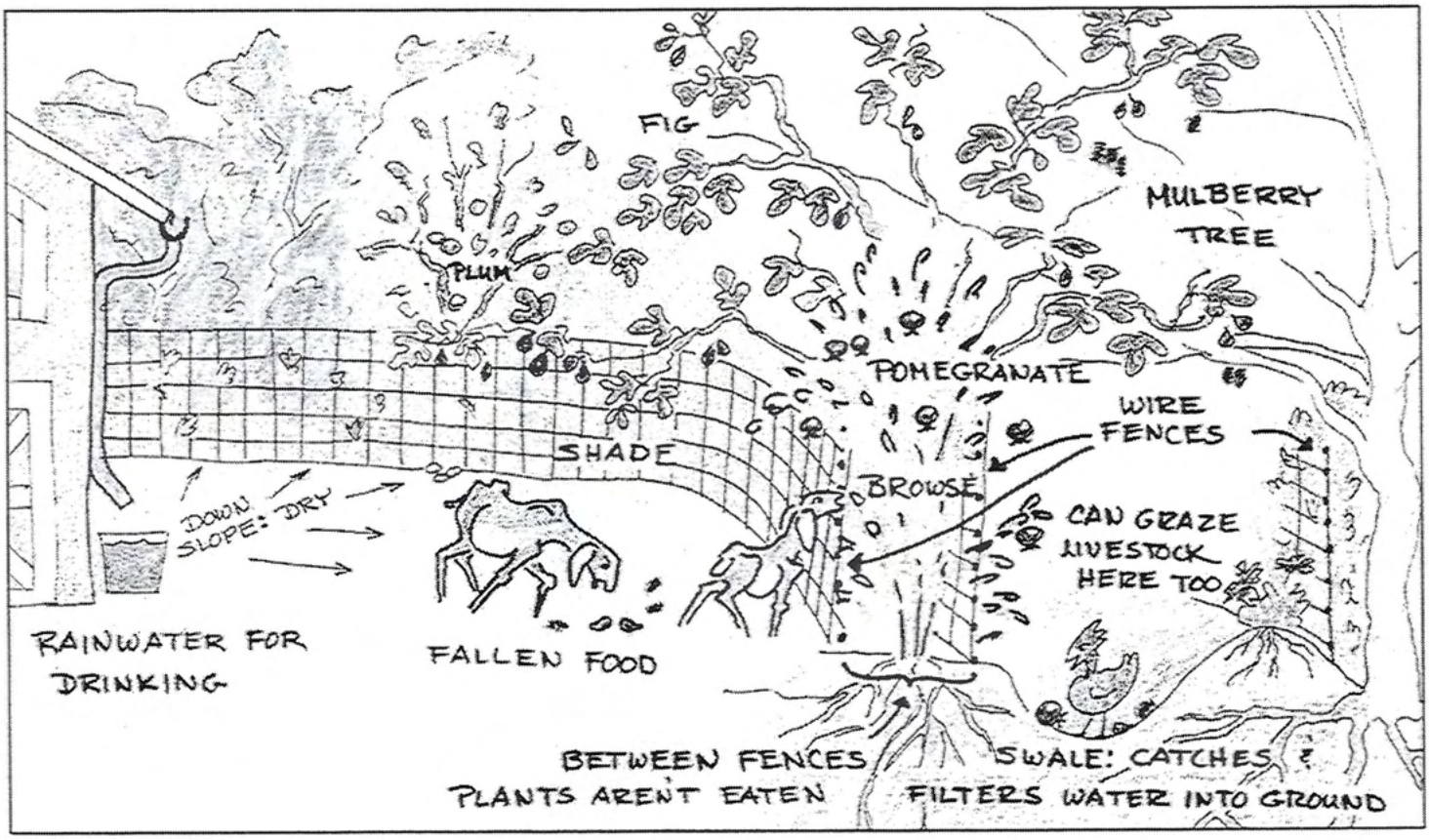
CREATION

Individuals in the group produced some unique examples of the principles of stacked functions. Brandy Winters drew an illustration depicting the renovation of the children's petting area using permaculture design principles. As you can see, the illustration informs the viewer about stacked functions and appeals to all ages and levels of awareness. We used this illustration for the cover of our assessment.

The story that emerged in producing this site assessment was living together , of finding appropriate ways to live with plants, animals, and each other. Living together became the title and theme of the assessment. Naturally, a functional farm will model ways of living together. As a part of the conclusion of our assessment, Scott Frische wrote the following story about Farmer Joe at Harmony Farm and his vision of a functional farm:

THE FARMER JOE STORY

Based on the observation of natural systems, Farmer Joe understands that he can maximize the beneficial connections between the elements: plants, animals, buildings, roads, people, etc., on his farm. In order to do this he must analyze these elements and develop a basic understanding of what they need for



A permaculture design for the children's petting area of Harmony Farm at the Phoenix Zoo. Drawing by Brandy Winters

good health and maintenance and what they will yield in the form of products and behaviors. This knowledge will assist Farmer Joe in determining the most useful placement of his elements.

The first element he analyzes is the chicken. He writes down as many of the needs of a chicken as he can thing of: food, water, shelter, grit, dust, air, and other chickens. Then he lists the products and behaviors: eggs, meat, manure, feathers, methane, carbon dioxide, foraging, scratching, and noise. Later, when analyzing the needs and products of his fruit orchard, Farmer Joe finds that many of its needs, like fertilization, weed control, removal of fruit-drop, insect management, and pruning of suckers, can be taken care of in whole or part by the chickens' foraging, scratching, and dropping manure. Therefore, some of the work needed to maintain both the orchard and the chickens can be delegated to the chickens by placing them in the orchard at the appropriate times.

As each element is assessed for needs and products, a plan emerges for an integrated farm design. Runoff from the barn roof fills rain barrels which, once filled, spill excess water into a swale that waters the trees that shade the west side of the corrals and barn and drop edible bean pods over the fence to the goats. The road into the farm is part of a fire break. Placing this road on a contour minimizes erosion and maximizes captured runoff which waters the plantings of fire resistant plants that also function as a windbreak.

Farmer Joe gets as many functions as possible from each element while having as many elements as possible perform each function. This stacking of functions and elements reduces the human input needed to maintain the farm and eliminates much of the on-site pollution generated by formerly unused or underused products.

Through the proper placement of elements, Farmer Joe's farm will yield both products and functions.

CELEBRATION

All along the way, we have been concerned about the interpretation of our assessment and about getting our efforts to work on the ground. It is easy to become impatient about the implementation and application of design principles. We want so much for others to embrace the concepts and see as we do. Bill Mollison states, "To become a good designer is to be in search of an understanding of nature, and to be content with the search itself." In reading this statement and remembering our group experience, I am reminded of the importance of honoring and celebrating the means. Our journey was as important as the end product. Our celebration will lead us to the creation.

Harmony Farm opened to the public in November of 1998. Permaculture at the Harmony Farm site has started small and is building on successes. Scott Frische has secured a full time position at the zoo, with the job title of Permaculturist .

Jo Miller is a fifteen-year business owner of Natural Concepts. She provides consultations in permaculture, feng shui, and landscape design. Currently she is developing the EcoSmart Program for schools in the Phoenix area. She can be reached at 602-482-2875 or NaturConc@aol.com.

Work for Love

by Michael Kramer

Given all the prosperity in this society, it is interesting that our success has not created any less stress and anxiety in our lives. In fact, it seems that we are trapped by our own standards of success to the point where we sacrifice our health and well-being just to reach and maintain a certain level of earning capacity. Many work long hours, and/or work at jobs which are completely unsatisfying, just to get the almighty dollar. Most of us go into debt to have things that we think we need but really do not need.

As odd as the emphasis on money is in this society, even more perplexing is how we have chosen to prioritize it over other aspects of our lives, such as our personal health, intimacy, play, relaxation, and family.

We assume that job-related stress is something which *must* be a part of our lives. We try to endure these stresses year after year, but clearly we have trouble coping. This is why our society is impatient and verbally and physically abusive, why we face such a major substance abuse problem, why crime rates are so high, why people get heart attacks, and why people are not so happy with their lives. It also explains why sedatives like television and electronic entertainment have become so popular; we like to numb our anxiety and emptiness with artificial stimulation.

POOR LIFESTYLE DESIGN

The truth is that while we place far too much emphasis on work, the real problem is the relationship between work and the rest of our lives. Currently, we live fragmented lives, and this isn't healthy. We force ourselves every day to make very clear distinctions between work, rest, family, and play.

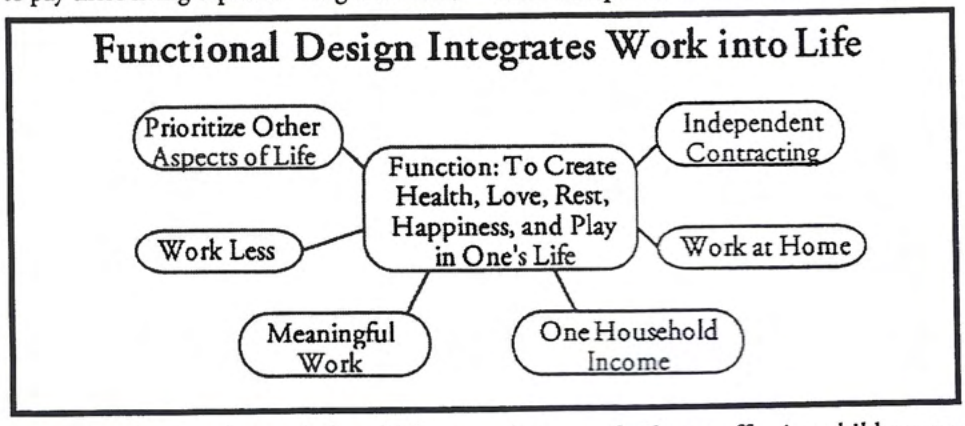
For example, even though most of us live in a home, the fact is that we are, statistically, spending less and less time there. This explains why most Americans' homes are not designed to support many aspects of who we are as people. Although they feature places to sit, cook, eat, sleep, and clean ourselves, our homes do not usually support our spirit, our physical health, our work, or our emotions. Given that the home is essentially Zone 1 in our lives, it is strange that we do not design these homes to support us well.

As most homes are rented or mortgaged, and require us to pay insurance, utilities, and the labor for repairs and maintenance, we must work outside the home to pay these living expenses. To get to work, we must have a car (or two), for which we must pay fuel, maintenance, insurance, and monthly payments. We also need to purchase food and clothing, go out and have a good time, and buy things to put in a home.

This lifestyle design is unsustainable. It requires us to put most of our attention into activities which will earn us money, so that we can then pay others to give us what we need in order to put a roof over our heads and food in our mouths, not to mention all the extra goodies. Since most of us are not directly responsible for our own survival - we do not build our homes debt free, nor do we grow our own food or make our own entertainment - we remain dependent, and therefore, unsustainable.

Americans are married to their jobs. To earn sufficient income to pay for basic needs, people must work very hard. And since people like to be good at what they do, the devotion people feel to their jobs is remarkable. It is amazing how so many lives revolve around employment situations.

In this society, people live in a community often because of job availability. All other aspects of life - marriage, family, health, environment, culture - are secondary concerns. Most employment situations are not designed to support the wholeness of our beings, but simply productivity. For example, it was only a few years ago that the Family Leave Act was passed, which enabled parents to take an absence from work to prioritize childbirth! Only very recently have parents been allowed to share one job, or work from home on occasion, so that at least one parent can be with the children at all times. Nevertheless, most parents send their children to day care and then school, so that they can "make a living" while their children are away from their parents most hours of the day. This does not facilitate effective child-parent bonding or sustain healthy family dynamics.



In terms of design, then, American community life is designed to support the workplace, and getting to and from the workplace. Our communities are designed to promote commuting because the neighborhoods where people live are not where they work. This in turn requires automobile or public transportation dependency, which requires continual economic investment while producing endless pollution. This does not sustain the environment, while commuting wastes a great deal of our time.

The image we see in so many movies and commercials of families rushing around in the early morning to grab a bite to eat and get off to school and work is nauseating. At the end of the day, most parents are too tired to deal well with their children, which means that most children are not getting enough love in their lives. This does not sustain children's self-esteem or a healthy family dynamic.

GOOD LIFESTYLE DESIGN

If we are to apply permaculture design to this unsustainable situation, we want each life design element to serve many functions, and we want each function to support many aspects of our lives. So how do we do this?

First, it is important to identify the functions in life that you want to support. Perhaps they include such things as quality time with family, enough income to provide necessities, fun and relaxation, healthy food, and making a difference in the community through work or service.

Prioritize these issues in terms of their importance. How do you rank issues such as employment, climate, noise, pollution, traffic, wilderness access, soil quality, public transportation, and education opportunities? We have unlimited choices in this regard.

In Los Angeles, where I grew up, people choose to endure two-hour commutes each way to work, and breathe in lead, just to live in a warm climate. In New York, people live in fear and noise just to have access to culture. Is it worth it?

A SUSTAINABLE WORK LIFE

I, like most of you, have sometimes lived for a job. I've allowed it to completely consume me. In fact, like most men, I've allowed my identity to be wrapped up by my job title. We men, and increasingly more women, see our worth primarily as serving some professional function. When people say, "So what are you up to these days?" we reply, "I'm an insurance salesman." We aren't really interested in who we are, but rather what people do for a living. We are economic robots, slaving away so we can have enough money to drink alcohol, watch satellite television, stay up all night on the Internet, or go on a two-week vacation once a year.

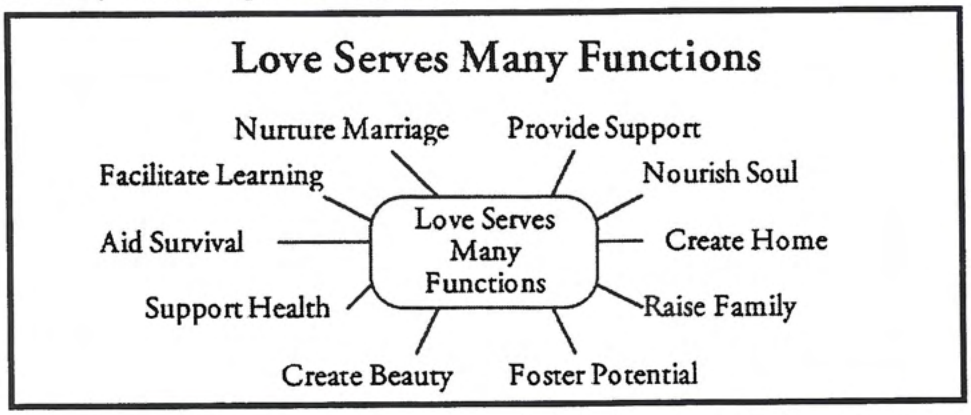
I would suggest, then, that a sustainable work life begins first with an acknowledgement that work is not the most important aspect of being a person on this planet, despite what all our conditioning and schooling has led us to believe. There are indeed more important things; for me, it's love, being in nature, and travel. So the design question then becomes, how do these things become Zone 1 in my life?

Let's focus on love. If love is so important to me, how will I nourish it by design? What my wife Lindley and I discovered, before we were married, was that seeing each other only in the early morning and evenings after work was not supporting us. We were both too exhausted to feel love because we were just too busy coping. The result was that our patience dwindled, our stamina for having fun or going camping diminished, and we wasted a lot more money treating ourselves to restaurants and entertainment just to create some pleasant moments. None of this felt healthy, but we didn't realize that we could change this reality.

After we married, we tried some different approaches. First, Lindley stopped working full-time outside the home. This is rare today because couples don't think they can survive on one income and because most adults feel obligated to be in the workplace making that type of a contribution. But what we discovered surprised us. First, with only me away at work, Lindley had more time to create a beautiful and well-functioning home, prepare healthy meals, make social arrangements, and be there emotionally for me. Because she was able to be well-rested, her energy and emotional stability actually began to rub off on me; I found being at home far more relaxing, and I also had more energy to go out and have fun. Our communication with each other improved, and our overall relationship flourished. It has been four years since this shift, and it has really strengthened us. Financially, we actually were able to save more money on one income than on two, because we were eating out, paying for entertainment, and driving less often!

A second design shift also supported our relationship. A few years ago, I decided to become an independent consultant rather than work full-time for one organization. This facilitated being able to work from home. Integrating work and home life is so supportive of our marriage and my own sanity. My time is more my own; it is flexible. I can eat many meals with my wife if I schedule it this way, and we see each other much more often. In addition, by being at home more, I am able to spend more time caring for our home and planting a garden, which I know I wouldn't have had time or energy to do if I left it for the weekends. Ironically, I discovered that I could actually make more money juggling a bunch of part-time contracts than I could working one full-time job, which allowed us to buy a home sooner than we had expected.

In terms of my other life priorities of being in nature and traveling, a flexible schedule allows me to garden or hike during some days, leaving indoor work activities like writing to the evening hours. Lindley and I can also take long weekends and extended vacations as we desire.



Last year, the integration came full circle, as Lindley and I formed a consulting partnership. Now we both work from home, and often on the same projects! This adds intellectual stimulation, cooperation, and income to our already dynamic relationship.

Rather than living for work, I have chosen to work for love. My ability to integrate love, play, relaxation, home, and work better supports me and these functions.

I don't pretend that my lifestyle design is suited for everyone. It is simply important for us all to realize that we can make our lives support our true priorities. We can stack life functions, and enhance more of who we are as people, through design.

Michael Kramer is a husband, musician, gardener, and educational consultant.

Permaculture Drylands Institute News

by Michael Kramer

As was reported in the Spring issue of *Branching Out*, PDI is reorganizing its operations in an attempt to be more successful. This conclusion was reached after the Institute attempted to broaden its scope and outreach over the past 18 months. Unfortunately, while some of the new ventures were successful in terms of profit and enrollment (e.g., survival skills workshops and the Convergence), others were not (e.g., the *Journal*, *Branching Out*, and Green Building Seminars).

PDI has always wanted to support itself through program fees and memberships, and not rely on grants. The membership campaign and program revenue did not enable to Institute to support an administrative office and staff any longer.

However, teaching has long been the strength of the organization. As such, rather than folding, the organization will return to teaching. The New Mexico and Tucson Teaching Teams are each very strong at this time, and as such, they will continue to self-organize Basic Permaculture Design Courses and other courses as they see fit. Both teams will continue to utilize an internship program to train and involve more permaculture teachers.

A smaller Board of Directors will have representation from these Teams (Nate Downey from New Mexico and Ann Audrey from Tucson), so that the issues pertinent to teaching will be addressed at the Board level.

PDI has decided to stop being a membership organization. It also will cease to be an information clearinghouse for worldwide inquiries related to permaculture. Finally, PDI will cease its publishing functions, which were never financially sustainable. As such, this is the last issue of *Permaculture Drylands Journal*. There will be no future issues of *Branching Out*.

As the primary contact point, PDI will still maintain and update its web site at *Permaculture.Net*. This site will list course and event dates and descriptions, and it will also direct inquirers to the two Teaching Teams and community guilds in Albuquerque, Las Cruces, Patagonia, and other places.

If you are interested in attending PDI courses or becoming a PDI teacher, please contact the Teaching Teams directly for assistance.

The New Mexico Teaching Team may also be planning the *2000 Natural Building and Permaculture Convergence* at the Lama Foundation. Contact the Team for details.

NEGOTIATIONS WITH THE PERMACULTURE INSTITUTE USA

Upon hearing of the changes within PDI, the Permaculture Institute USA, directed by PDI co-founder Scott Pittman, proposed to continue the legacy of PDI and eventually resurrect *Permaculture Drylands Journal* and the newsletter. In appreciation of this offer, the PDI Board of Directors has thus agreed to enter into negotiations with Permaculture Institute USA regarding PDI's assets. While no conclusions have thus far been reached, it seems likely that the Permaculture Institute USA will, at a minimum, have access to a copy of the PDI database. This had been anticipated anyway because PDI members would have been counted as members of the Permaculture Institute USA in order to join the forthcoming Permaculture Credit Union.

The ability of the Permaculture Institute USA, which is a sister organization to Permaculture Institute of Australia, to assume publishing and other potential membership functions rests in its ability to raise the funds for necessary staff. As such, there is no immediate plan to undertake such activities. You will hear of further developments in this regard as they become available.

CONTACT INFORMATION:

PDI web site:
www.permaculture.net

PDI New Mexico
Teaching Team: 505-983-0663

PDI Tucson Teaching Team:
520-572-1672

Albuquerque Permaculture Guild:
505-281-4871

Phoenix Permaculture Guild:
602-482-2875
NaturConc@aol.com

Las Cruces Permaculture Guild:
505-526-2559
villaverde@zianet.com

Permaculture Institute USA:
505-455-0270 and
swrpi@igc.apc.org

The Permaculture Institute USA was founded in 1997 as a sister organization to the Permaculture Institute of Australia. It is a coalition of regional permaculture groups and individuals dedicated to solving common problems and implementing programs to promote and support permaculture on a national scale. The need for a national organization was evident from increasing numbers of requests for international teachers, designers, academic credit, consulting services, media coverage, non-profit funding, for-profit project financing, and advanced technical information. For more information, contact:

Scott Pittman
Permaculture Institute USA
P.O. Box 3702
Pojoaque, NM 87501

RESOURCES FOR PERMACULTURE OUTDOOR CLASSROOMS

Outdoor classrooms on K-12 school campuses offer excellent opportunities for teaching and learning permaculture through the study of natural systems, including wildlife and pond habitat, agriculture, water catchment, erosion control, and much more.

If you would like an outdoor classroom in a school near you, here are two resources that can help you.

Your first priority might be to try to explain to others (educators, parents) why an outdoor classroom is a good idea, what it might look like, and how to get started. *Nature as a Classroom* is a 10-minute video that does just that using actual footage of students, teachers, and mentors doing academic activities in an outdoor classroom. This video is not only suitable for teachers, administrators, students, and parents, but it can also assist you with proposals to potential funders of outdoor classrooms. You can order *Nature as a Classroom* by sending $20 to:

Priscilla Logan
3031 Calle Caballero
Santa Fe, NM 87505

Another resource is a new web site: *www.outdoorclassroom.org*. This site is for students and adults to share: (1) successful outdoor activities on a variety of academic topics; (2) inspirational stories; and (3) information and resources.

If you are interested in receiving consulting support for starting a permaculture-based outdoor classroom, contact Priscilla Logan at the address above or at *plogan@outdoorclassroom.org*.

Thank you, John and Caroline!

THANK YOU JOHN WALLACE

Permaculture Dryland Institute would like to extend its heartfelt gratitude to John Wallace for his many years of dedicated service to the Institute and the permaculture community.

John has been on the Board of Directors for the past nine years, and recently terminated his tenure on the Board in May. He has, for the past several years, served as the Institute's Treasurer, assuming all responsibility for the budget forecasting, financial management, and accounting and reporting functions of the Institute. He has been exceptionally good in this role, and this has been important considering the need for the Institute to be continually modifying its priorities according to available funds.

In late 1996, the Institute appeared likely to fold due to volunteer burnout, disorganization, and a lack of clarity about what permaculturists wanted the Institute to be. John provided key leadership at that point, becoming the Executive Director and leading the critical organizational assessment process over the following year. During his time as Director, John reached out to key constituents and stake holders, brought people together who hadn't been in communication with the Institute for some time, and generally created a sense of momentum that the Institute could be something again if people so chose it. John was a steady hand during that time, and the Institute is appreciative of his bridge-building skills.

Those who know John are aware that he brings spirit into all matters of business. It is for this guidance that PDI will be eternally grateful. His experience with and his willingness to utilize the council process for PDI meetings has been invaluable. His insights have been important in getting the Board and staff to examine the core issues and find the appropriate leverage points, all of which contributed to the success of the Institute. No matter what we were doing, John always reminded us that the process was just as important as the product.

We honor John for his sensitivity, his clarity of voice, and his self-sacrifice. He has served us well, and we have not adequately paid him in return. Thank you John, for everything you've shared with us and for just being you. Blessings on you for whatever you pursue in the future.

THANK YOU, CAROLINE MAHON

We express our most sincere appreciation to Caroline Mahon for her important contributions to the success of the Institute over the past 18 months. As Administrative Coordinator, Caroline oversaw all verbal and written communications and logistical coordination for the Institute's numerous events, workshops, and courses. Even though she only worked on a part-time basis, we appreciate her consistent dedication to seeing every detail to successful fruition. Her professionalism was critical to the Institute's emergence as an important force in the world. Given the amount she was asked to manage, Caroline deserves our appreciation for her willingness to cope with uncertainty and numerous logistical challenges. She demonstrated tremendous patience and persistence throughout it all, and was the prime mover behind the Institute's successful Survival Skills Workshop Series.

We honor Caroline for her hard work and positive attitude during her tenure with PDI, and we wish her continued success wherever her path may take her.

Permaculture Drylands Journal Index

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