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*Medicine
& Health*



The Year of the Snake

Peter Bane

THE SNAKE IS A SYMBOL of the endlessly transformative energies of the cosmos. These same energies flow through our bodies (if we are healthy) as flow through the rest of the living world. This connection is the basis of health as well as the basis of good design, for the permaculture designer is working to restore health to landscape and to human communities torn from their moorings by the violence of the modern world. The dowser understands this connection; it is time for the doctor to understand it as well.

We must all become healers if humanity is survive this period of extreme destruction. This issue of the *Activist* attempts to sketch the shape of appropriate health: a way of caring for people that might be sustainable over generations. Western medicine clearly is not.

If we are to take responsibility for our own health care in an era of deteriorating environments, we must look to root causes, so as to achieve preventive care. We must pay close attention to traditional systems that have stood the test of time, and we need a wide range of practical knowledge: from the collection and cultivation of medicine plants, to the use of basic laboratory tests and instruments, to the organization of the medicine chest.

Medicine serves health, and the health (of the individual) is inseparable from the health of family, community, and environment. There is no away to which we can throw poisons and imagine that we will not eat, drink, and breathe them later. A large chapter on health that belongs with this subject is ecological restoration: the techniques and strategies for purifying contaminated soil and water, and for restoring degrading biotic communities. But that will require another round of this magazine.

We are on the cusp of a new paradigm in medicine, one that will truly allow it to enter the present era. Our conventional medicine, for all its technological brilliance, rests on an archaic and disreputable ontology. Whether from our attachments to the body or our fear of death, medical science has held closest of all to the classical science of separation, rooted in the ignorant dread of the Middle Ages. Unaware of microbes, and careless of hygiene, our ancestors reaped the whirlwind of poor nutrition, crowding cities, and increasing international trade. Medicine is still in thrall to the Plague. Strangely, the fear perpetuates itself. These horsemen are still saddled today, waiting to ride, and the best of our medical scientists know how little they will be able to do to stop the onslaught.

What hope we have must lie with the regenerative power of the earth, to cleanse itself, to heal all species. Our role is to return to this source for wisdom, knowledge, guidance. Centered in the

earth, we may find the resources the heal ourselves, other people and at the same time our relation to Life itself.

When we are able to liberate medicine from the grip of fear, we will have gone a great way toward truly healing the damaged soul of western humanity. △

Guest Editorial Healing as Root

Michael S. Howden, Lic. Ac.

Too often in contemporary writings and especially those of the news media, we are presented with methodologies of healing which are at best superficial, or without meaning or effect in actual practice. In most traditional cultures, healing is not simply a matter of taking a certain medicine or following (without heart) a procedure dictated by a licensed physician who is him- or herself bound by "standards of practice."

What seems most disheartening to me in terms of the presentations of healing that surround us daily, is the emphasis on the material. Chinese medicine, too, has devolved from a refined Taoist healing art, into a secular (and therefore often boring) medical practice, leaning heavily on Western medical concepts and diagnosis. Real healing is an art (and a gift); it is not something that can be easily appropriated. We are so concerned with manifestation, that we forget the in-listening process, of being receptive (yin). Often quoted and glossed over is Bill Mollison's phrase of "thoughtful and protracted observation," which, as a means of touching the heart/essence of a landscape, means an actual immersion in place, without preconception.

We cannot promise what we do not own. Healing, if it is real comes through us, and is not simply a matter of what we "know," but more deeply, of our intention and harmony with the patient (in Paul Reps' phrase, "another ourselves") and with nature. To see medicines only in the material sense, is to demare the potential of these substances. Papa Henry 'Auwae of Hawai'i often says that most of the healing power of the *la'au* (medicinal plants) is spiritual, how they are gathered (in prayer) and how they are received (with thankfulness). No charge to the patient is made in Hawai'ian healing, though often the patient will leave *ho'okupu* (an offering). Medicine is not business, but a process or yoga of inner work. Best it is something we are called to, as a ministry or earth remediation. If we separate ourselves from those with whom we are called to work, through material or financial barriers, we are possibly misreading the process and misunderstanding its deeper implications.

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Transforming World and Self

Joan Harper

IN ORDER TO BUILD A BRIDGE between healing and Permaculture we must see that we manifest our inner world onto our outer world. This calls us to a higher level of consciousness and also to a place of greater responsibility. We can no longer separate our inner work from our outer work. By exploring the concepts of healing and Permaculture in relation to one another we begin to see how the bridge is a natural formation.

Permaculture is concerned about the global crisis and understands the movement toward the formation of a global village.

Humanity lives in constant fear of an atomic war that would mean radical extermination of life on this planet. Several other doomsday scenarios are already relentlessly unfolding: industrial pollution of soil, water, and air; the threat of nuclear accidents and waste; destruction of the ozone layer; the greenhouse effect; possible loss of planetary oxygen through reckless deforestation and poisoning of the ocean plankton; and the dangers of the toxic additives in our food. (Stan Grof)

How do we heal the world? This is the domain of Permaculture.

Though the problems in the world have many different forms, they are nothing but symptoms of one underlying condition: the emotional, moral, and spiritual state of modern humanity. In the last analysis, they are the collective result of the present level of consciousness of individual human beings. The only effective and lasting solution to these problems would, therefore, be a radical inner transformation of humanity on a large scale and its consequent rise to a higher level of awareness and maturity. (Stan Grof)

How do we heal ourselves? How is the healing of the world connected to the healing of ourselves?

The core of permaculture is design. Design is about the connection between things. It's not water, or a chicken, or the tree. It is how the water, the chicken, and the tree are connected. It's the very opposite of what we are taught in school. Education takes everything and pulls it apart and makes no connections at all.

(From Introduction to Permaculture by Bill Mollison)

Permaculture has made a welcomed shift in how we see our external world. It gives us a new concept of abundance, and guidelines for living sustainably on the earth. However, if we are to re-tribalize our society, as Mollison suggests, we must know



how we, as human beings, are connected to the design of our world. If we are to live in villages and neighborhoods (and this is the only place we can truly live), in harmony with each other and nature, it is essential to understand ourselves first.

Life after Freud

Healing in our Western culture has rested on some unspoken assumptions. It has been assumed that the ailing individual has a diagnosable problem, the curing of which would allow him or her to return to normal society. Therefore practitioners of the three main schools of analytical thought, Freudian, Jungian, and Kleinian, plus Object Relations Theory, primarily treat individuals; they do not examine society as a whole.

The American Heritage Dictionary defines the term analyze as "to separate into parts or basic principles so as to determine the nature of the whole; to examine methodically." Our culture's most respected method of healing, analysis, corresponds with the culture's level of consciousness. Since Freud, we have learned an enormous amount about the development of the ego, which gives us the knowledge and a strong grounding to move toward deeper levels of the unconscious. We are now capable of reconnecting, or linking, all of the separate parts of ourselves with those of the macrocosm in order to understand better the nature of the whole. Separation, the work of the ego, has been a necessary step in this process,

But we are now in the linking phase, and need to be aware of what is asked of us to move in this direction. In order to make this paradigm shift we need to be willing to incorporate the contents of our personal unconscious and of the collective unconscious so as to expand our sense of self: We need to let go of control. We must know that a paradigm shift will be all encompassing; that our whole life is based on a particular paradigm. As our understanding of the world shifts, everything in our lives must shift with it, or be swept away.

Many developments in the post-modern world are showing evidence of this shift from the atomic to the holistic worldview:

Quantum physics—Rigorous scientific research has shown that reality transcends the traditional concepts of matter, time, and space. Even at the subatomic level, matter displays aspects of consciousness: uncertainty, therefore choice, and subjective responsiveness.

Holographic model—Mathematics, through chaos theory and fractals, is showing a new relationship between the parts and the whole, wherein all information is available in each part. The concept of “distributed information” opens up entirely new perspectives in the understanding of how transpersonal experiences can mediate direct access to information about various aspects of the universe that lie outside the conventionally defined boundaries of the individual.

Tribal wisdom and shamanism—Past knowledge, based on non-linear cosmologies, body wisdom, and access to other realms of consciousness, is resurfacing, e.g., the spread of Buddhism to the West.

The healing embrace of the body

Another assumption of Western healing has been that the mind and body are not connected. The analytical profession is now writing about the mind/body split, calling it the Basic Fault, but is resistant to changing techniques to heal such a split. Therapy still focuses on the personal unconscious (except for Jungians who include the collective in dream work, sandtray work, etc.) The goal is to heal the individual beginning with the first experience after birth. The assumption behind his approach is that we do not hold the memory of our birth experience. This is a huge and questionable assumption! When we undertake healing with the body (and not apart from it), we can heal the trauma of our birth experience as well as those traumas which come after birth; and with this liberation begin to incorporate the collective unconscious and transpersonal levels of experience. Stan Grof, who began Holotropic Breathwork, has written several books describing in detail this expansion of consciousness. (*Psychology of the Future* is his latest)

The new cartography includes the traditional biographic-recollective level and two major transbiographic levels—the perinatal domain—related to the experience of birth and death, and the transpersonal domain.

Deep experiential encounter with birth and death is typically associated with an existential crisis of extraordinary proportions during which the individual seriously questions the meaning of his or her life and existence in general. This crisis can be successfully resolved only by connecting with the intrinsic spiritual dimensions of the psyche and deep resources of the collective unconscious. The resulting personality transformation and evolution of consciousness can be compared to the changes described in the context of ancient death-rebirth mysteries, initiation to secret

societies, and various aboriginal rites of passage. The perinatal level of the unconscious, therefore, represents an important interface between the individual and the collective unconscious, or between traditional psychology and mysticism.

(Stan Grof—*The Adventure of Self-Discovery*)

The interface between the individual and the collective unconscious is represented by a shift in our ego. Our previously separate (or encapsulated) ego becomes permeable or able to connect to the transpersonal. By opening to these layers of the unconscious, and experiencing the death-rebirth struggle, death becomes integrated into our lives: We need no longer fear our own death. This is also the gateway to understanding our physical connection to other elements.

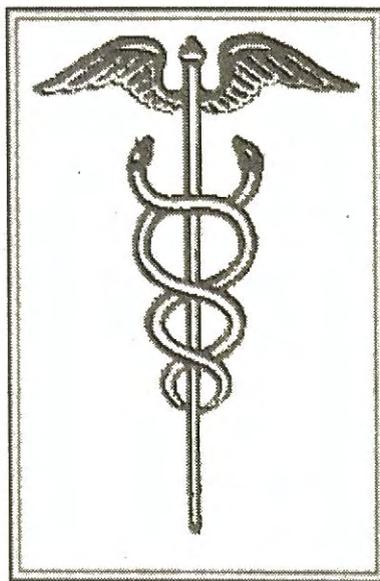
The Serpents in the Temple

When we work with energy we are healing at a cellular level. The changes are physical and emotional. It is interesting to remember that even the original symbol of our medical profession represented this connection—the caduceus is a winged staff with two serpents twined around it. The serpents symbolize the Kundalini, while the wings typify the power of conscious flight. It is an alchemical symbol of the union of opposing forces. This energy system of the body is often referred to by its Sanskrit name, the *chakras*. There are many books written about this subject, but my point here is limited to showing how our healing at this level begins to connect our bodies with other elements. Each of the seven *chakras* of the human microcosm is correlated to the seven-fold division of the macrocosm:

The seventh *chakra*, at the top of the head, is related to the original union of Shiva and Shakti. In the sixth *chakra*, in the center of the head, Shakti has separated from Shiva and created the realm of the mind. The five remaining *chakras*, located from the neck to the pelvis, represent progressive crystallization, symbolized by the five elements: ether, air, fire, water, and earth. Each stage is denser, as it contracts out of the previous element, until the solidity of the earth element is formed.

After Shakti has created the world, she is imagined to hibernate in the depths of the material universe. According to Joseph Campbell, the Sanskrit word kundalin means “that which is coiled or spiral in nature” and refers to the spiral patterns of energy found throughout the natural world, from the DNA molecule to the shape of galaxies. When the long terminal “I” is added, it becomes kundalini, a feminine noun meaning “snake”. A serpent rests in a coil and, like a spring, can release its potential energy when it strikes. In the hologram of the body-mind it rests in the earth element, in the first chakra at the floor of the pelvis.

(Charles Breaux—*Journey into Consciousness*)



The new ground of Self

By experiencing the perinatal level of our unconscious, as in Holotropic Breathwork, we are working in our root chakra. Through this level of energy, we begin to connect to the Earth's vibrational field. Now we can truly understand what it means to be "grounded." When we are grounded our energy flows from the root *chakra* to other *chakras*. Healing works to clear energy blocks in all the *chakras*. It is important as we do this healing to remember what grounds us. We lose this groundedness if our aim is to become "spiritual" without this connection. Our bodies need to remain in sympathy with the pulse of the terrestrial field. When we are in this state of sympathy our biological processes function best, improving our physical health. Therefore it is easy to understand how the electromagnetic pollution of our technological society has become a health hazard.

As we get in touch with our "ecological selves," which are coextensive with all phenomena, we see that healing goes beyond our personal realm. We heal the earth and the earth heals us. Joan Halifax, in her book *The Fruitful Darkness, Reconnecting with the Body of the Earth*, writes:

True self interest therefore includes more than ourselves. Our lives depend completely on retrieving the sense of the deep continuum, the stream of our being, known through our connection to the ancestors, the continuum of creation that is our history, and the continuum of mind and nature, of self and other that is eminent everywhere. This continuum flows from the secret room hidden in the core of our bones. It is retrieved in the darkness, where the roots of creation tangle and feed.

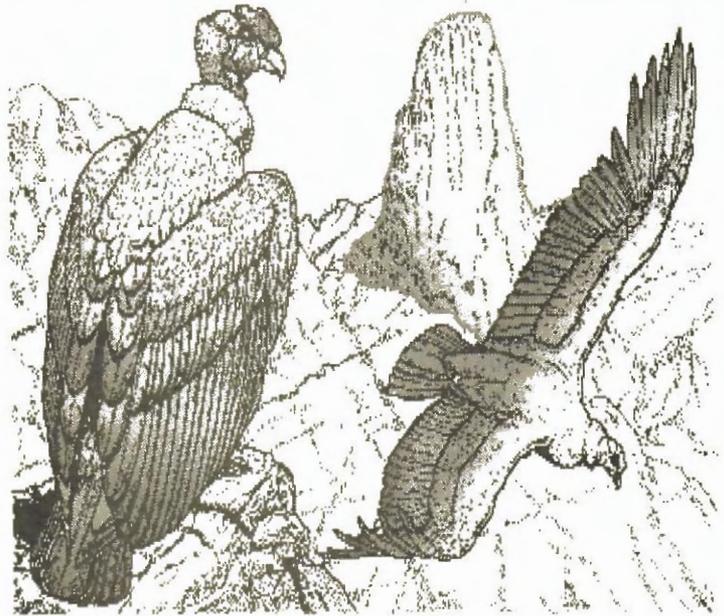
The darkness, the unconscious, the earth, the body are all areas we have considered as feminine. If we allow these energies to become part of our lives, we also transform our relationship to destructive energies. Destruction is one of the main concerns of our modern world, and perhaps it is so powerful because we have suppressed our true relationship to it. When we are in harmony with the cycles of life, we know that destruction for the purpose of new creation differs from destruction alone. In ancient times, the vulture was a symbol holding this paradox. *The Herder Symbol Dictionary* describes the vulture in the following way:

A symbolic animal associated in several American Indian cultures with the purifying and revivifying power of fire and the sun; for the Mayans it was also a death symbol. Since it eats carrion and transforms it into vital energy, the vulture is sometimes considered by Africans to be the being who knows the secret of the transformation of worthless material into gold.

Wisdom takes flight

As we journey into wholeness we can dream together to create a new way of living. How do we manifest this paradigm shift in our lives? We can tap into our unconscious individually and collectively to guide us, for we will have removed it from the realm of pathology, knowing it contains much more than

repressed memories. It becomes our inner guide and a source of wisdom. I recently had a dream in which an owl appeared. Both of his wings were wounded and he could no longer fly. He had come to me in order to show me that he needed to be healed. According to the *Herder Symbol Dictionary*, "Since the owl sees in the dark and is thought to be serious and pensive, it also symbolizes wisdom, which penetrates the darkness of ignorance;



in this context it became an attribute of the Greek goddess of learning, Athena." Information is no longer enough, we need the wisdom hidden in our unconscious selves.

Our communities need to provide the containers for transformation. Traditional psychology sees the container for transformation as another person, the therapist. Containers now need to reflect our expanded sense of self. These may include dream groups, sweat lodges, talking circles, sandtray work, breathwork, and many kinds of rituals.

We can learn from past tribal ways to create new tribal villages, but we are at a different place in the spiral of evolution. Malidoma and Sobonfu Somé are wonderful teachers of tribal wisdom, explaining how community cannot survive without nature and ritual. In their culture it was all linked together.

The idea of a person born with a purpose, a purpose that needs to be supported by an active community presence, and the idea of working with subtle energies for balance and healing would be only grandiose notions in the absence of nature as the playground, as the school where the children can play and study. Our relationship to the natural world and its natural laws determines whether or not we are healed. Nature, therefore, is the foundation of healing, and the type of nature that surrounds a community at the time of doing a ritual determines the types of ritual that are appropriate and the content of these rituals. We are talking about a way of dealing with an energetic world and energetic issues that borrows from

what already exists, not what has been invented, manufactured, or created by humans to satisfy some material purpose. In other words, every tree, plant, hill, mountain, rock, and each thing that there was here before us emanates or vibrates a subtle energy that has healing power whether we know it or not. So if something in us must change, spending time in nature provides a good beginning. This means that within nature, within the natural world, are all of the materials and tenets needed for healing human beings. Nature is the textbook for those who care to study it and the storehouse of remedies for human ills.

(Malidoma Somé, *The Healing Wisdom of Africa*)

Somé teaches that ancient tribal ways and modern technology need to learn from each other. Their ability to live with spirit and our ability to meet our material needs must work together.

Designing from the Core

Permaculture completes a missing part of the puzzle—we must know how to live sustainably on the earth and know what the earth needs from us. The core of the design work for our lives, permaculture sites, homes, etc., originates from within. We must learn to see how we are physically in the flow of design, not just designers observing or manipulating connections in the external world. (Read *Archetype Design* by Vishu Magee, who designs homes this way.) Permaculture villages could become the support networks for such global transformation, inwardly and outwardly.

Starhawk voices the same concepts:

To renew the world, we must become like the vulture, who feeds on waste, who eats the obstacles to love. To create a culture of life, the vulture must take wing to soar above the constrictions of the skyline. We need more than psychology, more than spirituality and community; we need an economics, an agriculture, a politics of liberation, capable of healing the dismembered world and restoring the earth to life. Most of all, we need to make a leap of the imagination that can let us envision how the world could be. Then we need to consider, step by step and in concrete detail, how to bring our vision about.

Our shift in healing from the personal to include the trans-personal has led us to an awareness of process; the process of our birth, our death, and all transformation during our lives. This process can no longer be seen as linear, but cyclic, as all other processes. Willingness to face our fears in these deeper levels of consciousness will bring peace and harmony, connectedness, joy, and compassion into our lives. Permaculture knows the processes in nature; we now know that they are also our own. △

Joan Harper is a mother and grandmother. She trained in psychology and Jungian analysis and for the past 20 years has maintained a private practice, during much of which time she has also been a member of the faculty of the University of Virginia. Actively calling forth a community to engage and contain this deeper transformation, she lives in Charlottesville, Virginia.

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Your Home Is Your Castle

Paul Battle, BBEI

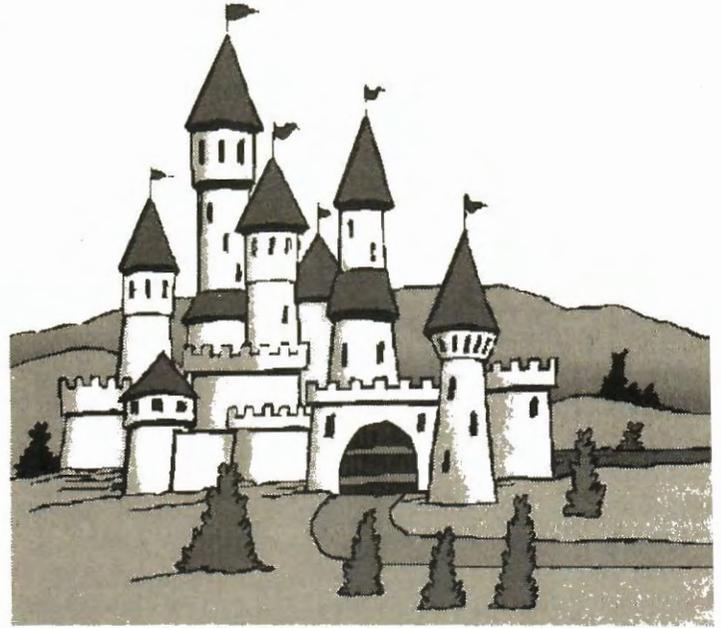
Once upon a time there was a young couple who inherited a large sum of money. With the money they decided to move out of the small cottage in the village that had been their home for many years and buy the castle on top of the hill. It was a fixer-upper; the rooms were drafty, the large fireplaces did a poor job of heating the place, and the dungeon had some leaks through the foundation. But it was a bargain, had a great view of the village and surrounding lands and it did have 24 rooms with fireplaces; not to mention the increased social status that came with owning a castle.

The couple decided they would renovate to make the castle warm and cozy (this wasn't going to be your typical drafty stoneheap) by using the best building materials available and the latest energy-efficient windows. After moving in they cleared out the last of the previous owner's "stuff" and stored it in the dungeon along with their moving boxes, all to be sorted at a later date when they had accomplished their renovations. Then the cold stone floors were carpeted wall-to-wall, rich tapestries were hung on the walls, windows that sealed tightly were installed, and energy-efficient natural gas inserts were fitted into all the fireplaces.

After many months of hard work and a small fortune spent on the remodelling, the job was done. The couple were pleased with themselves and set about enjoying their new home. Consistent with the home they had chosen for themselves, they lived in grand style; the villagers adored them for their generosity and the lavish parties they held. But over time the villagers started to notice some changes, slowly at first, and then more dramatically. At first the couple developed a persistent cough and seemed to have colds that would not quite go away. After a few more seasons, their eyes always had red circles around them as if irritated, and both seemed to be getting short of temper and not as quick of mind. People visiting the castle noticed the musty odor, but, out of politeness, said nothing to the couple who themselves had become so used to the smell they no longer detected it.

Creating Sick Buildings

This tale helps to show what is happening in many millions of homes in North America today. While few of us live in castles, we are creating the same conditions in our homes that led to the decline in health and well being of this couple. If we look at the changes to the building we see that they took a drafty (well-ventilated), poorly insulated building, and tightened it up for energy efficiency. They added new materials and furnishings like synthetic carpet that off-gas chemicals into the air. The fireplace inserts further reduced the fresh air infiltration by shutting out the drafts that used to blow down the chimneys. These same heaters when lit would use up some of the available oxygen in the castle for combustion. The natural gas lines with all their bends and twists introduced trace amounts of natural



gas (methane) into the air from a few tiny leaks. By moving the old furnishings into the damp dungeon they provided a food source for molds which found ideal growing conditions. What they created from a lack of awareness was a sick building.

Indoor Air Pollution

People in industrial societies such as Canada and the United States spend, on average, 90% of their time indoors, and breathe in about 4,400 gallons (20,000 litres) of air a day. The air inside buildings is considered to be as much as 10 times more polluted than outside air. The modern building industry contributes greatly to this condition: the chief contributors to worsening Indoor Air Quality (IAQ) are tightening up the building envelope (an obvious way to reduce energy losses) and covering the interior with synthetic building materials, finishes, and furnishings. The effect is to create a chemical soup which building occupants inhale—air pollution in the home.

Some people feel the effects of these chemicals right away and others don't seem to notice them. For most of us the occasional exposure to formaldehyde or mildew may be unpleasant but of little immediate consequence. Rather, it is the slow absorption and accumulation of these trace toxins that has a negative impact on our health. But for those with weakened immune systems or already overexposed to toxics the effects can be acute and immediate, even life-threatening. Problems such as asthma, allergies, chronic colds, fibromyalgia, chronic fatigue, and chemical sensitivities are all rapidly increasing in our societies as toxic exposures increase throughout the environment. All these degenerative ailments can be linked to indoor air pollution, though it is not their only cause.

From a macro-environmental standpoint it is important to save energy, use sustainably harvested natural building products, and reduce our ecological footprint. But these ethical concerns can also translate directly into health and well-being if we truly understand our relation to buildings.

The built environment is an extension of ourselves; some have called it our third skin, after epidermis and clothing. Everything introduced to the home, from the building materials to the furnishings, paints, clothes, and toys that we fill it with will affect us in some way. Aware of this many people become very elective in their choice of colors and textures for materials and furnishings; they choose elements for home decor with great care. Considering the possible health impacts should stimulate us to give as much or more thought to the character, origin, and chemical composition of structural materials, finishes, and fabrics we surround ourselves with.

Considerations for Healthy Homes

Using sustainably produced and natural materials, however, will not by itself create a healthy home if we do not design the building with an awareness of how building mechanics affects indoor air quality (IAQ).

Various species of molds found indoors are powerful allergens that can aggravate or trigger asthma and other respiratory ailments. Molds release spores into the air. These can accumulate and be dispersed well away from the active mold colony. Some molds release gaseous toxins that are endocrine disruptors and can trigger chemical sensitivities and other health problems. Mold spores are everywhere in our environment and in our homes and that in itself is not a concern. When indoor conditions allow molds to grow or colonize an area or when the type of mold present is toxic, then we should be concerned. Molds become problematic in homes when moisture saturates building materials in places that are out of sight. Mold requires a good source, warmth, moisture, and dark conditions to thrive, and by limiting any of these it is possible to take away the conditions needed for growth. So to stop molds growing we can make sure that no cellulose-based material comes in contact with moisture; e.g. stored cardboard boxes in a basement. When heatrock is used in basements, on outside walls, under windows, or behind shower stall tiling it can get saturated and support mold growth on the dark back side without showing any signs of growth on the front side. Humidity control and air circulation are the tools most often used to suppress mold growth.

Relative Humidity

A simple step all home owners can take to improve IAQ is to monitor the relative humidity (RH) in the home. Relative humidity that is too low will allow respirable dust to become airborne. In dry air our mucous membranes can't filter out this fine dust and it can penetrate deeply into the lungs. Dry air also creates more static electricity in a home, which changes the air on balance, not to mention adding the aggravation of small shocks. Maintaining a year-round humidity level of between 5%-60% will do a lot to improve the quality of the air. Levels below 35% humidity should be avoided as these will allow dust to become both airborne and positively charged. Chemicals,

gases, and biological contaminants then adhere to the charged dust particles which we inhale. Humidity levels above 60% support the growth of molds, mildew, and bacteria. Localized areas of high RH can become evident even in a very dry home. Examples would be on bathroom walls after showering, in basements after a flood, or behind a clothes dryer that vents to the inside air. Ideally the RH should be between 37%-40% for the winter, and windows should be monitored to make sure that dew point is not being reached and creating condensation. If this is the case a problem could be created where the condensation is sitting or being absorbed.

Measuring Humidity

Digital hygrometers are available from most electronics stores, and will allow you to measure the RH. However, these instruments are not always calibrated properly. To check the accuracy of the hygrometer, mix 1/2 cup of table salt with a 1/4 cup of water in a coffee mug. Place this along with the hygrometer in a large sealed plastic bag. After 8-12 hrs. the hygrometer should read 75% RH. Note the reading and make the appropriate adjustments when measuring in the home. If the reading is 72% then add 3% to all of the readings to get an accurate RH level. Use the hygrometer to measure RH in the bedrooms during the winter and in the basement during the summer. Summer levels in the basement should be maintained below 50% if possible; a dehumidifier may be needed.

Air Circulation & Ventilation

These are two more simple tools to help create good indoor air quality and to fix existing problems. When mitigating problems in a home the first approach is to find the source of the problem and remove it or remediate it, which is not always easy or practical to do as many problems are buried in walls or other inaccessible places. The second approach is simply to dilute the toxins with ventilation and air circulation by introducing more fresh air. This can be as simple as opening windows and closet doors or by the use of mechanical ventilation systems like fans and air exchangers. The air exchanger is an example of a mechanical system that has become necessary to take care of a human-made problem.

Because of our cold winters, a program was started in Canada in the 1980s to super-insulate homes to reduce energy use. This resulted in an increase in humidity which accelerated the degradation of building materials and compounded increased mold with poor fresh air recharge. The result was a massive increase in sick building syndrome. The solution was a unit that blows out the stale air and brings in the fresh air while transferring the heat from the outgoing air to the incoming. Called Heat Recovery Ventilators (HRV), these are now very common in northern climate homes. An HRV can completely exchange the air in a home up to three times every hour.

Obviously approaching building design as a whole system integrated with landscape and mindful of the biological and not just the mechanical needs of its inhabitants would avoid many of the most common problems. Permaculture thinking has much to offer in the design of buildings as well as gardens, farms, and towns. If pollution represents an unused resource, for example, we can see how ignoring the resource value of the water coming off the house roof allows it to be dumped willy-nilly into the

landscape. This common error, even when it doesn't lead directly to soil erosion, frequently results in water saturating the ground around the house leading to moisture problems in the basement or ground floor. This translates into molds which are then recirculated through air ducts, and worse, structural rot.

By careful analysis and planning, we can place the home so that it enjoys favorable solar gain, good air and water drainage, and protection from winter storms, while harvesting cooling summer breezes. We can further locate the rooms for function appropriate to house microclimate with storage and sleeping to the cooler side, kitchens and living spaces toward the sun. Appropriate placement and sizing of windows can ensure good cross ventilation without mechanical inputs; a good roof overhang and sound foundations help prevent moisture problems; and finally, intelligent detailing in the construction helps exclude vermin, prevent moisture from accumulating in crevices, and ensures comfort and energy efficiency.

Checking Out Your Castle

Anyone familiar with building practices and mechanical systems can do some trouble shooting in their own home. A few

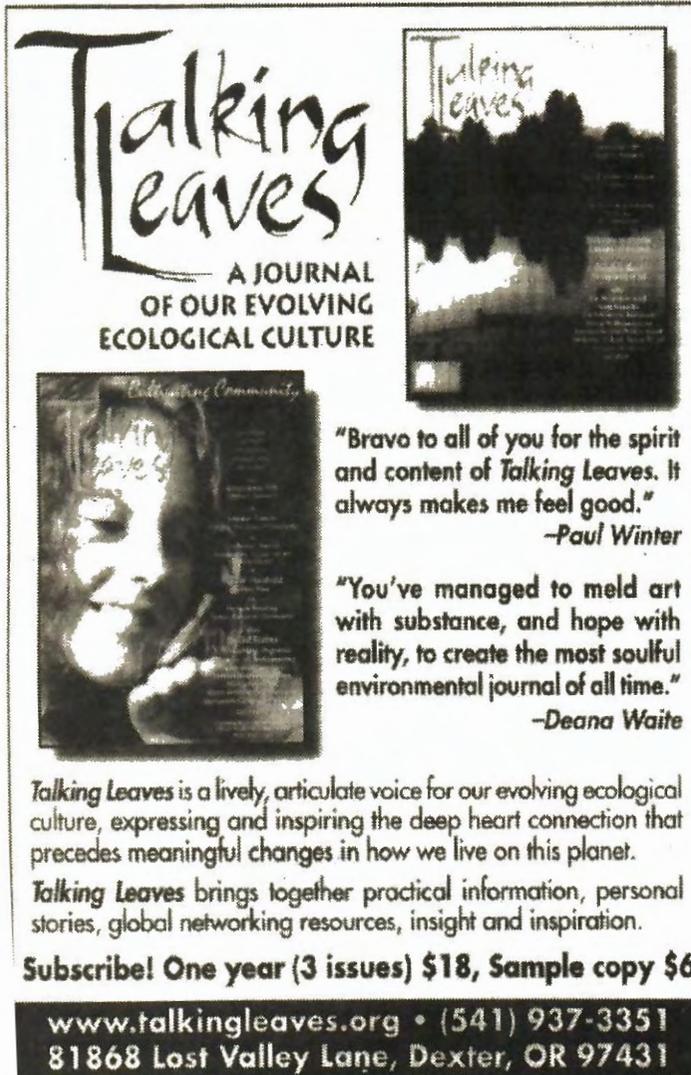
hours spent with a flashlight poking into corners, lifting and moving stored materials can reveal some surprises. Remember that all areas need some air circulation; even the closets where clothing is stored will get that musty odor if not aired out. Homes with basements need a fan system to keep some air circulating. Homes without basements can use passive ventilation from opened windows or active solar ventilation rather than having to rely on mechanical systems that use energy resources. In a home with a forced air heating or cooling system the ductwork can be viewed as the lungs of the home. These passages deliver fresh air and carry away toxins to be filtered out at the furnace blower unit. Ductwork needs to be kept clean and should be regularly inspected as part of the home maintenance routine.

Filters have improved considerably in the past few years and, with the growing concern and awareness about IAQ, more improved technology is coming out at a rapid pace. Many people still use the 1" thick disposable fiberglass filters—the ones that can be easily seen through. These only stop particulates 10 microns and larger while smaller dust particles will pass completely through the filter. As a general rule the thicker a filter is and the more pleats it has, the finer the particles it will remove. Don't be fooled by claims stating "Removes 99% of Household Dust." The bulk of dust in a home consists of particles above five microns. It is the finer particles, below five microns, that need to be removed from the air since they can penetrate deep into the lungs. Filters that do this will say so on the packaging. The ultimate in filtration is called a High Efficiency Particulate Arrestor or HEPA for short. This filter removes particulates to 0.3 microns at 99.98% efficiency as well as to 0.1 microns at 95% efficiency. HEPA filters are now common and can be found in whole house systems, portable filters, and on the exhaust of vacuums.

Resources

Professional environmental home inspectors are available in most larger cities in North America. An environmental home inspection does not always require expensive lab testing to determine the probable sources of allergens. An initial walk-through investigation can often reveal the problem areas and the solutions needed to mitigate the problem. The Institute of Bau-biologie & Ecology trains environmental home inspectors. A list of Bau-biologie certified inspectors who specialize in home environmental inspections can be viewed on their web site along with information on training courses offered to home owners, architects, and builders at <<http://www.bau-biologieusa.com/>>. The US Environmental Protection Agency <<http://www.epa.gov/iaq/pubs/index.html>> is a wealth of information on home health issues as is The Canadian Mortgage & Housing Commission in Canada <<http://www.cmhc-schl.gc.ca/>>. Two books that I would recommend are: *The New Natural House Book* by David Pearson, published by Simon & Shuster Inc. and *Prescriptions For A Healthy House* by Baker, Elliot, Banta, published by INWord press.

Paul Battle is a Bau-biologie trained environmental home inspector living in Ottawa, Ontario. Contact him via email: inverments@cyberus.ca.



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Designing Care

"...a theory of permaculture that shows care for people as well as the biosphere...But the dynamics of an ecosystem are not that of a social system, or are they?"

Rob Scott, student, School for Designing a Society

PA: Susan Parenti and I work together on two distinct but connected projects: The Gesundheit! Institute in West Virginia, and The School for Designing a Society in Illinois. Both are based on premises foreign to the current social system; thus, we consider these projects revolutionary.

For a long while I spoke, publicly, of creating a social system based on peace and justice." Now, for the past year, I've added and based on care." This is because care—medical, social, political, environmental—has long been ignored as a requirement for humane life.

In the following article we present our projects—their premises, their hoped for consequences—and our attempts to design care.

"I ain't gonna study war no more..."

PA: In the past eight years I've been an organizer and a teacher at the School for Designing a Society, as well as a performance partner with Patch Adams. The School, located in Urbana, Illinois, is an on-going experiment in making temporary living environments in which the question, "What would I consider a desirable society?" is given serious yet playful discussion. This discussion then forms the basis for a variety of creative projects. Rather than orienting participants to find a comfy spot in the current social system, the School offers tools, time, ambiance, and company in which people can imagine and design a system they would prefer.

Participants live together cooperatively, discuss, write, take and give classes, make performances, and do experiments. Through these means they explore the consequences of making their desires a basis for both learning and action. The concepts and skills developed through these activities are brought together in "design groups."

In these groups we challenge the assumptions of contemporary society in order to explore how a better society might be designed. One of the ways we do this is to make "false" statements based on our desires. These statements are untrue in the present system, but would become true in another, differently designed, system.

Patch and I have given a lot of attention to the matter of care and how society's beliefs about it impact the choices we make and the institutions we create. Care is a human need. Permaculture takes Care of People as one of its ethical foundations.

But what do I mean by care? Care occurs when one person temporarily becomes part of another's (social/emotional/personality) structure. And what do I mean by need? I use the word "need" whenever I wish to speak of conditions that must be met continuously and unconditionally if living organisms are to be motivated to maintain themselves, their identities, their existence.

Some "false" statements on care, based on what I desire, are: 1. That care is not linked with burden—to care for someone is not a burden. 2. That there are two—TWO—needs in relation to care: people need to get care, AND people need to give it. 3. Thus, care is a relationship built on a configuration of needs and offers. Care does not move in one direction only—from

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enerous giver to unfortunate needy receiver, but in both directions at once; the giver becomes a receiver, and the receiver giver. When I use the word care, I understand it as going in both directions at the same time.

"In Permaculture, everything works both ways."

PA: A good deal of my passion for care comes from my mother and my friends, and from the circumstances surrounding my growing up. I spent my childhood and youth on army bases overseas while my father was away at war. Nothing about the military made me interested in it, ever. But my mother gave me tender loving care; she fully cared for me.

A propensity toward science led me to think about medicine, a profession to care, and in my early teens I read the books of Tom Dooley, M.D. about his work helping in places where there was no medicine. These books were a hymn to caring. I liked his language, how caring is "thinking to do," and not with the implication that the cared-for were a burden. I believed (a mis-understanding, I later learned) that his being a doctor made him a caring person. After I became involved in medicine, I learned that a doctor's practice defines the healing interaction more than his profession.

My father was a soldier. Fighting two wars broke first his soul and then his body: I became a war orphan at age 16. I had already learned that violence is never intelligent, when, moving from Germany back to the U.S. and to the South in 1961; I became immediately aware of the racism in Virginia. I naturally took part in the Civil Rights Movement and still find it incomprehensible that every citizen didn't rise up and say: "We are all in this together. Stop this hatred!" During that time I

***We don't say—though perhaps we should,
"And the poor helped Mother Teresa!"***

realized our society was in a crisis of lost caring. This shout rose from every novel I read of the 20th century. Tom Dooley had shown me that it was possible to express care through one's actions, and from his example and from my own interests I was drawn toward a career in medicine.

When I finished medical school I began to see the strict, hierarchical, white-male-dominated institution—only recently integrated, that lay ahead of me: I knew I could not work in it. Fun and love were excluded, as well as any discussion of compassion or care. So far away from care was the medical system that care grew to mean the best machines and drugs, and not an experience and action of compassion, generosity, intelligence, art, and foolishness.

SP: It doesn't take much to go a stretch and notice how in our society receivers of care are perceived as burdens. For, after all, what are they doing but taking? Burden permeates all language

around care. It's assumed. Well-meaning book after well-meaning book asks how can we deal with the burden of care, who shall have the responsibility for care, how can we pay people enough to take on the burden of care.

PA: Looking closely, I saw many glaring examples where loss of care—turning care into a burden as Susan would say—did horrible things to the practice of medicine: it became greedy; it became a business, with insurance companies and pharmaceutical and hospital suppliers swarming in for their share of the profits.

Care is never where greed is.

***...care grew to mean the best machines and drugs,
and not an experience and action of compassion,
generosity, intelligence, art, and foolishness.***

SP: I believe care has two facets: 1. the (well-known) need to receive care, and 2. the (unacknowledged) need to give care. Even by articulating that care meets two needs, I step outside the boundaries of present-day society, language, behavior. (Hooray! Giving care is usually perceived as a virtue, something good people do, a noble calling. Rarely is it seen as a need. Mother Teresa, we say, helped the poor. Good Mother Teresa. We don't say—though perhaps we should, "And the poor helped Mother Teresa!")

PA: The only saving grace within the greedy medical system, was the health professionals who still cared. Yet whatever real care I found came from the nurses, orderlies, cleaning people, or volunteers—mainly people in lower paying jobs, most of them women. The rude, top-of-the-hierarchy doctors got the most money (anyway before corporate medicine...) but gave the least amount of care. Care was clearly devalued. There was no insurance reimbursement for it. I believe care even got in the way. Yet, women are so reluctant to stop caring that many heroic women continue trying to bring care even to corporate medicine.

SP: The story of care being the satisfaction of the receiver's needs is the story of present-day society. I don't want that story, that language, that society. I stipulate that care is not a one-way movement, where the giver gives a goody (care) to the poor unfortunate receiver. Rather, care is bi-directional, for I am aware that something is being created and transacted in care that both parties enjoy.

I say that care is a situation of two overlapping stories: the story of the need to get care, and the story of the need to give it. Care happens when these two stories are designed to meet.

Thus, I use the word care when—and only when—I've designed a situation where the human needs to receive and to

give care are linked. When only the need to receive care is acknowledged, then I am speaking of charity, not care.

I'm willing to swallow charity. But I will not forget that what I want to taste (because in my life I once had it)—is care.

PA: I knew that if I was going to play doctor, I would have to create a context, a hospital, where care wouldn't be penalized, a place where—as Susan would say—my need to care wouldn't be suppressed, indeed, would be an essential expression of the healing situation. With the *Gesundheit!* Institute I wanted to address every problem in health care delivery and suggest alternatives based in care.

I knew that individual health was inseparable from family, community, and social health. Therefore community problems, societal problems, and environmental problems all fell within the domain of health care delivery. And so from the perspective of giving care, poverty and justice became concerns of the *Gesundheit!* project as surely as illness, for the one could not be addressed without regarding the others.

SP: Care happens by design: when the needs to receive and to give care are linked.

From our students at the school, who study and apply permaculture ideas jubilantly, I've learned about that relationship called companion planting—plants help each other thrive when rooted down next to one another. So, for example, a plant that needs to grow in the shade and offers protection from beetles is placed next to another that offers to grow tall and can't abide beetles. Or, in the animal world: a garden offers a chicken room to scratch, seeds and bugs as food, shade, home range; while the chicken offers the garden aerated soil, fewer weeds and bugs, manure.

This linking of needs and offers in the plant and animal world points to a method of design for the social world as well. Permaculture invites us to look at every element in all its functions. This leads naturally to understanding the way things things work both ways. Design that links

needs and offers ensures stability and sustainability, as the components of the system provide for each other.

In the social world no one wants to be a burden—no one. Older people willingly incarcerate themselves in nursing homes, in order to avoid seeing themselves as burdens to their children. Bi-directionality or mutuality eliminates the possibility of burden, because in a mutual system, each component plays the dual roles of

benefactor and recipient.

This idea of companion plants and animals has influenced my thinking about care. Are there other ideas from permaculture that show care for people as well as for the biosphere?

*Susan Parenti may be contacted at sparenti@ux1.cso.uiuc.edu. Patch Adams at the *Gesundheit* Institute, 6877 xxxx, Arlington, VA 221*

The *Gesundheit!* Institute

Patch Adams

The *Gesundheit!* Institute is an experiment in holism with a medical focus, based on the belief that one cannot separate the health of the individual from the health of the family, the community, or the world. *Gesundheit* is a sociopolitical act that grows out of a deep concern for the quality of peoples' lives in a world dominated by the values inherent in greed and power.

The Institute's first 12 years (1971 to 1983) were devoted to a pilot experiment. For most of those years, 20 adults lived in a large home and used it as a crude hospital. Open 24 hours a day, seven days a week, three physicians and others did what they could for whomever came.

We never charged money, never accepted third party reimbursement or carried malpractice insurance, believing these things to be at the core of the horror of modern medical practice. The work was supported by the part time jobs of the live-in staff. To humanize medicine, we formed friendships with our patients, giving three or four hours to initial interviews. To open a path towards a joyous life for both staff and patients, we integrated medicine with performance, arts and crafts, agriculture, nature, recreation, and social service. To celebrate diversity, we accepted all practitioners of complementary healing arts as long as they charged nothing and would let us watch.

In those 12 years, 15,000 people came through the facility—our home—for every reason from profound illness to simple curiosity and play. After 12 years of this experiment, we realized that it was important to build our own model hospital because there seemed to be no vision in the United States of real solutions in health care delivery. We decided to give up the practice to devote ourselves full-time to fundraising for and building that model. For the past 18 years have been committed to this task.

Seeking a location where need was great and our scope for action would be large, we bought 310 acres in Pocahontas County, West Virginia, where we have built two buildings; in this past year we have broken ground for more. We are constructing a 40-bed rural hospital where staff will live with patients in a home-style setting. In addition to surgery, ob-gyn, pediatrics, internal medicine, family practice, and psychiatry, we will offer a set of complementary approaches: allopathic medicine will coexist with homeopathy, acupuncture, chiropractic, and herbal healing, to name a few. There will be a school for our children, for sick children, and for the children of sick parents. Embracing many ideas from the "Ecovillage" movement—which is attempting to create new "full-featured" human communities, we'll develop a fully sustainable agriculture project, and will devote 30,000 square feet to the arts.

Nine years ago I wrote a book about our project called *Gesundheit!* which was sold to Universal Studios; in December 1998 a movie based on that story of the early years of *Gesundheit* and on my life was released. Now it looks like the consequences of the film and of our 31 years of preparation are going to build this hospital and endow its operation. Δ

AIDS and Ayurvedic Medicine

Pankaj Seth, N.D.

Ayurveda is a system of medical knowledge which originated in India several thousand years ago. Its predominance in the Indian way of life is demonstrated by its continuous practice, revision, and elaboration since its beginnings in the remote past. In the modern world, Ayurveda is increasingly popular because it speaks to those elementary concepts of (1) individuality, (2) holism, and (3) a healthy relationship with nature. Translated as "The Art and Science of Living," Ayurveda forms an integral part of the daily regimen of hundreds of millions of people worldwide. Its principles can be used not only to treat the ill but also to prepare a balanced meal, or to construct a harmonious environment. Ayurveda brings to life the concepts of preventive health care and health promotion. The day-to-day practice of Ayurveda prepares the essential ground for Yoga, Tantra, and allied spiritual practices. The goal of Ayurveda is to help the individual discover a personal knowledge of living.

Genesis and Development

Ayurveda, the oldest system of medicine in the world, traces its roots to the Vedic period in ancient India (1500 B.C.). The *Rg Veda*, a compilation of verse on the nature of existence (or the existence of nature), is the oldest surviving book in any Indo-European language (1500 B.C.). The *Rg Veda* refers to elements of the cosmology known as *Sankhya* which lies at the base of Ayurveda, Yoga, and Tantra; in it are verses on the nature of health and disease, pathogenesis, and principles of treatment. The *Atreya Samhita* is the oldest medical book in the world; it survives from Takashila University which was operating as early as 800 B.C. The *Atharva Veda* (800 B.C.) lists the Eight Divisions of Ayurveda: Internal Medicine, Surgery of Head and Neck with Ophthalmology and Otorhinolaryngology, Surgery, Toxicology, Psychiatry, Paediatrics, Gerontology or Science of Rejuvenation, and the Science of Fertility. At 500 B.C. at the university at Varanasi, Sushruta, a surgeon who developed the operative techniques of rhinoplasty (plastic surgery), wrote the *Sushruta Samhita* which describes a highly developed surgery. In 100 A.D., the physician Charaka revised and supplemented the *Atreya Samhita*; the *Charaka Samhita* is a major work on internal medicine describing the use of more than 400 natural medicinal substances within a highly sophisticated diagnostic and therapeutic system.

Because India has been a crossroads of cultures for thousands of years, Ayurveda has influenced the Greek, Arabic, Chinese, Tibetan, and European systems of medicine. Over the millennia, Ayurveda has undergone many developments as well, but its earliest texts continue to provide the backbone of the system. The recent history of Ayurveda shows a near decline early this century under the pressures of colonialism and Western medicine. Since then, Ayurveda has emerged as the primary form of health care in India and it is now growing in popularity worldwide as more and more persons attempt in their own lives

to renew their connection with nature.

Concepts of Health

In Ayurvedic medicine, health is defined as soundness of body (*shrira*), mind (*manas*) and Self (*atman*). Each of these must be nurtured if the individual is to create health. Ayurveda offers a holistic approach based upon the understanding that no single agent by itself causes disease or brings health.

Life-Force: Ayurveda views the person as a composite of three forces:

Vata - The force symbolized by AIR;

Pitta - The force symbolized by FIRE;

Kapha - The force symbolized by WATER

The quality and the relative balance of these forces determine health and disease. When these forces act harmoniously, the functions of digestion, absorption, and elimination (physical and mental) create health. As these three forces are responsible for specific areas of body/mind function, the signs and symptoms of imbalance indicate which of these forces is deficient or excessive. In addition to *Vata*, *Pitta*, and *Kapha*, Ayurvedic physiology recognizes seven bodily tissues (*dhatu*s), 15 metabolic systems (*srotas*) and seven centers of consciousness (*chakras*).

Constitution: The concept of constitution (*prakriti*) is central to Ayurveda. Individuals are comprised of the three forces (*Vata*, *Pitta*, *Kapha*) in unique combinations so that no two persons are alike. The constitutional determination provides insight into the deeper workings of an individual. With this it is possible to become aware of the foods, spices, herbal medicines, emotions, thoughts, climates, colours, activities, and so on that tend either to balance or unbalance a particular individual and either to improve or aggravate various types of illness. Furthermore, it is possible to outline the disease tendencies of the different constitutions so that a preventive lifestyle may be observed; also, health promotion for individuals of different constitutions can follow a rational, time tested approach using all that nature provides.

Treatment: A disease will manifest in different constitutions in different ways. An individual with a predominantly *Vata* constitution will experience primary and concurrent symptoms different than those arising from predominantly *Pitta* or *Kapha* individuals even though they all have been diagnosed with the same "disease." Constitutional treatment of the individual is a priority since one's individuality is fundamental in health and illness.

Immune Function: Ayurvedic physiology teaches that a balance of the three forces is responsible for the production and maintenance of the seven bodily tissues (*dhatu*s). Proper digestion gives rise to nutrients which nurture blood, connective tissue, glandular, and nervous systems, and finally vital energy (*ojas*). An abundance of *ojas* is required for the maintenance of the individual's "I-ness" (*ahamkara*). *Ahamkara* refers to that

continued on page 1

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TOM WARD

Tom is a facilitator for the emergent Ecotopian culture. His specialties include Ecoforestry, Ethnobotany, Appropriate Technology, and Herbology. Since 1971 Tom has helped over 100 farms and homesteads with ecological design.

Tom is a partner in Siskiyou Sustainable Design, which acts as a counselor for land stewards.

RANDY CAREY

Randy is a generalist, a farmer, a student of Holistic Management and a partner in Siskiyou Sustainable Design. Randy specializes in farm design, Keyline Irrigation systems, pond building, and watershed restoration. He is a co-founder and president of the Williams Watershed Council.

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which marks the line between self and non-self. The integrity of the I-ness is the basic issue in states of immuno-deficiency. Physical vitality as well as mental and spiritual strength is required for a strong *ahamkara* (I-ness). The Ayurvedic approach is holistic; that is, it views the immune function as a reflection of the person's overall health.

Immunity is the function that distinguishes self from non-self; immuno-deficiency is a state where the self is overwhelmed by its environment. *Ojas* (vitality) is abundant and *ahamkara* (I-ness) is strong when there is strength of body, clarity of mind, and tranquility of spirit. A lack of *ojas* (vitality) leads to a weakening and disintegration of the

individual's *ahamkara* (I-ness) whether the medical diagnosis be AIDS or another term for immuno-deficiency. Treatment aimed solely at normalizing T-cell counts ignores the fact that the immune function status also reflects other aspects of body/mind/spirit that likely need care. Ayurveda treats the person, not the disease.

The List of Foremost Things

- Food is the foremost among those that sustain life
- Water among those that are refreshing
- Exercise among those that make for firmness of the body
- Air among those that restore animation and consciousness
- Overeating among those that are causative of digestive disorders
- Eating according to one's digestive capacity among those that are stimulative of the gastric function
- Eating and working in conformity to one's constitution among sound practices
- Timely eating among those that promote health
- The giving of satisfaction among the properties of food
- The suppression of natural urges among those that are causative of ill health
- Wine among those that cause exhilaration
- Intemperate indulgence among those that impair understanding, resolution, and memory
- Excessive indulgence in sex among those that cause consumption
- The constant suppression of seminal ejaculation among those that cause emasculation
- The sight of a slaughtering place among those that destroy the inclination for food
- Abstinence from food among those that curtail life
- Irregular eating among those that impair the gastric function
- The eating of foods of an antagonistic nature among those that lead to disease
- Self-restraint among those that are wholesome
- Overstraining among those that are unwholesome
- Wrong indulgence among those that are generative of diseases
- Grief among those that promote disease
- Bathing among those that remove fatigue
- Joy among those that give delight
- Grief among those that cause wasting
- Inactivity among those that promote corpulence
- Corpulence among those that induce sleep
- Excessive sleep among those that give rise to lethargy
- An infant among those that require mild medication
- An old man among those requiring palliative treatment

AIDS in Ayurvedic Medicine

AIDS is seen as a condition of low *ojas* (vitality) where the individual's *ahamkara* (I-ness) has been weakened. Substances and methods which re-connect the individual to her or his source of vitality are to be sought. In addition, methods which directly strengthen *ahamkara* (I-ness), such as reflection,

meditation, and prayer, are also recommended.

Substances known to increase *ojas* such as meat broths, root vegetables, certain oils, and herbal medicines such as asparagus root, gotu kola, ashwagandha (*Withania somnifera*), and many others are an important part of the therapeutic process. In addition, substances that

strengthen the functions specifically weakened in the individual are also necessary; the person's individuality must not be forgotten. It must also be remembered that without the ability to digest properly, even the best foods and medicines can be more of a hindrance than a help, thus gastro-intestinal function must be addressed no matter what the diagnosis. Also, while aiming to increase *ojas*, the three forces (*Vata, Pitta, Kapha*), the seven bodily tissues (*dhatu*s) the 15 metabolic systems (*srotas*) and the seven centers of consciousness (*chakras*) must be guided towards balance if the therapy is to be successful.

Immunity and Self-Mastery

We all exist in varying degrees of vitality; for the person diagnosed with AIDS, this has reached a critical stage where the grip on life itself has become loose. For all of us, with or without low *ojas*, Ayurveda suggests that the process of gaining a greater mastery of ourselves is the fundamental movement towards health. So the above applies to all of us in our common humanity. For all of us, the *ahamkara* (I-ness) must be strengthened and then eventually expanded through personal discipline. For some this may involve prayer, for others a particular form of meditation, for others still, a life lived in which personal integrity is held supreme without the necessity of any official spiritual discipline. This essential process must continue, whatever state of health we are in; in this, we have the possibility of living out the essence of who and what we are, whatever the medical diagnosis.

Many questions arise in this undertaking: "To what extent does my circumstance reflect the state of my environment and to what extent my own stuff?"; "In what way is my life my own doing and in what way am I being herded towards something foreign to my essential nature?"; "Now that I am here, what is to be done in the time that I have, and where do I go after that?". The common themes in these questions are the dualities of self vs. non-self, existence vs. non-existence. To address this, Ayurveda looks to the methods of Yoga and Tantra which are ancient, comprehensive systems for examining the truth of one's circumstance and thus helping to re-integrate body, mind, and self. More than physical

(Charaka Samhita, 100 CE, India)

- Cheerful spirits among those that help to retain conception in women;
- Zest for life among the attributes of health;
- An assemblage of physicians among those that help to resolve doubts;
- Practical skill among the qualities of a physician;
- As also applied scientific knowledge in pharmacology;
- Reason supported by scripture among the means of knowledge;
- A sense of propriety among the results accruing from a knowledge of time;
- Indolence among the causes of procrastination;
- Practical work and observation among those that dispel doubts;
- Incompetence among the causes of fear;
- Clinical discussions among those that help to broaden one's understanding;
- The teacher among those that help in the acquisition of knowledge;
- Ayurveda among those that deserve to be practiced;
- A misunderstanding among those that are injurious;
- And the renunciation of greed among those that give happiness.



medicines are necessary if one is to be fully involved in one's own healing, and involved at more levels than meet the eye. This is essential; please think about this.

Ayurvedic Treatment of AIDS

The first thing an Ayurvedic physician does, with the assistance of a complete medical history and physical examination, is to determine the constitution (*prakriti*) of the individual. The physician comes to an understanding of the strengths, weaknesses, and tendencies of that individual. Next, the current status of the three forces (*Vata, Pitta, Kapha*), the seven tissues (*dhatu*s), the 15 metabolic systems (*srotas*) and the seven centers of consciousness (*chakras*) will be determined in order to arrive at a detailed diagnosis (*vikriti*).

Clinically, the digestive and eliminative processes will likely need to be strengthened. In order gently to assist digestion and elimination, spice category herbals can be used for extended periods. For a more powerful action, Ayurvedic herbal formulas may be used. Once a detailed diagnosis has been made, specific medicinal substances to strengthen the various metabolic functions become part of the treatment. Body, mind, and spirit must be nourished and this may involve changes in the diet, nutritional supplements, herbal and mineral medicines, exercise, rest, yoga, and meditation. The determination of the person's unique tendencies must always guide therapy so the treatment does not produce imbalances elsewhere.

An example of an Ayurvedic remedy that may be of use in the treatment of persons diagnosed with AIDS is *Chayvanprash* (pronounced Chai-van-prosh). This Ayurvedic herbal formula increases *ojas*, and restores the digestive, eliminative, respiratory, and sexual systems. It is frequently employed in wasting conditions where it has been clinically shown to improve health and promote weight gain. The main ingredient in *Chayvanprash* is Indian gooseberry (*Emblica officinalis*), which has the highest yield of natural source vitamin C, as much as 3000 mg per fruit. It is also a rich source of naturally occurring antioxidants including bioflavonoids, the vitamin B complex, and carotenes (vitamin A). Studies suggest that this berry possesses antifungal, antibacterial,

and antiviral properties. It assists digestion, lowers high blood pressure, and lowers blood cholesterol. Clinical research has shown that it accelerates repair of muscle and skin and enhances natural anti-inflammatory substances. *Chayvanprash* also contains many others herbs which amplify and augment the effects of its main ingredient; such a powerful formulation can be helpful in the treatment of persons who have been diagnosed with AIDS.

It must be remembered, however, that the greatest strength of Ayurveda lies not in its vast pharmacopoeia but with its holistic approach to life in both health and illness; an approach which not only creates health but enables a respectful relationship between the individual and the rest of nature. The Sanskrit word for

"nature" and "constitution" is the same; *prakriti*. Δ

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Decline of Virtue and Longevity (Charaka Samhita, 100 CE, India)

In the Primal Age, men and women were endowed with vitality equal to that of the progeny of Goddess Aditi, exceedingly blameless and unhampered in their powers, had direct knowledge of the gods, the godlike sages, the divine law, sacrifice, and ritual, possessed bodies that were compact and firm, had clear senses and complexions, speed, strength, and prowess like those of the wind. They were devoted to truth, rectitude, compassion, charity, self-restraint, moral discipline, spiritual endeavour, fasting, continence, and religious vows. They were free from fear, desire, aversion, infatuation, greed, anger, despondency, pride, disease, sleep, indolence, fatigue, languor, sloth, and the spirit of acquisition; and lastly, they were imbued with unlimited longevity. For the benefit of these people of heroic minds, qualities, and deeds, the crops were replete with wonderful taste, potency, and virtue, for the earth during the dawn of the golden age was charged to the full with all excellent qualities.

As the First Age wore on, those who were better circumstanced became heavy of body by overindulgence, this heaviness of body bred lassitude. Lassitude gave rise to indolence, indolence created the need for the accumulation of goods,

accumulation necessitated acquisition, the spirit of acquisition engendered greed. All this came to pass long ago, in the First Age.

Thereafter, the bodies of human beings failing to receive sustenance as before from the progressively deteriorating quality of food, and afflicted by the heat and wind, soon succumbed to the attacks of fevers and other diseases. Thus, there was a gradual decline in the span enjoyed by successive generations.

Thereafter, in the Second Age greed brought malice in its wake; malice led to falsehood; falsehood let loose lust, anger, vanity, hatred, cruelty, aggression, fear, affliction, grief, anxiety, distress, and the like. Consequently, in the Second Age, virtue found itself deprived of a quarter of its plenitude. From this quarterly loss in virtue, there followed a similar deterioration in the duration of the succeeding Age and in the beneficent power of the Earth. It is in consequence of this deterioration that there took place a corresponding deterioration in the sap, purity, and potency of herbs.

Two excerpts from a source text of Ayurveda.

An Ecological Approach to Health

Bacteria: Pathogens or Agents of Decay?

Adeha Feustel, B.A.

Suppose for a moment that 150 years ago medical scientists made a great error and set off in a tragically wrong direction, one that has caused untold suffering to millions of people, even endangering our very existence as a species, while its proponents line their pockets with gold.

Suppose for a moment also that, although it has been obscured by misinformation, ignorance, and corporate greed, the true path to health is still open to us. Suppose that we can easily understand the superiority of this path, and that all we need to do to turn the tide is to initiate a series of small changes in our lifestyles and values? And big changes? What if our survival as a species actually depended upon big changes? If we knew what they were, would we be willing to make them? Would we have the courage?

Could we, the people, person by person, decision by decision, fly in the face of medical error and corporate greed, defy our own complacency and addiction, reverse the process of decay, and regenerate not only our own health, but the health of the planet? Here is the story. You decide.

Setting the stage: theories of disease

Ideas about the cause of disease have changed down through the ages. Disease used to be blamed on angry gods, or on the spells and curses of powerful enemies. Before the 1880s disease was largely seen as the result of people being out of tune with their environment, and while some doctors treated disease with blood letting and mercury, many doctors relied on rest, sunshine, fresh air, and nourishing food or fasting, knowing that the body must cure itself and that the physician's role was to facilitate that process to the best of his or her ability. Modern western medicine has another perspective entirely.

Current western medicine tends to look at infectious disease as a foreign invader to be fought to the death. Each disease is seen as being caused by the invasion of specific germs, which can reproduce themselves and travel to infect other host organisms. The treatment of disease then, consists of identifying the germs causing the disease, analyzing the appropriate weapon to kill those germs, and using that weapon effectively; killing the germs is considered the cure for the disease. This model of the Magic Bullet Instant Cure has spread contagiously from the treatment of infectious disease into every aspect of health care: eradicate any symptom with a drug or quick-fix surgery, and that's all there is to it—you are cured.

This understanding of disease dates from the mid-1800s when Louis Pasteur associated pathological changes in laboratory cultures with microorganisms he identified in them.

He concluded that the "germs" were causing those pathological changes. Pasteur claimed that each disease was uniquely caused by a particular microorganism; this was the **monomorphic germ theory** of disease. A cure resulted when the particular microorganism associated with the disease was eliminated.

At the same time Pasteur was putting forth his germ theory, Antoine Bechamp held an opposing theory which was also in the spotlight: he asserted that microbes naturally evolve through different stages of development during their life cycle. These microbes respond to a toxic body by altering their normally healthy forms into forms associated with disease. But the microbes, he argued, do not cause disease. They are just responding to the toxicity of the body. This was the **pleiomorphic theory** of disease.

Another scientist of the day, Claude Bernard, argued that disease was caused by variations in the host's internal milieu, or "terrain," to which the microbes responded by changing form in order to survive. According to this theory, the vitality of the host was the principal factor in disease; relatively small changes in the internal environment made the "terrain" attractive and hospitable to different types of invading organisms: a weak host not only "invited" invading organisms to take up residence, but actually cultured them, inducing their changes into pathological forms. A strong and vital host, on the other hand, was inhospitable and would keep pathological organisms and disease at bay. This is the **pleomorphic terrain theory** of disease.

Not only did pleomorphism deny the causative role of germs in the development of disease, it also claimed that bacteria actually changed form in response to changes in the bodily terrain: benign bacteria, under suitable conditions, could change into a "deadly" form, becoming benign again if conditions in the body changed back to support the benign form. The changes in terrain could be very subtle, as little as 0.01%; the body's pH, or measure of acidity/alkalinity, was the primary determinant of health. A neutral pH kept microorganisms in benign or even beneficial forms.

Two roads diverge...

The scientists debated their theories publicly at great length. Pasteur prevailed, less due perhaps to the validity of his theory than to his commanding personality: "Pasteur was a chemist and physicist and knew very little about biological processes. He was a respected, influential, and charismatic man, however, whose phobic fear of infection and belief in the 'malignancy and belligerence' of germs had popular far-reaching consequences in the scientific community, which was convinced of the threat of microbes to man. Thus, was born the fear of germs

(bacteriophobia) which still exists today.” (Baker, p. 212) Not only did Pasteur’s theory give rise to the fear of germs, but at this crossroads an entire medical strategy was birthed, modelled on war, a strategy which resulted, like war, in untold devastation. Humanity began its War on Germs.

In his excellent book, *Awakening Our Self-Healing Body*, Arthur Baker aptly sums up the results of the natural evolution of this change in our understanding: “With the germ theory of disease, no longer did we have to take responsibility for sickness caused by our own transgressions of the laws of health. Instead we blamed germs for invading the body. The germ theory effectively shifted personal responsibility for health and well-being onto the shoulders of the medical profession which supposedly knew how to kill off the offending germs. Our own health slipped from our control.”

On the surface, this approach has served us pretty well. Modern antibiotics have saved many lives in the 70 years since Alexander Fleming stumbled across penicillin mold. But the crows are coming home to roost: the experiment has changed the subject. Not only has modern medicine (and agriculture) bred resistance into bugs, it has bred it out of us! As medicine has made its seductive claims to protect us from illness, we have allowed the real supports for health to crumble beneath us. Our soils have been eroded by three generations of chemical intensive farming, stripping them, and our food of vitality. During the same period we have poisoned our bodies and the biosphere with a myriad of toxic chemicals, drugs, radiation, and now feral DNA. We are just now beginning to comprehend the grim and far-reaching effects of our capitulation both to the germ theory and to the tender and lucrative ministrations of its proponents, allopathic medical doctors and pharmaceutical companies.

Pasteur recants

Ironically and perhaps tragically, Pasteur himself, on his deathbed, recanted: he confessed his belief that “The terrain is everything; the bacteria nothing.” (Hume, Ed. *Pasteur exposed: the false foundations of modern medicine*. Australia: Bookreal, 1989, as quoted from *Beyond Antibiotics*, Schmidt et al., p.14) But even though Pasteur himself finally acknowledged the primacy of the terrain in the origin of disease, the die was cast. The disease theorists were firmly divided into two camps: those adhering to Pasteur’s original theory, and those who believed the resistance of the host was primary. The discovery of sulfa drugs in the 1930s, followed by penicillin in the 1940s propelled medicine irrevocably into the chemotherapeutic age, leaving the notion of host resistance in the dust. Allopathic medicine has never looked back.

Allopathic model follows from the germ theory

The advent of antibiotics and their phenomenal initial success cemented the place of allopathic medicine as the dominant modality in the treatment of disease. Even now as the idea of dominion over microbial disease is revealing itself as sheer fantasy, and infectious disease is rejoining chronic disease at center stage in the medical arena, allopathic medicine remains, myopically focused on destroying disease. It comes up dismally empty-handed when pressed for a theory of health. For

allopathic medicine, health is the absence of disease, as defined by laboratory test results “within normal limits.” If you ask your doctor how to be healthy, she or he will probably say something like “Eat a good low-fat diet, get moderate exercise, and get a medical checkup once a year.”

At the yearly checkup, your doctor will test your blood and body functions to see if you are functioning within normal parameters. If you are not, if your blood pressure, liver enzymes or blood glucose are abnormal, he will probably write you a prescription for a drug that he hopes will bring that parameter back within normal limits: the drug will most likely block some function of your body to do this. Your body is in error, and the physician hopes to get it back on track. If illness prompts your visit to the doctor, he will write you a prescription aimed at altering your body’s function to eliminate the symptoms that are making you uncomfortable. Allopathic treatment pits itself against “abnormal” function of the body, which it calls disease, and feels victorious when the targeted body function falls back into line. If some other function moves into the abnormal range as a result of, or at least at the same time as the treatment, the doctor will treat that function with yet another drug: and another, and another... And, “well after all, what do you expect? After all, you are getting older...” Fast!

The allopathic medical model

So, in the modern (allopathic) model, we fight disease, which is caused by invading organisms, genetic weakness or defect, or even random bad luck. This model basically uses chemical means either to suppress the symptoms that are bothering the patient, or to change a body parameter—such as high cholesterol—that the current medical model has associated with bad outcomes, such as heart attack. If we have a cold with a runny nose and cough, we take an antihistamine and a cough suppressant to dry up the drippy nose and stop the cough. This is very convenient, perhaps even essential, in order for us to pursue our hectic daily lives. In the case of test results indicating abnormal functioning of some body system, again, a drug is used to modify the body function to improve the parameter.

Actually, even “holistic” approaches such as nutrition, acupuncture, herbal medicine, and homeopathy are often allopathically inclined, in the sense that they are oriented toward symptom suppression, or at least at treating the symptom without looking at the overall balance in the body, the terrain. The difference is in the type of drug used, and in how toxic the drug is to the body. Even some of the new fringe alternative or holistic therapies (like Rife machines and colloidal silver) are aimed at eliminating the bacteria supposedly causing disease. The assumption in all these approaches is that the body is somehow in error, and that a drug or herb or homeopathic preparation can straighten it out.

But what is the effect on the body of these chemical—or herbal—or nutritional agents suppressing the symptoms of disease? Is it possible that disease is an expressions of the body’s intelligence? The various allopathic models address neither the cumulative and long-term effects of interfering with body functions at a symptom level, nor the toxic effects of non-physiological substances—drugs—given to alter those functions.

And as we have seen, 70 years of allegiance to the allopathic model of symptom suppression, drug dosing, and surgery has not improved our national health. In fact, we seem to be going to hell in the proverbial handbasket.

The Road Less Traveled: Addressing the Terrain

If symptom-driven blocking of bodily function does not sit well with us, if we are concerned with cumulative side effects of toxic drugs, if we are seeking the reality, and not the mere appearance of health, where do we turn? Are there alternate models that effectively address "the terrain" to which Claude Bernard pointed? There are indeed!

Even before Pasteur, many traditional disciplines addressed whole body balance: five phase Chinese Medicine, Ayurvedic, and Tibetan medicine are examples. Natural Hygiene, homeopathy, aromatherapy, and Bach flower essence are examples of more recent approaches. (Of course it is important to remember that each of these modalities can also be used merely to treat symptoms rather than establish balance from a whole body perspective.) In fact before Pasteur and the advent of antibiotics, most successful medical treatments were aimed at bringing the sick person back into balance with the environment through the use of enhanced cleanliness, pure food, hydrotherapy and mineral baths, sunshine, fresh air, and, primarily, rest. The modalities that did not seek to do this, those that applied drugs like mercury and arsenic, and practices like bloodletting, tended to kill the patient.

After Pasteur, when the medical majority went off chasing the illusion of dominion over bacteria, charging down the allopathic road of antibiotics and chemical pharmaceuticals, the pleomorphs and the natural hygienists set out instead on the road less traveled.

Pleiomorphism: Rife, Enderlein, Naessens

Since Bernard and Bechamp's day, a number of scientists have pursued pleomorphic study, among the most notable, Royal Rife, Gaston Naessens, and Gunther Enderlein. Because pleomorphism has been suppressed by the medical establishment, we in the West have not heard much about the developments in this arena, and the following reports may sound far fetched. But before you discount them, take the time to do some research. It will be fascinating, and it may save your life!

In the 1920s a self-taught genius named Royal Rife developed an ingenious microscope capable of much greater magnification than even the electron microscope. He was also able to view blood and tissue in a live state, because he used light in a way that illuminated cells without their having to be stained. Because the electron microscope requires the use of stained cells, and because staining kills the cells, the electron microscope can only view dead material. Using super magnification of light-illuminated live cells, Rife was able to confirm the pleomorphic nature of bacteria. Because he could actually see the bacteria, he was able to track their development. He invented a method of aiming a sound frequency at the bacteria, and was able to tune the pitch of the frequency to what he called, the mortal oscillatory frequency—similar to the soprano holding a high note that shatters a glass. Rife developed tuned frequency treatments to selectively eliminate many types

of bacteria from the body. Although his research was initially hailed as "the end of disease," it was eventually suppressed by the medical establishment.

Using a microscope similar to Rife's the French scientist Gaston Naessens has independently verified the pleomorphic nature of bacteria, and developed immune stimulating injections that can in some cases turn the pathological bacterial forms back to normal benign forms.

German bacteriologist Gunther Enderlein was a student of Bechamp, and continued to research the pleomorphic organisms, observing them under a dark-field microscope, which also is able to observe the blood in a live state. Viewed under these ingenious microscopes, the blood that allopathic medicine calls sterile, reveals itself to be a world teeming with life forms that aren't in the books. Microbes mutate according to the pH of the blood, and if the pH varies too far from balance, fungus and yeast overgrows first the blood, and then the body, and, unless the pH is reversed, the body dies.

See your blood via dark-field microscope!

There are many dark-field microscopists around today, and if you want to get motivated to take care of your health, go visit one! You will be able to see your live blood on video, and I guarantee you one of the most fascinating office visits of your "medical" career! You will witness the state of your moving red blood cells, and whether or not they are all clumped together, which makes oxygen exchange with the tissue difficult. You will see the activity level of your wiggling macrophages as they gobble down debris. You may see cholesterol or parasites. You will learn about the state of your liver. You may meet the endobiant, the mutating symbiotic bacteria in your blood, which serves you in a healthy state, and composts you in the pathological state! You will see how your blood ages over the time of your visit, which gives an indication of how your body is aging. Your practitioner will very likely give you a list of recommended diet and lifestyle changes as well as a video of your blood, so that you can compare it with future readings. Then later you can come back and see how those changes have

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changed your blood picture, and what you may still need to work on. If you can, take a friend, and at least one of you may be not so healthy, so you can actually observe the differences in your blood pictures. Your attitude toward health care will never be the same!

For more information on dark-field microscopy, see Steven Denk's excellent website www.biomedx.com, where you can also order his small but excellent book *How You Rot and Rust*, one of the most succinct, understandable, and downright helpful explanations of the pleiomorphic biology of disease I've ever read.

These brilliant microscopists have developed methods for observing the blood and for interpreting what they see, enabling them to advise you about diet and life style changes that will help you improve your body's terrain, and so discourage, perhaps even eliminate, the diseases which your present diet and lifestyle have created.

Health theory of Natural Hygienists

Natural Hygiene proposes some extremely interesting and provocative theories. Practitioners assert that what we call disease is actually the body trying to purge itself of toxins or, failing that, to store them in the body in the way least likely to interfere with function. Since disease is merely the process of a toxic body trying to clean itself out, any "treatment" to stop the symptom is actually counter productive because it interferes with the body's efforts to reestablish healthy balance through tissue detoxification. They believe that any medication that produces disease in a healthy body should be withheld from a sick one, and that only those conditions producing health in a healthy body—vital food, clean air, pure water, sunshine, exercise, and adequate rest—should be supplied to a sick one. Natural Hygienists deal with "disease" by carefully supporting it and allowing it to run its course, trusting the body's innate drive to create health. In this modality, there is no attempt to cure, only to supply the conditions of health, thereby supporting the body's natural drive to return to normal healthy function. To do anything else, the natural hygienists believe, just gets in the way of the body healing itself. Basically, that means no medication. Period.

Hygienists claim the apparent beneficial action of medications in stopping symptoms is due to the body's having to shift gears to get rid of the medicine, forcing the body to put its cleansing efforts on the back burner to take care of the greater evil, the drug you just gave it in your misguided attempt to "help." By stopping the symptom, you have handicapped and burdened your body's self healing capacity and forced the body to resort to increasingly desperate means to jettison its toxins. Any substance you would not be taking when healthy will just be one more toxin the beleaguered body must eject.

So, in the system of natural hygiene, you assist the ailing body, not by trying to make it get well, but by facilitating its being "sick"! To do this, you must both supply everything necessary to support healthy function and remove all those influences and foods that the body cannot use. And then you must leave the body alone to heal itself.

Of course, this approach goes against our every instinct, conditioned as we are by the allopaths. But when you consider

that animals generally take this approach when sick, refusing food, and retreating to a cave to sleep, perhaps you will be willing to consider this theory further.

The progression of disease

According to natural health theory, "disease"—the body's attempts to right itself—proceeds in a natural progression in response to the ways we moderns care for our bodies. In our modern lifestyles we accumulate many toxins. A toxin is any substance that our bodies cannot use to build health, and must therefore eject, burn, or store in some part of the body. Toxins which our body itself creates are called endotoxins (dead cells, used hormones, etc); external toxins, those which come to us from outside our bodies, are called exotoxins (pesticides, air pollution). Almost anything that we are not adapted to by evolution is likely to act as a toxin in our bodies.

Getting rid of these toxins is a very high priority for our bodies, because high levels of toxins interfere with normal function, and can eventually interfere to the point of death. The more toxins we accumulate, the more energy the body has to expend to get rid of them, and the less energy the body has available for other purposes. If toxins accumulate faster than we are able to process and eliminate them, our body stores them in the best place it can find at the time—a joint, fat tissue, or some area of the body that has poor circulation and cannot move the toxins out as fast as other areas.

According to Hygienist theory, at a certain level of toxicity, a vital body will make an attempt to throw off its toxins. The energy with which a body attempts to throw off the toxins is proportionate to the amount of vitality that the body still possesses. Children are usually strong and vital, and are notorious for the sudden violence but short duration of their acute illnesses. As the body ages, it usually loses vitality and its attempts at detoxification will be fewer and weaker. The body learns to live with the toxins, but only at a tremendous compromise, with corresponding loss in health and vitality.

When the body attempts a "housecleaning" and tries to throw off its accumulated toxins, fluids, and crud exude from the body and we say we have a cold, flu, fever, diarrhea, eczema, etc: we are describing the symptom or form the self-cleaning reaction is taking. But instead of allowing the body to expel its toxins, we try to stop the process, which we view as a symptom of disease. We take some allopathic medicine like aspirin, a cold medicine, an anti-diarrheal, or a skin cream. In short, rather than supporting the process of cleansing, we call it a disease and stop it as fast as possible! By suppressing the symptom, we actually interfere with the body's attempt to heal itself. As we continue to suppress the symptoms, our vital and valiant body registers increasing toxicity and tries again to dump the growing toxic load—harder! We get a more serious symptom which prompts a more aggressive symptom suppression, and then the beleaguered body has to try harder again!

Not only is the body struggling with an increasing load of the "normal" toxins accumulating from the modern lifestyle, but now the body is being laced with even more toxins: the medicines that our modern pharmacist has in his arsenal of symptom-suppressive weapons. When a substance has no normal function in the body's biochemical and metabolic processes—in

other words, when it is not part of our biologically mandated or evolutionarily adapted environment—the body has to work at throwing it off so as not to become overloaded in a tremendous internal traffic jam. Hygienists believe that when a drug is administered to suppress a symptom, what actually happens is that the body stops trying to cleanse and directs its attention to ejecting the drug, which has become the greater threat. The body expends its precious vitality getting rid of the drug, and then has to rest while it accumulates enough energy to try to cleanse again later. But instead of being stronger, as it might have been had it been allowed to decrease its toxic load through the cold or flu, the body is now weaker. The vicious cycle of symptom suppression continues, and the body wastes its precious vitality in a struggle that is futile in the face of our continuous suppression of its cleansing efforts.

For example, a body overlaid with toxic debris musters the energy to attempt a housecleaning. When it chooses the mucous membranes of the head as a dumping vehicle and the nose as exit, we have a cold. We suppress the symptoms with antihistamines, leaving an accumulation of toxins in the body while the body rallies its resources for another attempt at cleansing. Now perhaps the body tries for a flu, which is an escalated pathway, enabling the body to dump toxins faster than a mere cold. So we take cold and flu medicine with a nice fever suppressant.

After we have suppressed the flu, perhaps the body will try a chronic sinus infection, or perhaps pneumonia; or, unable to jettison the toxins, maybe it will try to store them in the joints as arthritis or in the tissue as cellulite, or even cancer. The process of escalation continues, and our body uses up its limited vitality in a pointless, destructive, and ultimately futile war with our efforts to suppress the symptoms. Eventually the body lacks the energy or vitality even to try throwing the toxins off, and we move from a series of acute diseases into the chronic degenerative diseases from which most of us eventually die.

We have all been so conditioned to think in terms of the dominant allopathic paradigm, that it is very difficult to wrap our brains around the idea that disease symptoms are actually the body's attempt to heal, and NOT the evidence of bacteria winning a battle for our bodies.

Logical flaw in germ theory

If you think about it carefully, you will realize there is actually a logical flaw in the idea that germs cause disease: all people exposed to these "causative" germs do not succumb to the disease. If germs actually cause disease, then anyone exposed to the causative germs should get the disease. In fact, healthy individuals usually have many if not most of these "causative" germs constantly residing in their bodies, and yet continue to be healthy. So the germs themselves are not in and of themselves causative. As the scientists say, germs cause disease in susceptible individuals. This statement actually puts the causative factor squarely in the arena of host resistance: if you are healthy, if your terrain is balanced, you will not develop disease, even if you are exposed to, or even harbor, the associated germs.

We must note here that medical commerce is driven by the profit motive. There is little profit on the side of this equation

that has to do with increasing individual resistance, thereby decreasing susceptibility. There is a great deal of profit to be made on the side of the equation that is pushing the war on germs and the chemical suppression of symptoms.

So of course the vast majority of the research by western scientists (largely funded both directly and indirectly by pharmaceutical companies) has been aimed at the germ side of this statement, identifying the germs as causative agents and finding the correct weapon, a medicine/drug, to kill them off, often ignoring that weapon's potentially damaging or even lethal effect on the host!

This is very similar to the way we conduct modern warfare: we often seem willing to demolish a country in order to liberate it! In fact most of the language of modern medicine reads like a war story, with valiant researchers continuously inventing and adding more and more powerful drug/weapons to the doctor's arsenal against disease; each new weapon causes an escalation in the warfare, which becomes more and more horrific, and the use of the ever-escalating weapons more and more unthinkable. Western medicine is indeed very much like western war, with *iatrogenic*, or physician-induced illness now among the leading causes of death!

Rather than focusing on the germs and the weapons, how much more appropriate and effective to look at what makes some people susceptible and others immune. If we learn to build and support immunity, we can avoid the chemical warfare of modern medicine and the resultant poisoning and crippling of our bodies by toxic medicines which have no natural function in the body, and which so often produce multiple side effects, sometimes unto death. By making the neighborhood (the bodily terrain) unattractive to pathological organisms, perhaps they will simply leave, or better, not show up in the first place.

This approach to health and disease parallels ecological approaches to pest control or agriculture. If you have cockroaches in your house, you can spray for them with poisons and pesticides, which also poison your home, your pets, your children, yourself, and eventually your planet—or you can put all the food in jars and keep the place clean—control their food supply! As organic farmers have learned, pest outbreaks are related to monoculture cropping patterns and to plants weakened by loss of soil fertility. Modern agriculture pumps itself up on chemicals and biocides, yet produces food devoid of vitality while wasting the natural world.

Could we, by adopting healthy patterns of living, cleaning up our environments, and strengthening our natural immunities, avoid the war all together, and spend our precious lives in better health and with time for more interesting and rewarding pursuits than fighting cockroaches, spraying weeds, or popping pills? With an emphasis on keeping the terrain healthy and balanced as opposed to killing the enemy germs, we can begin to see the world as an interdependent web of organisms, each contributing to the vibrant and balanced life of the other; building sustainable health, perhaps we can create peace. △

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A Ruminatiion on Barberry and Descartes

Richard Mandelbaum

I. The Woods

Berberis thunbergii is a good place to start. This understory shrub, usually referred to as Japanese barberry, is common in the northeastern U.S. It is characterized by bright red berries that dangle in clusters from its branches in the fall and throughout the winter, and by numerous thorns that would make it an attractive candidate for a hedgerow plant. This was most likely the reason for its initial import from Asia; the problem is that barberry does not stay put. It spreads voraciously over the landscape, and I have met botanists who scorn it as an “invasive alien”—a blight upon the land—as it spreads in thickets over sometimes huge swaths of land, in open meadows, along roadsides, and under hardwood groves.

Barberry, however, is a valuable plant. First of all, it is what is often referred to as a “warrior plant.” Along with other thorny plants such as *Rubus spp.* (brambles), and *Rosa multiflora*, it moves rapidly onto disturbed land, replacing the very first pioneers such as *Verbascum thapsus* (mullein) and *Arctium lappa* (burdock), to create impenetrable barriers. In this way it can be seen as analogous to a component of the human immune system, or alternately, as scar tissue, keeping out large animals—most notably humans—from a piece of land struggling to recover through the slow process of soil accumulation and remineralization.

On a more practical level, *Berberis* is also a valuable medicine. (24) Similar to its cousin in the western U.S., *Berberis aquifolium* (Oregon Grape), barberry is an alterative (restorative to health), cholagogue (increases bile flow to the intestines), and bitter tonic, helping to cleanse the liver and blood, and to stimulate gastric and intestinal enzymes, thus increasing and improving digestion. (1a) It is especially useful in cases in which the body’s impaired ability to detoxify manifests itself in the skin (the body’s detoxifier of last resort). In addition, it has strong anti-bacterial, anti-fungal, and anti-viral properties, useful in preventing and treating myriad infections both topically and internally, from the throat down through the intestinal tract. The root bark, harvested in the early spring or late fall, is used traditionally, although the twigs are also medicinally active.

Barberry is high in berberine (naturally occurring chemicals are often named for the organism in which they are first identified), an alkaloid that imparts to its inner bark a bright golden yellow, which is also found in a native and now scarce eastern woodland herb, *Hydrastis canadensis*, or goldenseal. It is a risky business to judge plants’ medicinal activities by the activity of particular chemicals found in them; the whole concept



of the “active ingredient,” followed by herbal products standardized to these chemicals, has created more misunderstandings than it has good medicine. But in this case, barberry and goldenseal do share many properties, as people familiar with the uses of goldenseal will see by the above indications.

Thus, we could take pressure off the demand for goldenseal, which should only be cultivated and not harvested from the wild due to its scarcity, by substituting barberry whenever appropriate. Doing this, we could at the same time clear the woods of this non-native plant and create income for local wildcrafters. (Another herb, *Coptis trifolia*, or goldthread, is also high in berberine, and even more similar in activity to goldenseal. It is common in many parts of the North woods, and a hundred years ago was commercially available, but its roots are so thin that it could quickly become endangered if commercial harvesting resumed.) There are no doubt plants occupying similar niches in other bioregions—so called “invasive weeds”—that are in fact quite useful. The same can certainly be said of *Pueraria lobata* (kudzu) in the southeastern U.S., useful in treating disorders as diverse as inflammation of the gastrointestinal tract, muscle spasm and pain, and heart disease.

Does it make sense then to view such plants as “invasive aliens” in the landscape? On the one hand, *Berberis* does spread readily into the understory below mature hardwoods, crowding out native plants of the herbaceous and shrub layers of the forest (unlike *Rosa* and *Rubus*, which tend to thin out as succession converts a field into mature forest). But on the other hand, we know that such woods are far from healthy mature forests. Would *Berberis* be anything more than a marginalized weed limited to roadsides and the like, if it was encountering Eastern old growth rather than the sick land we inhabit, barely beginning to recover from 400 years of repeated clear cutting and abuse?

II. The Philosopher and the Meaning of Health

The ecological concept of invasive species parallels closely the pathogenic, or germ theory of disease. Such a view leads to the justification of drastic measures, and we can see the ecological equivalent of toxic chemotherapy in the use of chemicals to suppress “invasive species” of plants. (2) PSE&G, the local utility company in Southern New Jersey, has conducted for the last few years the most massive aerial herbicide spraying in the history of the state, sanctioned by the Department of

Environmental Protection, to rid wetlands of *Phragmites*, all in the name of "ecological restoration." At the same time, agencies in the New York City area have reacted to the West Nile virus with widespread aerial and ground spraying of toxic chemicals, despite the fact that more people are being sickened by the pesticides than by the disease, all in the name of "public health."

This is a reflection of modern medicine's focus on illness, rather than on health. This approach has created worked miracles for individuals suffering from acute and late stage illnesses that respond to high-tech and drastic measures. Who doesn't marvel at the surgeon's ability to successfully remove his patient's heart from her body and place it on a dish, operate on it to remove widespread tumors, then rebuild it and replace it successfully in her chest cavity? But we pay a heavy price for this set of priorities, reflected in public health statistics that make the U.S. resemble the poor countries of the world more than our economic counterparts. We can see how the same mentality makes our nation very efficient at waging war, but very deficient at promoting peace.

Indeed, the very concept of health is altogether lacking in conventional medicine. Even when we speak of "preventative medicine"—such as the suggestion by the National Cancer Institute to eat more brassicas because they have been shown to aid in the prevention of cancer—we are still focused on disease, not health. *Taber's Cyclopedic Medical Dictionary* states that "the World Health Organization defines health as a state of complete physical, mental, or social well-being and not merely the absence of disease or infirmity."⁽²⁵⁾ This is not a bad definition, despite its limitations, but it omits any mention of spiritual well-being or the importance of family and community, not to mention the greater society. (4)

However, the entry goes on to dismiss even this small attempt at an inclusive definition of health, by stating that "this definition is of limited usefulness when evaluating an individual." Any holistic health practitioner knows how far this is from the truth! As its primary definition, *Taber's* describes health as "a condition in which all functions of the body and mind are normally active." This seems innocuous enough, but in fact reveals the deep mechanistic underpinning of current medical thinking. This mechanistic view of the human body can be traced back to Rene Descartes, the 17th century French philosopher, who was its earliest and perhaps greatest champion.

Descartes believed that the Universe was essentially a vast machine created by God (more than a metaphor, he believed this to be literally true). Indeed, every component of the Universe was mechanical in nature, however complicated, with only two exceptions: God, and the human soul. It is easy for a holistic-minded person to see how dangerous such a world view can be. From the soul sprouts free will, and in turn, thought. This is the true meaning of his famous syllogism, *Cogito ergo sum* (I think therefore I am): that we humans, as the only beings besides God who think, are the only beings who can truly be said to exist.

Despite Descartes' reputation as one of the first great rational thinkers, such a mentality can only be explained by an entirely rational allegiance to the Judeo-Christian myth of Man being created "in the image of God."⁽⁵⁾ In this universe, Man and God stand on one side of the great divide, and the rest of Creation on the other. Descartes believed this to such an extreme that he

described animals as automata, since "it is more reasonable to make earthworms, flies, caterpillars, and the rest of the animals, move as machines do, than to endow them with immortal souls."⁽⁶⁾ A man true to his words, he was known to perform vivisection (live dissection) on dogs and other animals, since they were after all, soulless and thoughtless, and therefore did not even exist to the degree that he did.

I dwell on Descartes' thinking because I consider his influence on the culture of the modern world to have been formative. His model of the universe still dominates the institutional and popular minds, even if modern physics has rejected mechanistic explanations of reality. It is not difficult to see how dangerous a philosophy it is. Though Science (empirical knowledge of the world) and rational thought are immensely useful tools, the rationality of the scientific method wedded to the irrational and arrogant ethic of human superiority over nature, has led us down a destructive path which now threatens to extinguish the human race.

Descartes' philosophy also unfortunately still dominates modern medicine. There is in fact little difference between his view of health, in which he "compares a sick man and a badly constructed clock with, "a healthy man and a well-made clock,"⁽⁷⁾ and the modern definition of health as "a condition in which all functions of the body and mind are normally active." This mechanistic view of the human body, consistent with the Cartesian view of the world at large, is a perfect example of reductionistic thinking. At the risk of over-simplifying, we can define reductionism as an approach to knowledge in which "understanding each part leads to understanding of the whole," whereas holism can be defined as "the whole being greater (or at least other) than the sum of its parts."⁽⁸⁾

At the same time, completely rejecting the pathogen model would be going too far. For example, I have yet to hear a good alternative explanation for the rapid spread of syphilis among Native American populations. Smallpox spread so rapidly and so virulently that it wiped out whole villages before their inhabitants had even heard the news that a strange white people had arrived from across the ocean, at a time when (it can be said without any risk of romanticizing) Native Americans were vastly more healthy than the Europeans of the time, who having become resistant also suffered from it but to a far lesser degree. The syphilis and smallpox tales are very similar to the story of the infamous blight that all but wiped out our native chestnut, *Castanea dentata*. Another example is the influenza pandemic of the early twentieth century, in which, counter-intuitively, the young and strong succumbed to the virus more than the old, sick, or otherwise immuno-compromised. There are other examples. Perhaps *Berberis thunbergii* would invade old growth as well. We may never know the answer to that question.

It is clear that the germ theory explains only a small proportion of illness; a healthy organism will rarely succumb to disease. (9) The terrain is far more important than the microbe. For instance, we could save more lives from West Nile virus (which incidentally has been responsible for the deaths of only eight people over two years, whereas the flu kills thousands annually) by promoting strong immune function through diet, exercise, and the use of immune tonifying plants, than we could save by poisoning ourselves and the land with pesticides.

III. The Garden

At Frost Hollow Farm, a medicinal market garden in northeastern Pennsylvania, the strength of the holistic approach in building healthy land has become more clear to me over the last few years as the garden has matured into an active ecosystem.

The most striking example lies in the potato patch. Compared to the wild, semi-wild, and otherwise tough medicinal herbs making up the majority of the garden, potatoes represent needy domesticated annuals—just the kind of plants you would expect to have more pest problems. But in fact in all of 1999 I saw only a handful of Colorado potato beetles—the worst pest on potatoes in our area, and this past year I saw none at all. Only ladybugs showed themselves as I peered under leaves looking for eggs; eventually I quit looking. I think there must be others in the area having the same success, but I have yet to meet them.

Returning to the ideas discussed earlier and applying them to the garden, a “preventive” approach to Colorado potato beetles would be to introduce ladybugs, or using a deterrent. There’s nothing wrong with that; in fact sometimes it’s the wisest thing to do, but that in itself will not build land health. For that you must forget entirely about the pests (i.e. microbes), and focus on nurturing the land back to wholeness. At Frost Hollow this involved the tried and true methods: applying copious amounts of compost, minimizing tillage, and increasing the diversity of self-seeding annuals and perennial crops.

Biodiversity is of supreme importance, and there is always something flowering in the garden during the growing season,

often members of several different families at the same time. These include Apiaceae (formerly Umbelliferae), such as *Levisticum officinale* (lovage) and *Foeniculum vulgare* (fennel), Lamiaceae such as *Ocimum sanctum* (holy basil) and *Melissa officinalis* (lemon balm), and Asteraceae (formerly Compositae) such as *Echinacea purpurea* and *Inula helenium* (elecampane). At any time between April and October, the garden is buzzing with an amazing assortment of insects for such a small space (less than an acre).

In the first two seasons weeding was more intensive, while certain species such as *Viola sororia* (dooryard violet), *Plantago major* (broad leaved plantain), and *Taraxacum officinale* (dandelion), were encouraged to prosper. Now they form a living mulch over much of the garden, providing habitat for myriad



The author's garden

insects, and cutting down drastically on the need to weed or mulch. I liken all this in my mind to encouraging a healthy and diverse bowel flora, which once established prevents the overgrowth of pathogenic organisms in the gastrointestinal tract. And now that these herbal allies grow in sufficient quantities, they have become a money making crop. The plantain and dandelion grow many times larger in the garden than in adjacent lawns and nearby waste places. I believe this may be due as much to giving them space to grow as to the fertility of the soil (although I haven't tested that). In other beds I have used *Trifolium repens* (white clover) as a living mulch around perennial herbs. This has worked well enough that I plan to expand my use of it.

In four years the garden has come to resemble a wild meadow, and in all that time only one pathogen has invaded with enough vigor to require some reductionist thinking. That was a rapidly growing colony of voles which seemed to enjoy nesting in the thick straw mulch and munching on seedlings of lettuce and echinacea. But that infection was resolved with the use of a fairly benign medicine: a cat, which quickly sent them packing to the neighbor's yard!

Over the past few years the garden and the woods have begun

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o teach me about the connections between land health and human health. Maybe these are obvious teachings. Indeed, only the Cartesian culture in which I was raised led me to separate the two in the first place. For myself, the path toward health, or wholeness, involves breaking free of that mentality in the search for balance: intelligence yes, but coupled with wisdom; knowledge with humility (in recognition of our fundamental ignorance), a fruitful marriage of science and mystery.

Notes

1. *Berberis vulgaris* is most often cited as the medicinal species, but is not very common in our region, and the two species can be used interchangeably.

2. Even the Sierra Club has come out in the past in favor of the use of herbicides in certain situations to kill invasive plants.

3. *Taber's Cyclopedic Medical Dictionary*, 17th Edition, F.A. Davis & Co., Philadelphia, 1993

4. These are, of course, complex and far-reaching topics. Here's something to think about from *Scientific American*, July 2000 ("The Geography of Death," p.22), explaining research by Ichiro Kawachi on regional variations in mortality rates. He shows that mortality corresponds not only to socioeconomic status, but even more so to economic inequality: "A better explanation (for regional variations in mortality rates) may lie in distribution of income. States with significant income inequality also tend to have high mortality rates, a relation that holds for both blacks and whites. Unequal income distribution may shorten lives because it degrades civic cohesion. Ichiro Kawachi and his colleagues at the Harvard University School of Public Health measured civic cohesion in terms of participation in community groups and by the extent to which people trust one another, as measured by such statements as 'Most people would try to take advantage of you if they got the chance.' They found that in states with high mortality, such as those of the Southeast, trust in others is low and that in states with low mortality, such as Minnesota, North Dakota, and Utah, trust is high.

"As for public policy, Kawachi believes that reducing income inequality would help lower mortality; he suggests prescriptions which might include raising the minimum wage, expanding the earned income tax credit and increasing child care subsidies. Others hold that the best approach is to rely on public health measures."

5. I'm purposefully using the term Man here rather than a gender neutral word, since I think that it more accurately reflects the thinking and mentality of these cultural beliefs.

6. Descartes, "Letter to Henry More, 1649," from *Descartes Selections*, ed. Ralph Eaton, Charles Scribner's Sons, 1927.

7. Descartes, *Meditations on the First Philosophy in Which the Existence of God and the Distinction Between Mind and Body are Demonstrated*, Meditation VI: "Of the existence of Material Things, and of the real distinction between the soul and body of Man," *ibid*.
27. The words health, holy, and whole all derive from the same Old English word *hal*.

9. "The failure of allopathy was that it treated disease, or a part of an organ, or tried to do so, whereas the only means of cure was to treat the whole patient." Fergie Woods, as quoted in *Yasgur's Homeopathic Dictionary*, by Jay Yasgur, Van Hoy Publishers, 1998, p.9

Richard Mandelbaum migrates with the seasons between New York City and the Southern Catskills, working as an herbalist, a gardener, and a farm labor activist. He is currently establishing gardens at the Center for Creative Therapies and the Arts in Forestburgh, NY. He can be reached at PO Box 63, Forestburgh, NY 12777, or at richardmandelbaum@hotmail.com

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Developing Integrated Community Health Centres

Catherine Willow, N.D. and Michael Willow

Integrated medicine takes the best of old and new healing philosophies and melds them into an intelligent health system based on timeless principles and recent science. When drugs, surgery, and radiation were solidly instated over this past century, much of our ancient medical wisdom was forgotten or abandoned as too slow and cumbersome. With the failure of modern medicine to address the chronic diseases that plague western civilization, there is a need to revive the ancient principles. These are based on the profound biological and spiritual realities of human beings—who now live in a toxic and rapidly changing environment.

As with many other areas of change, i.e., energy, construction, and agriculture, integrated health care is more easily developed by small groups of open-minded, forward-thinking individuals rather than huge complex institutions entrenched in a profit-motivated, symptom-based framework. We believe that integrated, or holistic, health is essential to our survival, as much as, and interdependent with, organic farming, alternative energy, eco-construction, and enlightened models of governance.

Furthermore, we also believe that the core element in all of these areas, fundamental to the quantum leap in perception that is needed to evolve our species, is spiritual awareness. In other words, moving from a position of each person for themselves to one of cooperation, peace, and a win-win mode of existence which includes all living beings.

Our understanding is that the destructive habits which make us sick are driven by psychological issues such as insecurity, guilt, and low self-esteem. Spiritual awareness fosters acceptance, faith, and love of self and others. Once this transformation has begun, the underlying tensions that produced illness gradually dissolve, and true health can bloom. A health care centre that is based on this process supports its community at the deepest possible level. We offer this article as a suggested guideline for developing such a centre, based for the most part on the one we live in.

Road Map Back to Health: Education

Essential to the process of healing is the patient's understanding of the road map that guides an often complicated journey of unfolding. It gives direction for every level of being.

Physically it teaches about detoxification and nourishment, the importance of lifestyle, individuality of body types, and how the body functions in general with all of its parts. Emotionally and mentally we learn about issues and blocks and how they relate to lifestyle, physical symptoms, and psychological suffering. Finally, the energetic and spiritual aspects need to be defined and explained according to each person's ability to understand them so they can be embraced without pressure or guilt. Once a community clarifies these principles, each person can take responsibility for his or her own process, and can better

work in tandem with practitioners, family, and supporters. Most importantly, people can understand what their symptoms mean, how they are caused, and the path to wellness without needing medical intervention every step of the way. We find in our centre that as patients "get" the overall connections, their health really starts to take off as they instinctively do what is right for themselves.

Assessment and Diagnosis

Holistic assessment is the most important aspect of integrated health care—other than education. It is the key to devising a successful treatment program and answers the question, "What is

really going on here?"

There are two important levels of assessment: understanding the patient and understanding the disease. The first involves constitution, lifestyle, personality, and driving issues. The second reveals, or rules out, pathology. These are both done by way of history, physical exam, and lab work.



History

This is the most important part of an assessment and usually

gives the diagnosis to any experienced practitioner who then simply confirms her or his suspicions with a physical exam and lab work. Especially crucial is the onset of the "chief complaint" and what was happening in the patient's life at the time. All aspects of a person's life are useful to explore in a holistic assessment because each piece of information fits together with the rest to determine a unique picture which then leads to an obvious treatment plan. In a way it's like detective work. We always ask the person's own sense of their condition as well—people often know exactly what is going on with themselves.

History gathering is usually best done partly with a form and partly in an interview, and should take a minimum of 45 minutes. We take two hours over two visits to assess a person at our centre. Of course, information gathering continues with each visit and includes dental status, old scars (physical and psychological), diet, family of origin story, exposure to toxins, past relationships, and much more, depending on the knowledge of the practitioner.

Physical Exam

Again there are two levels: ruling out disease and understanding a person's unique constitution and how it is strong and weak.

There are many windows into a person's condition and we find the following combination extremely valuable: inspection of the iris, tongue, nails, hair, facial features, and body shape; percussion and palpation of the abdomen and liver (we put great emphasis on the digestive system); pulse diagnosis according to Ayurveda (the ancient health care system from India); and orthostatic blood pressure (to assess adrenal, liver, and cardiovascular function).

Not only are these methods non-invasive and informative they are exciting to teach to patients so they can better monitor and understand their own progress.

Ruling out disease can start with examining the affected part and then be confirmed with appropriate lab work, either in-house or by referral.

Lab Work

Numerous lab procedures can easily be done in a community health centre, are inexpensive, and give wonderfully useful information. These include:

- Urinary dipsticks to check for sugar (diabetes), protein (kidney disease), blood (infections) and other criteria,
- pH paper (for urine and saliva) to identify whether a person's metabolism is acid or alkaline, giving clues as to whether a person is in the range of degenerative disease (ie cancer range is acid saliva and urine).
- Sublingual zinc solution lets you know if the person has an all too common zinc deficiency which undermines the immune system in everyone and fertility in men (among other systems).
- Urinary indican is a dye which unmasks colon toxicity, often the physical cause of disease.
- Hair analysis quantifies necessary and toxic minerals in the body (needs to be sent out).
- Stool tests show quality of digestion and identifies pathogenic organisms (usually sent out, but can be learned and practiced in-house if one has a good microscope).
- Regulation thermography: A new machine we recently procured for our centre screens for cancer at a very early stage, for heart disease, and identifies "toxic teeth" (from mercury fillings and root canals) and asymptomatic infections.
- Electronic testing can show food and environmental sensitivities, check for tolerance to supplements, and cross-reference organs with diseases.

There are many others and, of course, one is advised to get a good referral network for more expensive and complex lab tests such as X-rays, CATSCANS, MRIs, and the whole range of blood-work—although simple blood-work can definitely be learned and practiced in-house. Again, a good microscope is invaluable here and can also be used to detect bacteria and yeast infections from swabs of various body parts. It's important to mention that labwork is a great motivator of people. Even when they already know at an intuitive level that something is off-balance, seeing black and white results is sometimes what it takes to stimulate action! (Although one hopes that as a species

we are moving towards being a bit more intelligent and proactive about the care of our temples!)

Synthesis

Once the case picture has been pulled into pieces, it's time to put it back together into a cohesive whole which then determines the treatment program.

In general, one needs to know the constitutional type and strength of the person and the overlying condition from which they are suffering. The former will give you lifestyle suggestions, show how intensive treatment can be, assist planning detoxification programs and suggest what types of spiritual, mental, and emotional tools would be most useful. The latter informs you of the type of medications to use, whether natural or drugs or both, if surgery is needed, and how seriously these need to be pursued.

Under all of these are the psychological and spiritual issues that drive a person's life. Gently and caringly mirroring these back to the person is both the beginning of the heart of healing and source of the deepest rapport. **We believe rapport is one of those unquantifiable and utterly necessary ingredients for a successful healing process.** Often this final piece puts all the rest into perspective, especially once the spiritual lessons are clarified.

An Example:

D.S. is a 60-year old woman who has just had a lumpectomy for breast cancer and wants to do preventative work. We go through our whole diagnostic process and find poor digestion, low glandular vitality, and generally a solid constitution. Toxins from mercury fillings. A stressful job and a happy marriage.

Going deeper we find a two-generation block in nurturing (note the symbolism of the affected part) between mothers and daughters. When this is brought to light there is a big relief and a deep awareness and letting go of emotional pain carried for decades. She decides to forgive all around.

Next visit, expecting an improvement, it is a surprise to see everything worse. The processing of the old emotional material on top of the job stress on top of the illness was too much. Even though a lot of rest had been strongly recommended, this had not been taken seriously. (Which is very common in our culture.)

This is when sharing figures on paper and having a strong rapport is crucial. We tell her that she may die if she doesn't take herself more seriously and that she has big choices to make before the next visit. (This was very true in our clinical experience. We had lost two women to cancer who should have survived from the physical aspect, but couldn't let themselves slow down enough to heal.)

By next time she had taken control of the situation—always a major turning point, especially with cancer, and something we promote heavily—and her energy was starting to return. The simple lab test we do at each visit showed she was out of cancer range, and she felt more confident and empowered about her life.

This example shows the exciting integration of all the levels of being and different types of medicine. As a rule, holistic visits tend to be enlivening, real, and intense, even when dealing with less serious diseases.

Treatment Programs

Following the same principles, one treats the urgent, acute, and emergency problems first, then one designs appropriate lifestyle guidelines to provide a foundation of physical balance, and finally (or interjectedly) one helps identify and resolve the key underlying issues with care and supportiveness.

Since the actual tools, remedies, techniques, and therapies are so many, we'll simply name them in broad categories, assuming that there will either be a trained practitioner bringing expertise or that interested lay people will learn these pieces step by step through books, workshops, and ideally, in apprenticeship.

- First-aid supplies with emergency protocol known by several in the community and gradually taught to everyone.
- Connections with medical doctors, paramedics, nurses, and hospitals are important. If a community is large enough, it can build its own hospital and serve the surrounding countryside.
- Supplements such as vitamins, minerals, glandular extracts, and enzymes are essential because it will take a few generations for our culture to catch up from the nutrient deficiency caused by eating a poor diet.
- Herbs as gentle medicine in teas, capsules, baths, poultices, enemas, and food. Best grown locally on organic soil and occasionally sent to a lab to be tested for active ingredients.
- Homeopathic remedies can be made on the spot and are good for acute episodes (esp. children), first aid (Arnica and Hypericum for trauma), childbirth, detoxification, disease conditions, and psychological imbalances. Needs someone willing to do a lot of studying or fairly experienced to be good.
- Bodywork ranges from *reiki* and related energy work through massage to chiropractic and *shiatsu*. It is excellent for treating structural problems, headaches, and stress, and as a potent channel for inner work.
- Acupuncture and Chinese medicine is a whole system unto itself but can be used symptomatically for acute and chronic conditions, especially pain.
- Therapeutic techniques for inner work are best when integrating emotions, beliefs, and spirituality, in other words, a transpersonal framework. This covers everything from simple counseling to Gestalt, Neuro-Linguistic Programming, Rubinfeld synergy, and also work in groups, such as co-counseling. Further useful activities are journaling, dreamwork, art, and music therapy.

• Spiritual facilitation is related to therapy in that it involves working with inner issues and different in focusing purely on connecting a person with their own spirit as well as spirit at large. Practices include meditation, prayer, vision quests, chanting, yoga, and selfless service.

Developing a treatment plan is a matter of combining technical details, medical necessity, practitioner and patient intuition, and understanding where the patient is willing and able to work. What may seem an obvious start to the practitioner, such as cutting out the ten cups of coffee a day, may be temporarily impossible for the patient. It may sometimes take years to unhook from deep addictions. Most important is that the practitioner finds the avenue that is open and gives plenty of support for it. In cases where the addiction is life-threatening, the practitioner will need to set limits and consequences—tough love!

Monitoring

Once a program is underway, it is useful to monitor certain symptoms to gauge that progress is actually being made. Charting symptoms puts us in better touch with our bodies as well as the things we do and don't do that make us better and worse.

For the average preventative and non-threatening condition we see patients monthly for 30 minutes, giving people homework each time, and always checking that what we have given fits the person comfortably. Lab tests are used to monitor more serious conditions, and we see people more often then.

Maintenance, Prevention, and Optimization

Once a person has overcome a disease or moved out of an imbalanced condition, the challenge is to maintain balance, prevent other disease, and optimize health in ways that suit each individual. For instance, some people are motivated by physical challenges such as mountain climbing or running marathons while others are gratified by focusing on their inner lives.

For a community, diversity and acceptance are nourishing and a key to the ongoing health of its residents. In our surrounding community, there are a wide variety of spiritual pursuits, personal goals, and health philosophies within a supportive and interactive environment. People are interested in each other's paths without needing to convert each other. Celebrations are common when individuals reach personal goals. Group rituals such as at Solstice or New Year's, in a sweat lodge or healing circle, bring us together and enrich us. We are so very fortunate.

We are an intentional community of individuals within a mainstream community, working on improving the political and social infrastructure of our township towards sustainability. This feels extremely healthy to us, an integration of all levels of our being, a sharing with all levels of society.

Conclusion

Developing an integrative community health centre is an endless process of networking, service, and learning. It is fun, exciting, and draws people together, and it provides deep inner growth as individuals face illness and death. A centre can be started up with a simple space of a consultation room, a place to make and store remedies, and a bathroom to double as a lab. Add a library, give regular classes, reach out to special interest groups like pregnant women, and offer experientially based workshops on spiritual practice.

There are few things we can think of that are more gratifying than being able to facilitate each other towards feeling better in every way, through all the necessary growing pains, and then watching each other do things we never thought we'd do in this lifetime. Blessings to you. △

Michael and Katherine Willow live and work on 190 wooded acres near Ottawa. By Fall, 2001 they intend opening one of the first in-patient facilities for naturopathic health care in Canada. They also run a small holistic school, direct environmental outreach, and hope to be joined by two other families on their property. With six children and three grandchildren from previous marriages, they welcome visitors, and are open to helping other communities start integrated health centres. Contact: West Carleton EcoWellness Ctr, 4596 Carp Rd., Carp, ON, K0A 1L0 CANADA. Tel. 613-839-1179 or fax/-3909. karen@echelon.ca.

Traditional Plant Medicines and Women's Health in Nepal

Cynthia Edwards

When I was a child in the early 1960s, I was fascinated by the fact that Aspirin originally came from a tree. What a novel idea! In that Dark Age of American culture, we all knew that "real medicine" came from "the Rexall Drug Store," and only doctors in white coats knew how to heal us. Unfortunately those beliefs were exported to the Third World as the truth about medicine and health, which has led to the breakdown of many fine traditional systems of healing based on plant medicine. Thank-fully, I have come a long way from Aspirin, incorporating many medicinal plants into my life and my permaculture teaching.

Since 1991, I have had the privilege of working in Nepal with the Jajarkot Permaculture Program, one of the first permaculture based development programs in the world. JPP has worked extensively to establish perennial agroforestry systems that include traditional medicinal plants. It is doing valuable work to research, document, and re-value the use of medicinal plants in Nepal, before this knowledge is lost. Our most recent effort is a book and poster on medicinal plants for women's health. Written in basic Nepali, it provides newly literate women access to basic health information, and will be distributed widely across the country.

Since the subject of women's health is still largely taboo here, this is cutting edge work and will serve as a major empowerment tool for village women.

The impact of western medicine

Nepal has a long history of traditional Ayurvedic plant medicine. Ayurveda is an ancient system, which effectively uses many thousands of medicinal plant combinations to cure everything from headaches to hepatitis. Medicinal plants from the Himalayan region have always been highly prized worldwide, and are considered extremely potent. This has unfortunately led to over-harvesting and exploitation of village resources by Indian and Nepali Ayurvedic drug companies as demand burgeons. Rampant forest destruction in Nepal—a result of overpopulation—is leading to loss of habitat, further endangering these medicinal plants. (JPP has been addressing these problems through its agroforestry programs.)

Over the past 30 years, Nepal has been converting to western medicine, thanks to numerous well-intentioned development programs. This has put priceless indigenous medical knowledge at risk of being lost forever; village elders are dying while the next generation are being taught to look to drugs for salvation. Important medicinal plants are also endangered, partly due to

lack of foresight in some development projects, and especially from chemical agriculture. Plants that "modern" agriculture considers weeds and seeks to destroy with herbicides are often food, fertilizer, and medicine in many Third World countries. On a more positive note, there is a growing movement here to return to the use of plant medicines and good traditional practices. Even some pharmacy students are now studying them.

Unfortunately the arrival of western drugs (in Nepal) has preceded the arrival of the knowledge of how to use them, especially in remote areas, and often the attitude is "if it's western drugs, it must be good." (As with so many other destructive aspects of western culture replacing traditional cultures.) There is rampant over-use and mis-use of drugs, and drugs banned elsewhere are dumped on the Third World. All of this has compounded existing health problems. The evolution of drug resistant bacteria has been rapid, in

response to the overuse of antibiotics.

The situation for health care, especially in remote village areas is poor at best. Much of Nepal has no roads. People sometimes walk for days to reach a government health post, only to find it closed, or understaffed with poorly trained people, and understocked with medicines most people can't afford anyway. Ironically, the head of the UN Family Planning Agency in Nepal was finally caught siphoning millions of dollars from health care programs. Many people have probably died on his behalf, but he had diplomatic immunity and a Swiss bank account!

The situation for women

There is a tremendous amount of injustice, discrimination, and abuse endured by women in Nepal. Much of this is rooted historically in the Hindu religion. Because of my growing interest in supporting JPP to begin to deal with these difficult issues, I initiated discussions on women's health and violence



gainst women, with 5 of the 26 JPP women's groups in February, 1999. We learned that the majority faced abuse on a daily basis, often related to alcohol consumption. Many women had terrible experiences at government health clinics, reporting ridicule by male staff who later discussed their case openly in public. Because of taboos on discussing women's health problems, they often lie about their problem and are given inappropriate medicine. Many were suffering from easily curable ailments such as urinary tract or vaginal infections, but few knew about traditional plant cures. Other discussions brought to light cultural practices, which force women to stay outdoors during their menstrual period with no blankets and very little food. Birth (also considered "unclean") usually takes place in the cowshed. Women who had undergone sterilization reported chronic health problems, often disability; and everyone knew someone who had died as a result of infection. The issues are too numerous to go into here, but they are large and challenging.

The outcome

As a result of these discussions, a health clinic run by and for local women was proposed. It will emphasize learning about traditional plant medicines and self-help techniques for many common problems, and will provide a forum to discuss violence issues. It will also move through the district so many women will have access to it. Thanks to grants from the American Himalayan Foundation and Jade Tree Foundation, this is becoming a reality.

One of the JPP leaders, Hom Maiya Gurung, was encouraged to pursue her work on medicinal plants for women's health,



Indian Gooseberry (*Emblica officinalis*)

building on her first book about plants for general health problems. She collaborated with Ben Wensley, a volunteer from the UK who has been collecting local information, researching old plant books, and interviewing traditional shamans (who are male). They found almost nothing for women's health problems a sad commentary on both the value placed on women and the need for this work. After two years of hard work, their 40-page book is ready for publication. It will be used in literacy classes and is designed for easy reading. Accurate drawings and colour photos make it easy to understand and to use.

AND WE NEED YOUR HELP to get this book into the hands of thousands of village women across Nepal, empowering them to have more control over their own lives. Mainstream funding sources won't support this because it teaches the "traditional use of plants" which is perceived as a threat to the acceptance of western medicine and as a regression to "dangerous" practices and witchcraft. Sad but true. The printing cost for 5000 copies of the book and poster is a mere \$3000. I figure if each of you reading this gave \$3-5, we'd have it! It's a great value for the investment. For what amounts to pocket change you will be part of one of the more radical things to hit development in Nepal in a long time, as well as giving a lot of women a chance to be a lot more healthy. Any extra money we collect will go for further work with medicinal plants and the clinic. Send your money to Ethnic Arts Foundation, 1112 Grant St., Madison, WI 53711. Mark it "JPP plant book." Feel free to pass this on and let me know about larger funders as well. This is the power we all have to change the world. Go Team! You can write to me at cedwards@wlink.com.np △

Cynthia Edwards has been involved with permaculture since 1984, and was one of the founders of the Eastern Permaculture Network. She has worked as a self-funded volunteer in Nepal since 1991 and lives near Madison, Wisconsin when not in Nepal. She loves to get emails; it gets lonely over there.

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A Personal Apothecary for the Fourth World Life



Arjuna da Silva

Whether packing for a day trip or a month at the coast, I like to take along whatever medicines and supplements I might not be able to find easily in small quantities. I probably choose my first aid kit in response to the kinds of injuries and maladies that have needed attention most often. Itches and burns, cuts and bruises, aches and pains, sores and blisters, headaches, and indigestion are common intrusions into daily life, whether at home or on the go. Preventive and maintenance medicines are also part of my personal apothecary.

My all time favorite helper is Rescue Remedy. (Rescue Remedy is the name of the Bach Flower brand of this formula; there are other brands as well.) I like to have the oral drops and the cream near my person whenever possible. Any trauma, physical or emotional, can be reduced to much more minor effects if a few drops of the benign medicine water are taken under the tongue. Topically, the cream is unsurpassed for itches, rashes, bangs, scrapes, and most especially burns. Burn treatment is miraculous, and demonstrates the double action of heat removal and moisturization the formula provides. Take a minor but painful burn at the stove, which you know is going to scar and hurt like hell for several days. Apply cream generously as soon as possible, on and around the affected area. Feel the coolness and watch it absorb. Still hurts? Apply more. I've kept up application for almost an hour on more than one occasion and wound up with no more than a slight temporary discoloration to remind me, if I managed to notice it, of the unfortunate encounter with red hot metal. Otherwise it was soon forgotten. Soothing itches with Rescue Remedy is a piece of cake, as long as I have my tube of cream along. I also like to apply it whenever the external tissue has been injured.

A little dab'll do ya

Homeopathic preparations of *Rhus toxicodendron* (for swelling) and *Arnica montana* (for bruising) are the next most important first aid supplies. Both are commonly available as tablets for dissolving under the tongue, but Arnica also comes as a cream, which is handy for rubbing into sore muscles. Although we think of bruises as damaged tissue below unbroken skin, they essentially result from ruptured blood vessels. A cut, though messier, is no different. Any injury, internal or external, responds amazingly well to the Arnica and becomes either mild or past tense in a very short time. Some aware surgeons and dentists I know of recommend patients begin a course of Arnica before and continue it after any surgical procedures they perform. Rhus tox, a derivative of poison ivy, is a hero in the field of anti-inflammation. Homeopaths, you'll recall, works by virtue of the application of infinitesimal amounts of the toxin or toxins at fault for a particular malaise. Thus the nasty plant

that gives us blisters and puffs us up like pink mushrooms is the all time best resolver of swelling from any number of causes. Together, Arnica and Rhus tox help prevent me from carrying yesterday's boo-boos into tomorrow's reality.

I like to keep both clove oil and tea tree oil in pretty close proximity to my body, mostly for oral hygiene, but they're effective in other ways as well. There isn't anything I do for my teeth and gums that doesn't seem to involve melaluca (tea tree) anymore! Toothpaste, floss, stimulents, mouthwash—the stuff is the best anti-bacterial, anti-plaque substance ever. I've reduced gum pockets by half with this regimen; ask my dentist! And if ever I feel gum tissue that's tender or raw, several applications of tea tree oil usually take care of it within a day. Clove oil is an effective analgesic for toothache, so I like to have it around, even if I don't carry it everywhere. I've also used it as a disinfectant on an open wound with superb results.

Umeboshi plums are often a great remedy for headache or indigestion, but not that easy to carry around (although a paste is available), so I try to keep a roll of papaya enzyme lozenges in my bag of goodies for the occasional indigestible meal. According to Jethro Kloss, who wrote the seminal herbal medicine text, *Back to Eden*, a sore throat is the result of indigestion, i.e., the inflammation of the stomach lining, of which the lining of the throat is anatomically an extension. Sometimes a sore throat is one of a host of cold or flu symptoms but sometimes it seems to be just a localized irritation, perhaps brought on by shouting. Whatever the cause, pain in my throat always motivates me to drink a cup of slippery elm tea—there is at least one brand of medicinal tea bags that has an excellent and consistently effective combination of slippery elm bark and licorice root that I now always carry in my purse.

Choosing what works

But not everything in my medicine cabinet is from the health food store. If a headache is annoying enough to distract me from my focus, I've learned that a couple of over-the-counter tablets (or, depending on the hammer in the head, sometimes a bigger, prescription "gun") is the most reliable source of relief for me. If I can, I'll gladly go to sleep on a headache and let it run its course, but sometimes it just ain't practical, so I pop a pill or two.

I have several different remedies for muscle and joint pain. The smallest and easiest to carry are two versions of St. Johnswort: the tincture, taken internally, and the oil for rubbing into the skin, although I have an idea this herb works best as it accumulates, as do shark cartilage (glucosamine sulfate) and chondroitin. Extracts of that darling, arnica, both in ointments

nd in oils, are widely depended on to soothe aches and pains.

A subtle sign of a cold symptom coming on can hit any time. Echinacea, especially in tincture form, is now almost universally used in the alternative health culture. (We used to call appropriate technology "alternative technology"; should we start calling fourth world medicinal practices "appropriate health?") A combination of echinacea and goldenseal is popular in tinctures and pills, but I shy away from using goldenseal unless I'm in need of an antibiotic. Then the powder in gel- or vegi-caps taken in a disciplined way (for me, 250 mg every four hours for five to seven days) usually puts me back together. With that kind of effectiveness, I avoid desensitizing myself to this powerful ally from the plant world. Vitamin C, of course, is also called for when we start to notice cold symptoms. (It's also excellent for helping to flush away the pain-causing toxins from bruised tissue.)

I've recently been turned on to the power of "food state" supplements. The notion is that the body uses an extracted nutrient much more efficiently if it's taken in conjunction with foods rich in that same nutrient. Thus, it's not enough to take a vitamin or a mineral with a meal; it's important to have representative foods in that meal. Ideally we should take Vitamin C with peppers and oranges, Vitamin A with carrots and sunflower seeds, Calcium with sesame seeds and dark leafy greens, etc. To simplify the situation, certain companies have begun growing nutrients in a food matrix that provides both in one dose and supports hugely increased absorption and usability.

Support for wellness

The blessing of flax seed seems to have gained wide appreciation. Flaxseed oil plain or in combination with other healthful oils has become a regular part of my medicinal diet. The seeds themselves are a much more economical source of the remarkable benefits of flax, and can be ground up and added to many different dishes. In particular, flax is an amazing lubricant and brings almost instant improvement to both the intestinal tract and the skin. Years ago I was spared serious trouble when it was recommended to me that brewing and drinking a cup of gelatinous boiled flaxseed tea would eliminate a very painful bout of blocked intestinal gas. It worked—and quite silently! (The favored household lubricating and waxing oil, linseed oil, is a flax derivative.) Vitamin E and wheat germ oils are extraordinary helpers wherever herpes blisters and cold sores appear. Prick a Vitamin E capsule and squirt some oil onto your finger, then rub it often into the afflicted tissue for prompt relief. These oils also significantly enhance healing of cuts and abrasions.

Food, of course, is a basic source of medicine. At home I like to keep dried cranberries for the bladder and kidneys, raw ginger root for indigestion, stuffy head, and poultices, and raw garlic for immune strengthening. A sliced clove of garlic soaked in olive oil and served warm in the ear canal beats the best ear drops I know of at relieving an earache. Garlic is deserving of its reputation as a near miracle substance. Juliette de Bairacli-Levy, a Romany wise woman and author of several books on herbal healing, reports that rest, fasting, and garlic will cure almost any animal of almost any illness! I respond well to this treatment too. If garlic is the cool climate wonder food and universal

condiment, ginger is its tropical counterpart, also with important therapeutic properties. Powdered ginger in a capsule has been surprisingly effective at reducing and even eliminating the effects of a migraine headache. Ginger in any form is also useful in cases of nausea, including motion sickness. And for aches or to draw out toxicity from illness a hot ginger bath provides superb relief: I grate or chop the fresh root into a sauce pan of water, boil for 5-10 minutes, then strain the liquor into the already hot bath.

A brief survey of some lesser used but mightily useful medicinals on my shelf reveals a variety of other tinctures: calendula to stimulate lymph flow, lobelia when that cough just won't produce, milk thistle when indulgence has disturbed the liver, usnea when the problem seems viral.

Finally, in just about every instance I can think of, it helps to carry some white sage to burn because purifying the atmosphere with its smoke seems to restructure the energy field and invite your own energy to align with it. Δ

Arjuna da Silva lives at Earhaven Village in western North Carolina, where her ready-to-hand first aid magic—not to mention her most excellent chicken soup—has been a source of comfort to many needy ecovillage pioneers and visitors. For information about Earhaven write 1025 Camp Elliott Rd., Black Mountain, NC 28711.

Make Your Own Tonic

Peter Bane

It's not something most people talk about, but I know quite a few very sane people, who, like myself, drink their own pee. Now, mind you, this is not a substitute for beer with pretzels and potato chips. Rather it's something I do when my immune system needs a boost.

Urine therapy has its roots in ancient human practices and holds a respected place in Ayurvedic medicine today. Siberian shamans learned long ago that the liver and kidneys breakdown and filter most metabolic poisons (as from fly agaric mushrooms, *Amanita muscaria*) but pass through some very interesting chemistry.

So it works with nutrients and immune factors.

We've long recommended using urine in the garden (diluted 5-30 times), but I put it to numerous therapeutic uses as well: a few ounces drunk fresh in the morning stimulates immune function and can knock a cold or flu back quicker than anything I know. Cold sores and sore throats respond to urine as a gargle or mouthwash; and irritations of the skin, such as athlete's foot, heal faster when urine is applied topically.

Now about the messy details: I collect urine in a used juice jar; the narrow neck suits my anatomy, but women friends usually prefer the wide-mouthed quart. Letting the first few ounces go by (to the toilet or the garden) is best: you want urine from "mid-stream." I prefer mine fresh, before reaction with the air brings up odors and ammonia. I've gotten used to the flavors, ranging from mildly grainy and salty to bitter and acrid, depending on what I've eaten and the state of my health.

Most of the time, urine leaves the kidneys free of pathogens, but it can pick up bacteria as it exits the body. These are usually benign, but in the case of urinary tract infections, exercise caution.

Becoming familiar with the state of one's urine is a good way to monitor health: clarity or cloudiness, color, salinity, and other measurable but invisible factors can tell us a lot about the body. I invite you to take your health into your own hands. Δ

Ten Good Friends



Burdock (*Arctium lappa*)

Corey-Pine Shane

“Weeds” are plants that grow prolifically without human intervention. They don’t need to be planted, tended, mulched, or watered. They don’t care if we want them there or not—they are survivors and tend to grow in disturbed areas. Many of these plants are delicious edibles and wonderful medicines.

Talk about a revolutionary concept—the same weeds most home-owners work hard to eliminate from their yards and gardens are the medicine that can help heal our bodies. When I worked at a health food store, I saw product after product come on, made from “newly discovered” plants from Tahiti, China, or the African continent.

We are delighted by the idea of foreignness. It’s not that these plants and products might not be useful, it’s just that we know little to nothing about how fragile are the environments they grow in, how they are harvested, or how they were traditionally used. And just as importantly, we have to rely on someone to bring them to us instead of being able to walk out our back door and collect them ourselves.

First Aid from the Garden

First-aid remedies as well as cleansers and tonics for all the major body systems are in all likelihood already growing near where you live. All ten of the herbs discussed below grow across most of North America and Europe; many of them grow in Asia as well. Many of these medicinal plants are also tasty edibles.

The easiest medicines to learn about and use are the first aid remedies, such as Plantain (*Plantago major*), Chickweed (*Stellaria media*), and Yarrow (*Achillea millefolium*).

Plantain is one of my favorite first-aid remedies. It is incredibly common and easy to identify, growing practically wherever grass grows.

It has strong parallel veins on its oval basal leaves and a thin flower stalk with inconspicuous flowers. This is my herb of choice for any kind of sting or bite. For immediate relief of bee stings, simply chew up the green leaves to make a “spit poultice” and mush it on your sting. Plantain will help draw out the poison while also soothing the pain.



Dandelion
(*Taraxacum officinale*)

Plantain is also very soothing and healing to the skin. Similar in action to Comfrey (*Symphytum officinale*), a commonly cultivated plant, Plantain leaves can be used as a poultice or in a salve to help wounds heal faster and to prevent scarring. It also has this same action inside the body, and is useful for sore throats, dry coughs, and stomach ulcers—anywhere a surface is dry and irritated.

Chickweed is another demulcent, soothing chafed and irritated skin. It is a common garden weed, plentiful even in late fall and early spring: look for low-growing plants with opposite leaves coming to a point. It can be used as a fresh poultice, juiced, or made part of a healing salve. If you do make a salve from Chickweed, I recommend wilting it for a day or two to get some of the water out.

Yarrow is another first aid remedy with so many different uses it’s hard to list them all. The botanical name, *Achillea millefolium*, refers to the legend that Achilles used this plant to heal his soldiers’ wounds during the Trojan War 3000 years ago. The finely divided leaves are still used to heal wounds and staunch bleeding today. Yarrow make a great poultice for cuts, abrasions, and other wounds. You can even stuff a crumpled leaf in your nose for extreme nosebleeds.

Yarrow’s beautiful white flowers, bearing some resemblance to the unrelated Queen Anne’s Lace (*Daucus carota*), also have a long history as a flu remedy. A hot tea of the flowers can induce a healing sweat to break a fever. Yarrow flowers are also antiseptic and mildly immune stimulating, and I have seen the tincture work alone in minor urinary tract infections.

Tonics for the blood, liver, and kidney

Yarrow can also be used for stomach upsets, as it stimulates the liver and digestion and gets the blood moving; it is one of the classic “bitter tonics.” Its influence on the blood vessels is such that it is also considered a prime cardiovascular tonic.

Two of the best liver tonics around are also two of the most vilified weeds. Dandelion (*Taraxacum officinale*) and Burdock (*Arctium lappa*), the bane of many a gardener, can both be used to help cleanse the liver and the blood of toxins, and to improve



Yarrow
(*Achillea millefolium*)

digestion at the same time. Both are safe enough to use for long periods of time.

Dandelion, our friendly yellow flower on a solitary stalk, is probably the more active of the two. The root cleanses and restores the liver, stimulating bile production and flow, which is the liver's way of ridding itself of toxins. Dandelion also helps the pancreas balance blood sugar. An herbalist friend of mine would grind Dandelion root in with her coffee so she wouldn't have an energy slump. Perhaps this is why many country folks use either roasted dandelion or the medicinally similar Chicory root (*Cichorium intybus*) to supplement their coffee.

Meanwhile, the leaves of Dandelion are an excellent kidney tonic. They stimulate urine excretion and so are helpful during a urinary tract infection or to lower blood pressure from water retention. Unlike many pharmaceutical diuretics which cause a loss of potassium, dandelion has enough of this mineral to create a net gain of potassium.

Burdock has large broad leaves, hairy on the underside, and in the second year puts up a flowering stalk that produces the large burs we find stuck all over our animals' coats when they come back from a romp. The plant has a deep tap root that is often used in macrobiotic cooking to aid the body in

detoxification, and is there called *gobo* from its name in Japanese. Burdock has a gentle cleansing action, taken either as a food or as a tea, and is a mild immune tonic. One of my favorite meals when I'm sick is miso soup with Burdock and shiitake mushrooms. Burdock is also a great remedy taken over a period of time to help chronic dry skin conditions like acne and eczema. Most herbal remedies for the skin focus on improving elimination and cleansing through the liver.

Yellow dock (*Rumex crispus*) is a liver tonic that is especially good for moist skin conditions. Stronger than the previous two plants and more liver stimulating, it is also stronger tasting. The root of yellow dock is both a mild laxative and an astringent for the large intestine. But this root is probably best known as a tea that will help the body absorb more iron, and so is

excellent for any kind of anemia or iron deficiency. Look for long glabrous (smooth and hairless) wavy-edged leaves and, of course, a yellow root.

Nettles for every purpose

One of my favorite herbs is a weed of meadows and

streamsides, Stinging Nettles (*Urtica dioica*). Looking remarkably similar to a mint when young, with strong veined, cut-toothed opposite leaves, anyone who has brushed up against this plant knows the difference immediately: Stinging Nettles

Nettles (Urtica dioica)



sting! At least until you dry them or cook them (we're talking a tasty steamed veggie here).

Nettles have such a high regard in the herbal community, herbalist David Hoffmann says, "When in doubt, use Nettles." Nettles have a good quantity of iron, Vitamin C, and protein, and are so full of other minerals and vitamins they can be thought of as an herbal multi-vitamin. A tea steeped for several hours has such a nourishing taste my friend Donna calls it "mother's milk." Not surprisingly, Nettles can help stimulate milk production in nursing mothers.

Nettles also acts as an "alterative," or blood-cleanser, especially helping rid the body of excess uric acid and other waste products by stimulating elimination through the kidneys. Many also use Nettles for its positive effect on allergies. By healing the lining of the nasal and respiratory tract, it makes the body less susceptible to the irritations that cause allergic reactions. For this purpose, it is best begun before the allergy season and drunk daily throughout the season.

Don't Sneeze...

But my favorite remedy for allergies (don't laugh now) is actually Ragweed (*Ambrosia artemisiifolia* and *A. trifida*). Okay, so you laughed. But believe it or not, though the pollen of the unremarkable flowers is one of the chief allergens during the late summer and fall, the leaves are an excellent antihistamine, working both preventatively and as a remedy once an allergic reaction has begun. They can be used as a tea or tincture for any kind of airborne allergy, but just to be on the safe side, pick them before flowering.

Another nourishing weed for eating or tea-making is **Red Clover** flowers (*Trifolium pratense*). A common plant in the pea family (Fabaceae), the flower heads are actually more purple than red, and the trifoliate leaflets are each marked with a white "chevron" or arrow. Although common in yards, usually one has to find a meadow not recently mowed to find plants of a good size.

Like Nettles, Red Clover is both extremely nourishing and gently cleansing at the same time. This plant's subtle but deep cleansing power has earned it a reputation as a valuable addition

to any cancer treatment, cleansing the body of accumulated toxins. Yet it is still a gentle enough remedy that you can liberally sprinkle the flowers on your salads or, as I do, eat them as a trail snack. Red Clover will also make any tea taste and look good, and we shouldn't forget the importance of feeding our senses while we nourish our bodies.

And to round things out, we have that soothing lung plant, **Mullein** (*Verbascum thapsus*). The tall flower spikes can be seen along roadsides throughout the country, while the grey-green leaves are velvety soft and fuzzy, and give the plant its old name of flannel dock.

Mullein leaves are a wonderful remedy to soothe irritated lungs and coughs, as well as to help clear out accumulated lung grunge that wasn't caught further up in the respiratory system. Once toxins get deep enough into the lungs, the cilia can no longer move them out and they need to exit through the lymph system. Mullein stimulates this process and is in fact a good lymph tonic for the whole body as well as the lungs.

So as you're out there weeding your garden, yard or farm, make sure you know what you're picking—it might save you a trip to the herb store or the drugstore. Our best medicine is often right under our feet! Δ

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Mullein
(*Verbascum thapsus*)

Making Medicines

So now you've weeded your garden and your useful weeds (we should call them "herbs" now) are in separate little piles. What next? Well, you can either dry the plants to make tea, or tincture them fresh (tinctures from dry material work well too).

Drying

First thing to do if you've gathered roots is to wash them well. Scrub the dirt off with a vegetable brush, being careful not to remove the outer skin. Next, slice the root as you would slice a carrot to cook, and lay the pieces out on a window screen or newspaper indoors. You may quarter larger roots lengthwise first, as you will get more out of smaller pieces.

Leaves and flowers should be gathered from a clean area and shouldn't need to be washed. I usually leave my herbs whole to dry them, either hanging them upside down in bundles, or laying them out flat, as for roots.

Do NOT dry any plant in the sun, as the sun causes plants to decompose. Some heat will help the plants dry faster without danger of mold, but temperatures over 100°F (38°C) may harm some plant constituents. An area with good air circulation is also helpful, as is stirring the material every day. They are dry when they break crisply instead of bending.

Teas

Teas are made by **Infusion**, pouring boiling water over plant material, or **Decoction**, boiling water with the material in it. Teas of most aerial parts and some aromatic roots like Valerian or Sassafras are made by infusion. Bring water to a full boil, then pour it over your herb and cover for 10 to 15 minutes. Mineral-rich plants like Nettles can be infused for several hours to make a richly nourishing tea.

For tougher plant parts like most roots and barks, a decoction is the best method. Bring your herbs and roots to a boil, then simmer lightly for 10 to 20 minutes. Strain and drink.

For both kinds of tea, start with roughly an ounce of the herb by weight (28 grams) to a quart of water (roughly a liter).

Tinctures

Making tinctures can get very complex, but here is a simple no-fail method for making a "folkloric" tincture. Chop your plants and place them in a jar, packing leaves and flowers fairly tightly, but not too tight, while roots can just be chopped and placed in the jar. Then simply cover with the appropriate strength alcohol: I use about 95% (190 proof) alcohol for fresh herbs, which already contain a fair amount of water, and 50% (100 proof) alcohol for dried plants.

Let this sit for a month, shaking occasionally to keep things stirred up, then strain out the herb and compost it. The liquid you will have left is the tincture. Use it in good health! Δ

Growing Medicinal Plants in the Hawaiian Islands



Michael Pilarski, Friends of the Trees Society

The topic of plant medicines is very complex, as is any large body of knowledge. It is true that some medicinal plants are very poisonous and only experts should administer them. It is also true that every culture has traditional knowledge of how to use many herbs safely and effectively. These healing traditions encompass far more than medicinal plants alone. They also include spiritual, psychological, massage, lomi-lomi, and other healing methods.

As in most western societies, people in the Hawaiian Islands are using medicinal herbs more than they have in the recent past. Many people are turning to herbal medicine because they experience herbs to be safer and easier on the body, with fewer side effects than prescription drugs. Herbs, too, are less expensive, and can be more effective than medicines produced in laboratories. All the cultures that make up Hawaiian society: Hawaiian, Samoan, Tongan, Chinese, Japanese, Filipino, European, etc., have herbal traditions, so island people have a rich variety of botanical medicines available to them.

Traditional herbal knowledge

Two centuries ago, there was no pharmaceutical industry. People everywhere depended on herbs as their main medicine. Local healers knew local plants that could help cure almost every kind of sickness. Hawaiian *kahunas* had a good knowledge of the native and Polynesian herbs that met the needs of their people. Yet almost all cultures in the world have been losing traditional healing knowledge due to modern media, oppression, displacement, migration, and environmental damage. This is an enormous loss for each of our cultures and for the whole human race. However, interest is awakening in keeping traditional knowledge alive. This includes traditional Hawaiian healing knowledge.

Home Production

As with any item we use in the home, such as food, water, or energy, medicines can and should be produced in the home system. More people should consider growing some of their own. Today, Hawaiian families and school programs can plant traditional medicinal plants in their yards, gardens, schools, conservation plantings, and ethnobotanical gardens to help keep the healing traditions alive.

Who can grow medicinal herbs? Almost everyone can, and many do—around the home, and in containers on porches and balconies. Many people, for example, grow aloe vera because its leaves are the source of a healing gel used for burns and scrapes. Home production can reduce money spent on medicines, and can give people the satisfaction of growing their own medicines. Furthermore, the fresh herbs are there when needed.

New herbal knowledge

Though traditional knowledge continues to be lost, in some parts of the world new herbal knowledge has been increasing for the past two or three decades. The Pacific Northwest is home to some of the USA's leading institutions for teaching herbal knowledge, including two of the main schools training naturopathic doctors (in Seattle and Portland). Herbal practitioners are setting up offices throughout the region. This same trend is happening all around the USA.

Endangered medicinal plants

Unfortunately, more and more of the world's medicinal plants are being overharvested in the wild or are losing their habitat to human development. World demand for wildcrafted medicinals is putting a severe strain on more and more species. As the plants become less common their prices go up. Every region needs many local people dedicated to preserving endangered species by protecting habitat as well as propagating and growing plants to keep local gene pools diverse and alive.

Because of its wide range of climates, Hawai'i offers growers unique opportunities to help conserve endangered medicinal plants from other parts of the world. Filling some of the world demand for at-risk species by cultivating them in Hawai'i could potentially reduce pressure for wildcrafted materials in native environments. In some cases seed could be sent back to a plant's native region for restoration projects. Bringing non-native plants into the Hawaiian Islands would have to be done with great caution so as not to create new weed problems.

The market for botanicals

Medicinal plants offer many opportunities for small farmers looking for high value cash crops. There are thousands of medicinal plants sold commercially in the world. Some are sold internationally, while others are known only within certain countries or regions of the world. In the mainland USA herb store shelves are stocked mainly with products from plants of European and North American origin. Chinese and Ayurvedic (Indian subcontinent) medicinals have gradually become more available over the past 20 years. More recently, we are starting to see medicines originating in Africa, South and Central America, and other parts of the world. In due time Pacific Island medicinal traditions will enter the mainstream as well. Kava kava (*'awa*) and noni have been much publicized lately, and other Pacific medicinal plants will receive increasing attention. Medicinal plant species from around the Pacific, Asia, Africa, and South America can be grown in Hawai'i.

Wholesale prices to herb and spice growers are low for well-known commodities. Hawai'i growers would have to rely on

rare or novelty species or focus on markets willing to pay more for high-quality and organic crops. Growers looking for new crops have to consider whether they are growing for their local island market, statewide, US mainland, or exporting to other countries. Selling farther away means bigger markets, but also more bureaucratic hurdles to overcome. Another option for growers is to produce value-added products and medicines. This has the potential to increase income greatly from a limited amount of production, but also means meeting product safety regulations.

Cooperation among a number of growers to market crops and wares, buy equipment, or set up community-based certified kitchens can make it easier for small producers to succeed financially.

To limit the risks of monoculture, growers should select a number of medicinal plants when choosing crops. Don't put all your eggs in one basket! Companion planting and mixed species agroforestry plantings make good sense ecologically and economically. Many medicinal plants do best in a multi-story environment combining overhead trees and shrubs with understory plants. Differing levels of light and shade in the planting benefit diverse species adapted to many different ecological niches.

Invasive plants

Invasive plants is a big topic which I have discussed in more detail in *Agroforestry Guide to Hawai'i*. Out of the thousands of subtropical medicinal plants which could be grown in Hawai'i there are hundreds we should never introduce due to their invasive potential. Regulations and paperwork dealing with imports and exports and quarantines of plant material are likely to increase at federal, state, and international levels. There are good reasons for concern, such as invasive plants, insects, and microorganisms.

Friends of the Trees' recent publication, *Subtropical and Tropical Medicinal Plants Checklist* 1700 species of useful plants which will grow in Hawai'i, however, some of these would be invasive and should not be introduced to the Islands. We plan to consult with knowledgeable botanical authorities to rank the plants in the *Checklist* according to their suitability for use in Hawai'i. In descending order of desirability these would be classed as: 1) native to Hawaiian Islands; 2) Polynesian introductions; 3) commonly naturalized (i.e. weedy); 4) occasionally naturalized; 5) common in cultivation; 6) in cultivation but uncommon; 7) not known to be introduced to Hawai'i; 8) should not be introduced to Hawai'i.

Future editions of the *Checklist* can indicate where the experts place each species among these eight categories. Many of Hawai'i's non-native "weed" species will be in Friends of the Trees' *Checklist*. *The Flora of the Hawaiian Islands* has information on invasiveness levels of many naturalized species.

Other subtropical and tropical regions can use the *Checklist* but their regional experts need to rank the species into parallel categories according to the situation there, e.g. different natives, different weeds, rainfall, soils, etc.

Several hundred species in the *Checklist* have never been introduced to the Hawaiian Islands before. Some people would like to close the door on any new plant introduction, and they

might get their way eventually.

A corporate future?

One possible scenario is that there will be stricter laws and penalties attached to plant introductions, with the result that only large corporations will be able to afford the studies, trials, quarantines, and permits required. If this comes to pass, only big money interests will be able to develop new export crops. This scenario will appeal to plantation owner mentalities, but many people prefer a more democratic, egalitarian control of the world's plant resources. It remains to be seen how the situation will evolve.

Or democratic scenario...

Here are some elements of the scenario I promote:

- Every region in the world would be largely self-reliant in plant medicines, whether locally grown or sustainably wildcrafted.
- The general public would be much better educated in traditional and modern herbal knowledge, and many people and families would grow and collect their own medicines.
- Farmers' markets and locally-owned herb stores would sell locally-processed herb products so that money stays in the local economy.
- Herb exports would be mainly through "fair trade" relationships which minimize middle-man profits, and send a fair share back to the producer.
- Native herbs, where available, abundant, and known, would be given a strong preference in cultivation and use, but people would also grow and use non-native herbs.
- Habitat preservation and ecological restoration would lead to a strong comeback by native plants and native ecosystems everywhere.



It is possible to live in a world of abundance, beauty, and ecological health. It can be done with a strong degree of local control and local production. Indeed, such a world is probably only possible if local people control their own lives and the powers of large corporations and governments are curtailed.

Spiritual aspects of plant medicine

There is a science to herbal medicine, which can measure the physical constituents of plants, but plants are living beings, each with its own essence and life force. Science cannot grasp the spiritual nature of medicinal plants. Human beings, however, can connect with the spirit of plants. Indeed, all traditional herbal medicine was imbued with spiritual understanding upon which healing and the effectiveness of medicine depended. This type of knowledge grew from an attitude of respect and love for the plants used. These things are hard to discuss in our "modern" world where "science" has become the religion for many people, but I feel the spiritual aspects of plant medicine must also be acknowledged. It is my hope that the herbalists of today and tomorrow have a spiritual, respectful attitude toward the plants and the people they treat.

It is also my hope and recommendation that people who grow medicinal plants do it not for money alone but also because of love. Love for the people the plants will heal and love for the plants themselves. Growers who work out of love are more likely to succeed in growing healthy plants with strong healing properties. These types of growers are also more likely to persist even when they aren't making money hand over fist.

Unfortunately, these are difficult times for small farmers around the world. Medicinal plants may offer good crop opportunities for some farmers, but it is not likely to be all smooth sailing and easy money.

Personal experience

I personally collect wild medicinal plants for a major part of my income. I also collect native plant seed. As a result I have learned over the years to identify most of the plants growing in the various climates of Washington State. This includes native plants, weeds, food plants and ornamentals. After doing hundreds of plant surveys in numerous ecosystems, I can confidently state that in Washington state, approximately half of all the plant species found growing on any particular piece of land (whether wilderness, rural or urban) will have medicinal uses. I suspect this approximate 50% level will be true for many temperate regions. I do not know what the percentage would be in Hawai'i or in other subtropical or tropical parts of the world. The pre-human native plant flora of the Hawaiian islands may have a relatively low rate of medicinal plants. However, a very high rate of the Polynesian introductions are medicinal plants. I would guess that a fairly high percentage of Hawai'i's weed species and ornamentals have medicinal uses.

Public education and cooperation

In other words, the obstacle to having a high rate of herbal health care for Hawai'i's people (and in most parts of the world) is not going to be from a lack of useful herbs. Rather, the obstacle is the amount of public knowledge of how to use the herbs successfully. Education is the key. An educated public can use safe herbs for common ailments. Well-trained herbal practitioners can help where more in-depth knowledge is needed.

Promoting the growth of herbal medicine in the Hawaiian Islands is a long-term proposition. I hope to bring interested people together in the next year to plan further cooperation and research on species selection, propagation, cultivation, processing, and marketing. A group of people working together can benefit all involved. The potential is immense. The people of Oahu, the Hawaiian Islands, and the world have a growing need for good quality plant medicines. △

Michael Pilarski will offer a series of workshop in Hawai'i focusing on medicinal plants. Contact Friends of the Trees, PO Box 4469, Bellingham, WA 98227. (360) 752-1239. friendsofthetrees@yahoo.com

Correction

Readers of Robert Green's article: Green Windmill, which appeared in PCA #44, may have been confused by an error on our part. In describing the needs of rural dwellers for low-cost, low-tech wind generators, the article, on page 35, stated, "To be effective in these situations, a windmill must have high starting torque and be able to use low-energy wind as well as higher-energy winds." The phrase should have read, "...a windmill must have low starting torque..." The Activist regrets any confusion.

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Healing Powers of the Garden

Elizabeth R. Messer Diehl, ASLA

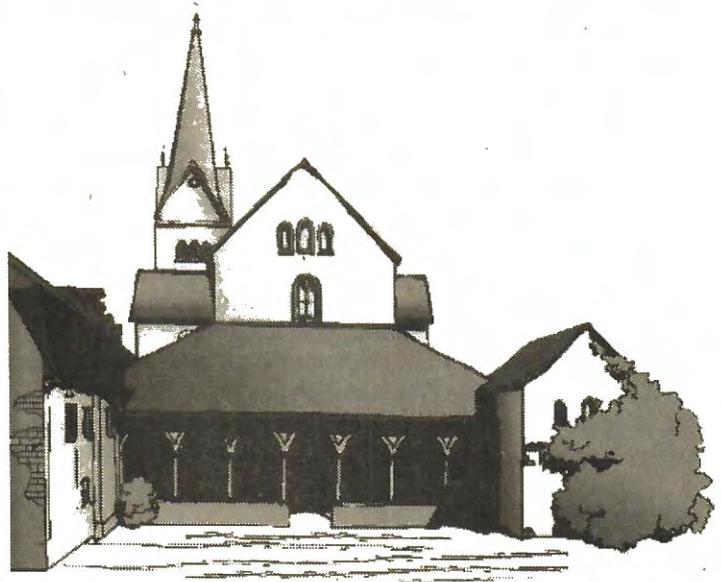
Where humans are found so too are gardens, practically from the beginning of time. As suppliers of food, shelter, and beauty, gardens have played a crucial role in the history of humankind and they can tell us much about the people for whom they grow. Recently, the recognition of garden as place of refuge has reemerged, perhaps as a guide in the search for understanding of our personal relationship with the planet. For many of us, our gardens have always provided us haven and facilitated our connection to the earth. Not so for everyone, however; as our cities expand and our population grows, more and more people are disconnected from natural landscapes and gardens, and many people have never intimately known them during their lifetime. Many believe that this disconnection from the natural landscape causes physical, emotional, and spiritual ills for those who experience it. Recent research has shown strong connections between exposure to gardens and various kinds of healing and recovery. This is not a new theory, however; people throughout history have believed that gardens are strongly connected to lifecycles, and as such, are linked to renewal and healing. The development of this theory can be traced back to humans' early history in health care settings.

The role of gardens at hospitals has varied through time. Today, gardens are often thought of as an important element of complementary and integrative medicine, and as a result, they are appearing in more health care settings. Gardens as places of healing can often be found at hospices, where the focus is on the care of patients for whom there may be no cure. By providing a comfortable, familiar, and homelike setting, gardens can serve a crucial role. Traditional hospitals have recently begun to include gardens in and around their buildings as well, both to take advantage of the garden's healing powers for patients, visitors, and staff, and to appeal to the potential hospital "customer."

A restorative garden in a hospital setting is designed as a place to relax, connect to nature, reduce and relieve stress, and escape from the otherwise institutional setting. In offering an environment for these events the garden helps to enhance the recuperative powers of the individual. When recovery is not possible, the garden can still provide calming conditions through its connection to lifecycles and other natural processes. The effects of a successful restorative garden can be experienced throughout the entire health care facility, not just by patients, but also by doctors, nurses, administrators, other hospital staff, and visitors.

Monastic Gardens

Gardens first appear as a restorative or healing component of a hospital during the Middle Ages, emerging as an element of monasteries. The design of most monasteries included a cloister, which was an enclosed courtyard. The cloister was surrounded by an open-air, covered walkway, called an ambulatory, which provided access to the monks' cubicles as well as a place to stroll and contemplate. Although the design of the cloister courtyard varied by location and time, it was always open to the



sky and usually included a water feature, such as a well, in the center of the space. This setting allowed for meditation as well as various degrees of sun, shade, warmth, and shelter for the residents and patients of the monastery. In describing the benefits of such a hospice garden at Clairvaux, France, St. Bernard (1090-1153) referred to the therapeutic benefits of privacy, green plants, songs of birds, and fragrance (in Gerlach-Spriggs, Kaufman & Warner, 1998). As the number of plagues and people affected by them increased toward the end of the medieval period, the ability of monasteries to provide these healing environments declined. The subsequent decline of monasticism itself led to a loss of the use of garden courtyards for healing.

Paradise Gardens

Although the Middle Ages marks the first known use of a restorative garden in a health care setting, we can find the inspiration for the first restorative garden in Mesopotamia about 10,000 years ago. Following the end of the last Ice Age, Mesopotamia was full of green parkland, animals, and a few Paleolithic humans. As the glaciers retreated and the heat advanced northward, humans and animals were pushed out by the change in climate, which was becoming increasingly hot and dry. As Geoffrey and Susan Jellicoe describe it in their book *Landscape of Man* (1995), it was a sort of physical enactment of the legendary banishment of Adam and Eve from the Garden of Eden by the angel with the flaming sword. This is where the idea of the paradise garden came into being. Its origins are found in Old Testament history: "...and the Lord planted a garden eastward of Eden...and a river went out of Eden to water the garden; and thence it was parted and became into four heads...and the fourth river is Euphrates." This biblical excerpt went on to refer to the idea of heaven, the shape of which is symbolized on earth by a square, being associated with this paradise garden. From about 2500 BC onward, lush agricultural plots planted in the Euphrates River valley but surrounded by an

otherwise dead landscape provided the first visual inspiration for these earthly paradise gardens. As a result, the shape and proportions of the early gardens reflected those of the agricultural fields.

Given the hot, arid environment of Mesopotamia, the original paradise garden was an oasis in the desert; a refuge from the harsh, dry surroundings. Fruit and nut trees provided shade, cooling temperatures, and nourishment for the body and soul. Water brought into the garden in narrow channels provided refreshment, watered the plants, and connected the garden to the paradise garden of heaven by symbolizing the four rivers of heaven as described in the bible. In these very early gardens the concept of garden as refuge was important, specifically in terms of physical refuge. It is not unreasonable, however, to hypothesize that the experience of emotional and spiritual refuge followed closely behind. The paradise garden symbolizes the idea of heaven on earth both physically and spiritually and its early geometry continues to influence garden design today.

Stimulation for the Senses

Gardens are usually not considered gardens unless they contain plants, and plants are an essential component in the healing experience of the garden. The multitudes of fragrance, beauty, texture, taste, and even sounds of plants provide various opportunities for sensory stimulation. Positive sensory stimulation has been connected with the stimulation of cognitive and physical functioning (Barnes, 1996; Beckwith & Gilster, 1997; Haas & McCartney, 1996; Hoover, 1995;), improved disposition (Ebel, 1991; Messer, 1996), alleviation of depression and loneliness (McGuire, 1997), and recovery from disease (Ulrich, 1999; Zhou & Relf, 1991). Developmental psychologist Anita Olds (1987) reminds us that our senses must receive changing stimulation to function. For example, our ears hear when sound waves approach and vibrate our eardrums. Changes in air movement around us reveal sensations and odors that go undetected in closed, static spaces. Our senses are organs designed to detect changes in stimulation, not to monitor constant input. Such positive, changing stimulation occurs frequently in the garden at many scales, and a successful therapeutic garden will emphasize and make accessible these opportunities for sensory stimulation. When our senses are stimulated in the garden our relationship with the garden and plants becomes experience-oriented, allowing us to feel a stronger connection to the landscape (Messer, 1996). In establishing that connection we become a part of the landscape and are able to experience its transformative qualities. Through an experience-based landscape we connect ourselves to the earth and to nature, and this in turn provides therapy and healing in the most basic and effective form. As Olds (1987) points out, if something as seemingly minor as an increase in the negative ions in the air can "cure" allergies, headaches, dizziness, depression, and asthmatic attacks, then think how much more powerful things like sun, breezes, earth, water, and plants must be in providing healing and harmony.

Research studies have looked at the role that gardens and other outdoor settings play in healing. Roger Ulrich found that allbladder surgery patients in an urban hospital whose windows looked out over a natural setting recovered faster, required less

pain medication, and made fewer demands on nursing staff than those whose windows looked out on a brick wall. Further research led Ulrich to theorize that viewing natural landscapes reduced stress and promoted a sense of well-being that contributed to health and recovery (in Thompson, 2000).

It has also been proven that particular scents stimulate bodily organs to release neurochemicals that help to eliminate pain, induce sleep, and/or create a sense of well-being (Burrell, 2000). Research has also shown a link between the scent-sensitive hypothalamus and the immune system, drawing a connection between scent and the body's ability to fend off disease (Burrell 2000). Another study comparing rates of delirium in intensive care units found that patients in the unit without windows had a higher rate of delirium on the whole than those in the unit with windows (in Cooper Marcus & Francis, 1998). Certainly more research is needed in this area, but **studies conducted so far show a clear and strong relationship between access to nature and healing.**

Fascination relieves the mind

For some people, simply being in the garden or having a view to the garden can evoke a healing experience. Environmental psychologists Rachel and Stephen Kaplan (1995) developed the "fascination" theory, which describes how a garden setting can help us to recover from mental fatigue by becoming fascinated with something in nature. Mental fatigue is caused by the excessive amount of information that we are inundated with on a daily basis causing us to work hard to direct our attention to tasks. Having limits for directed attention, our capacity to stay focused wears down, resulting in mental fatigue. Mental fatigue often leads to irritability, impatience, mistakes, risk-taking, and exhaustion. Fascination is a significant component of a healing experience because it allows us to function without employing directed attention. Fascination involves attention without demanding effort and a fascinating situation can provide a transformative experience that provides time to recover from mental fatigue (Kaplan, Kaplan, and Ryan, 1998). For example, a person who becomes fascinated with a butterfly in the garden becomes absorbed by the experience of watching that butterfly float through the air moving from flower to flower. This kind of absorption involves directed attention but does not contribute to mental fatigue. The experience, therefore, can be fully enjoyable while still permitting reflection and thought. In a restorative setting this fascination experience can help an individual to explore difficult thoughts in a less painful and more calm way.

While fascination in nature can have calming and healing effects, many of us require more active participation in the garden to enjoy its restorative benefits fully. Working in the garden can alleviate stress, provide appropriate outlets for aggressive energy as well as nurturing tendencies, improve strength and dexterity, and provide positive feedback through the creation of beauty, to name just a few benefits. The study of people-plant interactions has increased dramatically over the last 10-15 years and has resulted in both scientific and anecdotal evidence of its benefits.

The American Horticultural Therapy Association (AHTA) was founded in 1973 to promote and develop the horticultural

therapy profession as a therapeutic and rehabilitative medium for people who are disabled or disadvantaged. AHTA defines horticultural therapy as using "...professionally directed plant, gardening, and nature activities for the purpose of improving human well-being" (AHTA membership brochure, 2000). This involves improving the physical, psychological, social, and educational aspects of individual's lives, thus improving their body, mind, and spirit.

Gardening as Therapy

As an organized effort, horticultural therapy was first used in veterans hospitals established by the federal government following World War II. Garden clubs around the country mobilized scores of volunteers to bring horticultural activities to veterans struggling with psychological and physical disabilities. Horticultural therapy was seen as a form of occupational therapy and the recognition of its benefits grew in this context. The profession has grown to be recognized for the numerous benefits it provides to many different groups of people, including those with physical and/or developmental disabilities, mental illness, and social disadvantages, as well as older adults, children, victims of abuse, substance abusers, and public offenders, among others. Although the basic premise of horticultural therapy is the same no matter whom it involves, the techniques and interventions will change depending on the needs of the individual.

As particular categories of health care needs and settings grow in number, including hospices for individuals with AIDS and cancer and facilities for people with Alzheimer's disease, the importance of the healing garden is increasingly being rediscovered. These types of facilities emphasize care as opposed to cure, and in doing so, attempt to provide home-like comfort, familiarity, and spiritual well-being. Gardens have become an important component in providing this atmosphere and they create opportunities for stress relief, privacy, being outdoors, and activity. Recently, the Joint Commission on Accreditation of Healthcare Organizations required that long-term care and pediatrics patients be given access to the outdoor landscape through the use of the hospital grounds and nearby green areas (Center for Health Design, 1998).

Many people, especially Americans, have recently become more interested in alternative medicines and healing techniques. This increased interest is likely due to widespread dissatisfaction with conventional medical practices (Cooper, Marcus & Barnes, 1995). With gardening being one of the most popular hobbies in the United States today, it is no surprise that our interest in the healing aspects of plants has grown. Cooper, Marcus, and Barnes point out that the 1990s have seen an increase in our interest in taking care of our own health and many of us have recognized the calming effect that nature can have on feelings of stress. Alternative medicines and therapies have adopted the garden and nature as an integral component of the healing experience.

A restorative garden is an environment that provides healing and comforting experiences at many levels and in many forms. By its very nature the garden serves many functions, emphasizing relaxation, recuperation, stress relief, invigoration, recovery, and general well-being. A well-planned restorative

garden allows for both passive and active interaction with plants and nature (Messer, 1996). The garden should be the subject of the view from many windows, allowing individuals who are not able to get out to the garden to benefit from its visual effects. When in a health care setting, the restorative garden should take the needs of visitors and staff into consideration as well as patients, allowing for quiet contemplation and privacy as well as active participation and social interaction. Access to gardens and their views throughout all phases of hospitalization and recovery has proven to enhance healing, recovery, and recuperation (Gerlach-Spriggs, Kaufman & Warner, 1998). Garden by garden, plant by plant, we are rediscovering and reintroducing to our lives that which has been known since the Middle Ages; gardens provide spiritual and emotional refuge and sustain our physical and emotional health. △

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Medicinal Tree Crops

Martin Crawford

This article is intended to detail all the main temperate tree crops of current economic value. Some are already being grown on a plantation scale in countries where labour is cheap, and may be difficult to grow economically in Britain or North America, but there is a growing demand for organically grown products from all these crops, including the mass grown ones. This is perhaps the niche which agroforestry growers should aim for.

Many of these tree crops can be grown in alley cropping systems—indeed, those which are coppiced regularly to provide a crop may be ideal for such systems, as they will be cut before there is much light competition to the arable crop, and thus the arable component can remain, whereas normally the light reduction necessitates changing to pasture or shade-tolerant understory after some years. The coppiced crops may not be as suitable to tree pasture systems since the tender new shoots produced after coppicing will be vulnerable to grazing damage.

The trees bearing fruit and leaf crops here are ideal candidates for tree-pasture systems and forest farming systems. These trees can remain productive for many decades and provide a niche crop to add diversity to the system. Mixed plantings could include trees to be felled for medicinal products, which are used as nurse species, then removed to make space for the more permanent medicinal trees.

Abies balsamea (Balsam fir)

A medium-sized evergreen tree growing to 15 m (50 ft) high from Northeastern N. America. Likes a moist, slightly acid soil; not very wind tolerant. Extremely hardy, to -40°C (-40°F), but susceptible to early frost damage in Britain. Very shade tolerant, especially when young—a good understory component of a mixed system.

An essential oil is distilled from the resin; the resin is tapped from trees in July and August when the flow is at a maximum. About 225-280 g (8-10 oz) of resin is obtained per tree. The oil is similar to that of pines and is very aromatic, with a pleasant scent, and contains camphene, pinene, and resinic acid. All firs (*Abies spp.*) yield resin to a greater or lesser degree.

The oil has long been used medicinally, being a very strong antiseptic on wounds and ulcers. It is also antirheumatic, antitussive, cicatrisant, diuretic, expectorant, nerve sedative, tonic, and vulnerary; it is used in treating diseases of the reproductive organs and urinary systems as well as the respiratory system. A considerable American industry deals with balsam firs, and the oil is used in many soaps and cosmetics, perfumery, in dentistry as an ingredient in root canal sealers, and as a flavouring in some food products and drinks.

A. sibirica (Siberian fir)

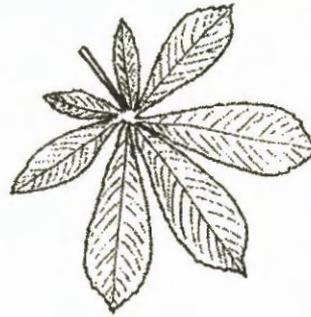
A large evergreen tree from Northern Europe growing to 30 m (100 ft). Likes a slightly acid soil. Extremely hardy, to -45°C (-49°F), but susceptible to early frost damage in Britain. Very shade tolerant, especially when young—a good understory

component of a mixed system.

An essential oil made from the needles is used. The fresh shoots with needles are distilled to extract the essential oil. Material is usually taken from felled trees. The oil is pale yellow with a rich, sweet balsamic odor; it contains santene, pinene, limonene, bornyl acetate, and others, and is used mainly for respiratory complaints, fever, muscular and rheumatic pain. It is used in cough and cold remedies, rheumatic treatments, and as a fragrance component in deodorants, room sprays, disinfectants, bath preparations, soaps, and perfumes. Yields of 2.2-2.6 Kg/tonne of fresh material are obtained. Annual world production is worth over £250,000 (\$400,000); *A. sibirica* essential oil wholesales at about £45/litre (\$72/l).

Many species of fir can be used similarly, but this is the most popular in Europe and North America due to its fine fragrance. Others include Japanese fir needle oil from *A. mayriana* or *A. sachalinensis*.

Aesculus hippocastaneum (Horse chestnut)



A large deciduous tree from Europe, growing 30 m (100 ft) high. Tolerates most soils and is very tolerant of cutting back. Very hardy, to -35°C (-31°F). Bears seeds at the age of about 20 years.

The leaves and seeds are both used medicinally. Seeds have a drying ratio of 2:1, and leaves of 4-5:1. Seeds are collected when ripe in September; leaves are collected in June and July. Horse

chestnut contains saponins (notably aescin), coumarins, and flavonoids. Aescin, the main active ingredient, has anti-inflammatory properties, and is used in many European countries. The seeds wholesale for about £7/kg (\$5/lb).

Betula lenta (Sweet birch)

Sweet birch is a medium-to-large deciduous tree from Eastern N. America, growing to 24 m (80 ft). Tolerates most soils, and moderately shade tolerant. Hardy to -35°C (-31°F).

An essential oil from the bark is widely used. The essential oil is extracted from the bark which is first macerated in warm water before distillation. The oil is clear or pale yellowish-red with an intense wintergreen scent. It contains almost entirely methyl salicylate and is almost identical in composition to wintergreen oil. It has a limited use as a counter-irritant in anti-arthritic and antineuralgic ointments and analgesic balms, also in cosmetics and perfumes; used as a flavoring agent in toothpaste, chewing gum etc. Sweet birch essential oil wholesales at about £20/litre (\$32/l).

***Betula pendula* (Silver birch)**

A medium-to-large deciduous European tree growing to 20 m (70 ft). Tolerates most soils and wind exposure. Very hardy, to -40°.

The leaves are used medicinally. Leaves have a drying ratio of 4-5:1, and are collected from June to August. Dried leaves, mostly coming from Slovenia, wholesale for £5/kg (\$3.65/lb). They are used in tea blends.

An essential oil is distilled from the leaves and leaf buds which is pale yellow, viscous, and with a balsamic scent; birch bud oil is used mainly in hair tonics and shampoos, also medicinally for skin and scalp complaints. Paper birch (*B. papyrifera*) is used similarly. White birch essential oil wholesales at about £65/litre (\$100/l).

***Cedrus deodara* (Deodar Cedar)**

A large evergreen tree from Eastern Asia, growing to 33 m (110 ft). Tolerates most soils including chalk, and quite wind tolerant. Hardy to -12°C (10°F) or so, depending on origin of the seeds. The essential oil distilled from the wood is used in perfumery. Most production is from India. It is sometimes called cedarwood oil but should not be confused with that from *C. libani atlantica*. Himalayan cedarwood essential oil wholesales at about £25/litre (\$40/l).

***Cedrus libani atlantica* (Atlas cedar)**

The Atlas cedar (Syn. *C. atlantica*) is a large evergreen tree from North Africa, growing to 25 m (80 ft). It tolerates most soils and is hardy to -20°C (-4°F).

Cedarwood or oil of cedar (N.B. The name is used for several other species but this is the one most used therapeutically.) is produced by distillation of wood from cut trees, also stumps and sawdust. The wood contains 3-5% oil. Most production is from Morocco, where 6-7 tonnes of oil per year are produced (1980 figure); annual world production is worth some £7,000,000 (\$11,000,000). The oil has been used from the time of the ancient Egyptians. Atlas cedarwood essential oil wholesales at about £35/litre (\$56/l) (organic oil at £72/litre, \$115/l).

The oil is syrupy, yellowish, and balsamic, with a sweet turpentine scent. It contains terpenic hydrocarbons, cedrol, and sesquiterpenes. It has a beneficial effect on eczema and other skin diseases including scalp problems; in France it is included in commercial shampoos and hair lotions. It is also used in cosmetics, soaps, detergents, and perfumes (especially men's).

***Crataegus monogyna* & *C. oxyacantha* (Hawthorn)**

Small deciduous European trees growing to 6 m (20 ft). Tolerant of most soils and very wind tolerant. Hardy to about -23°C (-9°F). Seedling trees bear fruit after 5-8 years.

The leaves, flowers, and fruits all contain cardioactive

compounds. The flowers contain 0.15-0.17% essential oil, quercetin, quercitrin, and trimethylamine; the fruits contain citric acid, crataegus acid, and vitamin C. Medicinally, hawthorn dilates the blood vessels, especially the coronary vessels, reducing peripheral resistance and thus lowering blood pressure. It has a direct favourable effect on the heart and reduces the likelihood of angina attacks.

Generally, the flowering branch ends are gathered in May, and the mature fruits from August to September or October. To avoid the flowers falling off, the flowering ends are dried without turning. The mature fruits are usually dried in shade. Fruits have a drying ratio of 3:1 and flowers of 4-6:1. Dried flowering tops wholesale for £8-11/kg (\$6-8/lb), and dried fruit for £4-6/kg (\$3-4.40/lb) (higher prices for organically grown). Most production is from Eastern Europe. The fruits and dried shoots are also used in herb teas.

***Cupressus sempervirens* (Italian cypress)**

A large evergreen tree from Southern Europe and Western Asia, growing to 30 m (100 ft) high. Likes a loamy soil and full sun; can be damaged by strong winds. Hardy to at least -15°C (5°F).

An essential oil is produced from the tree. The fresh leaves and cones are distilled to produce the essential oil. They contain 1.3-1.5% of oil. The oil is colorless or very pale yellow, with a woody, balsamic, agreeable amber scent. It contains terpenes (65%, mostly α -pinene and terpineol), cedrol, cypress camphor, some acids, and tannin. Most production is from the South of France; annual world production is worth over £150,000 (\$240,000). Cypress essential oil wholesales at about £55/litre (\$90/l) (organic oil at £65/litre, \$105/l).

The oil acts as a vaso-constrictor and is used for circulatory problems like varicose veins and hemorrhoids. It is also used as a vapor inhaled for coughs and bronchitis and was formerly used in cough pastilles in France, and used for whooping cough in children. It is used as a fragrance component in perfumes.

***Eucalyptus* spp. (Eucalypts)**

Eucalypts are fast-growing evergreen trees from Australia which need a sunny site and a moderately fertile, well-drained soil. Hardiness varies widely between species, and can vary widely depending on the seed origin; hardy survivors in temperate climates pass on the hardiness (which may increase) to their offspring. Most of the species mentioned below are not very hardy but there are many hardier species which may produce good quantities of oil in temperate regions—little research has been done on the matter. *E. radiata* and *E. dives* are hardy to -10°C (14°F); the others below to between -2 and -5°C (23-28°F).

Cupressus sempervirens

The leaves of most Eucalyptus species can be used medicinally, but the essential oil is more commonly used. European organic Eucalyptus leaf wholesales for about £5/kg (\$3.60/lb). At least 500 species of Eucalyptus produce an essential oil, but a relatively small number are used commercially. In general they can be divided into three categories of oils:



1. The medicinal oils containing large amounts of cineol (eucalyptol) such as the blue gum (*E. globulus*), the blue mallee (*E. polybractea*), the narrow-leaved peppermint (*E. radiata australiana*), broad-leaved peppermint (*E. dives* cineole variant), *E. viridis*, and the gully gum (*E. smithii*).

For medicinal use, oil distilled from *E. globulus*, the Tasmanian Blue Gum, is preferred. Young and mature trees are both used, but more oil is produced by mature trees and it has better aromatic qualities. Normally, trees are coppiced to keep them manageable. Leaves may contain 3-4.5% of oil. The oil is very fluid and a pale clear yellow, with a fresh balsamic aroma. It contains 70-80% eucalyptol (cineol) and various other substances; there are about 250 different constituents so it is extremely difficult to reproduce synthetically. Spain and China are the main producers; annual world production is worth over £10,000,000 (£16,000,000). *E. globulus* essential oil wholesales at about £22/litre (\$35/l) (organic oil at £27/litre, \$43/l); *E. radiata* oil at £35-55/litre (\$56-88/l); *E. smithii* oil at £35-55/litre (\$56-88/l); and *E. dives* oil at £35/litre (\$56/l).

Eucalyptus oil is highly antiseptic and antifungal and often used as an inhalation for colds, flu, coughs, bronchitis, catarrh, and viral infections. It is also used for rheumatic conditions.

The oil and cineol are largely used in liniments, inhalants, cough syrups, ointments, toothpaste, and as pharmaceutical flavorings in dentistry and veterinary work. They are used as a fragrance component in soaps, detergent, and toiletries. Cineol is used as a flavouring in many food products.

2. The industrial oils containing mainly piperitone (40-50%) and phellandrene (20-30%), such as the peppermint eucalyptus (*E. piperita*), grey peppermint (*E. radiata phellandra*), *E. elata*, and broad-leaved peppermint (*E. dives*).

The oil from these species has a fresh, camphoraceous, spicy-minty odor. It is used in deodorants, disinfectants, antiseptics, mouthwashes and gargles, and is used to make thymol and menthol (from piperitone).

3. The perfumery oils containing mainly citronellol (80-95%), such as the lemon-scented eucalyptus (*E. citriodora*). Annual world production is worth over £2,000,000 (\$3,200,000); *E. citriodora* essential oil wholesales at about £35/litre (\$56/l).

The oil from these species has a strong citronella-like odor. It is used as a fragrance component in soaps, detergents, and perfumes; in room sprays and insect repellents. Citronellol is also used as a starting point for synthesising many aromatic chemicals.

The twigs and leaves (fresh or partially dried) are distilled to extract the essential oil. The oil content varies from species to species and is affected by climate, but may reach 3-4.5% in the best species; typically, a species with 1.5% oil content will produce 3.5-6 kg of distilled oil per tonne of fresh leaves.

Eucalypts are grown in plantations which are coppiced once or twice annually by machine; foliage is also obtained from trees felled for other purposes and from natural stands. In plantations, trees are planted 3-5 m apart within rows, with a spacing between rows suitable for the machinery used. Weeding is very important in the first year after seedlings are planted, but after that the cover between rows can be mown. Hand harvesting of foliage still takes place where areas are small or rough—a person can cut and load 600-1000 kg of foliage per day for

transport to a still. Coppice height can be any convenient height; on level land it can be as low as 5-8 cm (2-3"). Plantations have been harvested for 70 years without deterioration.

E. citriodora: Foliage yield from annually coppiced trees is 2-5 kg, with selected strains up to 10 kg; mature trees yield 300-500 kg of foliage when felled for timber. Oil yield is usually 0.5-2%.

E. globulus ssp. *globulus*: Foliage yields from 6-8 year old trees in Spain is 20-60 kg of leaves. Oil with the highest cineole content tends to be at the ends of branches and the top of the canopy, and selective harvesting of these leaves produces the highest quality oil. Trees are often grown on a 5-12 year coppice rotation for pulp or firewood, or on 15-30 year rotations for timber; the foliage yield when these trees are coppiced is much greater.

E. polybractea: Seedlings are initially coppiced after 15-18 months, then every 1-2 years.

Ginkgo biloba (Ginkgo, Maidenhair tree)



The ginkgo is a large deciduous tree from northern China growing to 30 m (100 ft). Tolerates most soils and prefers hot summers. Hardy to -25°C (-13°F).

Ginkgo leaves have long been used in Chinese medicine and in recent decades the medicinal values have been

recognised in the West. The seeds are also much used for food and medicine in China.

Ginkgo trees are cultivated for the medicinal leaves in plantations which are coppiced annually, particularly in China, France, and the USA. They are harvested in late summer or early autumn, before they begin to change color. The leaves contain flavonoids, ginkgolides, and bilobalides. Extensive research in the past 30 years has established that ginkgo can improve cerebral circulation, aiding memory and concentration. It is also anti-asthmatic, anti-inflammatory, antispasmodic, and anti-allergenic. Ginkgo is the best-selling herbal medicine in several European countries and demand for leaves is steadily increasing.

Ginkgo leaf wholesales for about £6/kg (\$4.40/lb). Most is purchased by pharmaceutical and herbal remedy companies and processed by them.

Juniperus virginiana (Eastern red cedar, Pencil cedar)

A medium to large evergreen tree from Central and Eastern North America growing to 20 m (65 ft). Tolerates most soils—prefers neutral or slightly alkaline. Drought and wind tolerant. Hardy to -25°C (-13°F).

The wood from this species is used in the pencil industry, and an essential oil is obtained from waste pieces and sawdust. At one time a superior oil was distilled from the red heartwood of trees over 25 years old. Virginia cedarwood essential oil wholesales at about £40/litre (\$64/l).

The oil is pale yellow or orange with a mild, sweet-balsamic

scent. It mainly contains cedrene and cedrol. It is used extensively in room sprays and household insect and moth repellents, also in soaps, cosmetics, polishes, and perfumes. It is sometimes called cedarwood oil but should not be confused with that from *C. libani atlantica*.



***Picea* spp. (Spruces)**

All medium-to-large evergreen trees which like a moist acid soil. They are all widely used in forestry. Norway spruce (*P. abies*) reaches 30 m (100 ft) and is from Northern and Central Europe, hardy to -25°C (-13°F); white spruce (*P. glauca*) reaches 15 m (50 ft) or more and is from Northern N. America, hardy to -40°; black spruce (*P. mariana*) reaches 20 m (70 ft) or more and is from Northern N. America, hardy to -25°C (-13°F).

Hemlock or spruce oil is produced from these species by distillation of needles and twigs, usually from forestry trees which have been felled. A similar oil is produced from Eastern hemlock (*Tsuga canadensis*).

The oil is pale yellow which a fresh-balsamic, sweet-fruity odor. It contains mainly pinenes, limonene, bornyl acetate and others. It is used for muscular and joint pains, respiratory problems, and nervous ailments. It is used extensively in the USA for room spray perfumes, detergents, soaps, bath preparations and toiletries; and in veterinary liniments.

***Pinus sylvestris* (Scots pine)**

A large evergreen tree from Northern Europe, growing to 25 m (80 ft) high. Likes a light soil. Very wind tolerant and fairly shade tolerant. Hardy to -40°.

An essential oil (pine needle oil) can be obtained from many pines, but for medicinal use, *P. sylvestris* is preferred (other species which can be used include eastern white pine, *P. strobus*, and black pine, *P. nigra*). The best quality oil is distilled from the needles, but sometimes cones and young twigs are included. The oil from Siberia and Finland is regarded most highly. The oil itself is colorless or very pale yellow, and has a strong turpentine-like aroma. It contains 30-40% bornyl acetate and several other terpenes. Annual world production is worth over £600,000 (\$1,000,000); essential oil wholesales at about £50/litre (\$80/l) (organic oil at £120/litre, \$190/l). Turpentine is also obtained from the Scots pine (see below for details).

Pine needle oil is antiseptic and expectorant, and is very efficient for pulmonary problems and as a sudorific, used for flu and other virus infections. It is vaporised in the burns units of some hospitals and has been found to prevent infection after severe burns. It is used as a fragrance component in soaps, detergents, cosmetics, toiletries, and perfumes; and as a flavoring in food products, alcoholic and soft drinks.

Longleaf or pitch pine, *P. palustris*, produces an essential oil from the wood, and turpentine from the oleoresin which exudes from the trunk. Sawdust, wood chips of heartwood, and roots are distilled to produce the crude oil, which is double distilled by

fractional distillation to produce pine essential oil. This is used extensively in medicine, particularly in veterinary antiseptic sprays, disinfectants, detergents, and insecticides; also as a fragrance component in soaps, toiletries, bath products and perfumes; and in paint manufacture. Turpentine contains largely alaphinene and is used in many ointments and lotions for aches and pains, and in cough and cold remedies; though it is mainly known as a paint and stain remover, solvent, and insecticide. Turpentine is obtained from several other species including slash pine (*P. elliottii*), chir pine (*P. roxburghii*), lodgepole pine (*P. contorta latifolia*), masson pine (*P. massoniana*), sea pine (*P. pinaster*) and Scots pine (*P. sylvestris*).

***Populus nigra* (Black poplar)**

A large deciduous tree from Europe, growing to 30 m (100 ft) high. Tolerates most soils and needs a sunny site. Hardy to -40°C/F. Very tolerant of cutting.

The leaf buds are covered with a resinous sap which has a turpentine odor and bitter taste. Leaf buds are collected in February and March. They have a drying ratio of 2:1, and contain an essential oil, a phenolic glycoside (salicin, closely related to salicylic acid—precursor of aspirin), and a flavone derivative. Dried poplar buds wholesale for about £7/kg (\$5/lb) and are mostly collected in Eastern Europe. They are used in herb teas and cosmetics.

***Quercus robur* & *Q. petraea* (Oaks)**

Large European deciduous trees which reach 30 m (100 ft) or more. They prefer a deep fertile loam.

The bark is used medicinally and in industry. Trees are usually coppiced on a 5-12 year rotation and the bark stripped from branches. It is collected in spring and contains 15-20% tannins. The bark has a drying ratio of 3:1. It is used medicinally as an astringent and hemostat. Dried oak bark is mostly collected in Eastern Europe and wholesales for about £5/kg (\$3.60/lb). A small amount is used medicinally, but most is used in the leather industry for tanning and in the paint industry.

***Robinia pseudoacacia* (Black locust)**

A large deciduous tree from Eastern North America, growing to 25 m (80 ft). Hardy to -35°C (-31°F). Likes a well drained soil. Susceptible to wind damage. Seedling trees usually flower at 10-12 years of age; improved selections at about 6 years. Flowers are shown to right.

The flowers are used medicinally and for perfumery. Flowers are gathered in May and June, and contain the glycoside loxalbumin. Flowers have a drying ratio of 7:1. Most are collected in Eastern Europe,



where some breeding work has taken place to produce selections with more flowers over a longer period of time (eg. 'D-2') mainly for bee fodder. The flowers are used as a spice/flavoring, in herb teas, and an essential oil is distilled from them and used in perfumery.

***Salix alba* (White willow)**

White willow is a large deciduous European tree growing to 5 m (80 ft) high, usually found by river banks. It tolerates most soils but prefers damp ones. It needs full sun. It is very tolerant of cutting.

The bark is used medicinally. Trees are usually grown in pastures and pollarded regularly: the bark is stripped from 2-6 year old branches in spring or early autumn. The bark contains salicylic acid, flavonoids, and tannins (up to 20%) and is anti-inflammatory, analgesic, febrifuge, antirheumatic, and stringent. Salicylic acid was the forerunner of aspirin and has many of the same analgesic and anti-inflammatory actions. Unlike aspirin, it does not thin the blood or irritate the stomach lining. Dried willow bark wholesales for £5-8/kg (\$3.60-6/lb) the higher price for organic).

***Sassafras albidum* (Sassafras)**

Sassafras is a deciduous tree from Eastern North America, usually growing some 18 m (60 ft) high, occasionally much higher, with an irregular pyramidal head. It prefers sandy soils and quickly colonises neglected land in its native range.

The bark, especially from the roots, has been used as a food and drink flavoring for several centuries, as well as being used medicinally. The dried bark wholesales for about £12/kg (\$9/lb) and the dried root bark for £23/kg (\$17/lb). Trees over 10 years old are normally harvested.

An essential oil is distilled from the chipped dried inner root bark, which yields 10% oil. Sassafras oil is yellowish-brown, viscous, with a sweet-spicy camphoraceous odor; the main constituents are safrol (to 80%), phellandrine, and pinene (10%). The sweet, rather woody taste was the main reason for the oil's use in soft drinks, especially North American root beers and arsaparilla drinks (now banned). The oil is also used in perfumery, soaps, and toiletries, and has antiseptic, insecticidal, and bactericidal properties. A safrol-free oil can be produced. Safrol itself is used as a starting material to synthesise eliotropin, used in perfumery.

The fresh leaves when crushed have an orange-lemon-vanilla scent, quite different from the bark, and contain citrol and geraniol but little or no safrol.

Due to the finding of carcinogenic substances in safrol, its use has declined, and most sassafras oil is now produced from a different tree entirely, the tropical *Ocotea pretiosa*.

***Taxus baccata* (Yew)**

A slow-growing medium sized tree from Europe, reaching 15 m (50 ft) high. Tolerates most situations including deep shade—good in the understory of an agroforestry system. Very tolerant of cutting. Hardy to -25°C (-13°F).

An anti-cancer compound taxol (paclitaxel) is present in yew trees which is active against ovarian and breast cancer and perhaps other cancers. Originally found and extracted from the

Pacific yew (*T. brevifolia*), where the chemical is found especially concentrated in the bark, it has since been found in lower concentrations in other yew species. Leaves of *T. baccata* are used to extract starting chemicals which are then used to synthesise taxol, and there is at least one commercial pharmaceutical company which collects quantities of yew clippings to use for this process in Britain.

Trees can be clipped annually for a supply of leaves, although large quantities are needed to produce small quantities of taxol.

***Thuja occidentalis* & *T. plicata* American arbor-vitae & Western red cedar**

T. occidentalis is a medium-sized evergreen tree from Eastern North America growing to 15 m (50 ft). It prefers a moist soil. It does not regenerate well from cutting. It is hardy to -45°C (-49°F). *T. plicata* is a fast-growing deciduous tree from Western North America, growing to 60 m (200 ft). It prefers a moist loam and is tolerant of light trimming. It is hardy to -20°C (-4°F).

Essential oil can be obtained from all *Thuja* species, the leaves and twigs of which contain medicinal compounds.

Essential oil is distilled from *T. occidentalis* using leaves, twigs, and bark collected in summer. Whole branches can be lopped off or trees felled. The oil ("oil of white cedar") contains up to 60% thujone. *T. occidentalis* essential oil wholesales at about £50/litre (\$80/l). It is used in pharmaceutical products such as disinfectants and sprays, and as a counter-irritant in analgesic preparations. It is used as a fragrance component in some toiletries and perfumes; and a flavoring if the component thujone is removed. The leaves are sometimes used medicinally being anti-viral amongst other things.

Oil from *T. plicata* is preferred for medicinal use. The leafy young twigs (either fresh or dried) are distilled to produce the oil, of which there is most in spring—very little in summer. Trees can be annually clipped for a regular supply of twigs and leaves, or branches lopped, or trees felled. The oil contains α -pinene, borneol, bornyl acetate, δ -thujone, fenchone, and fenone. The oil is antiseptic and antirheumatic, and is used for a variety of skin and scalp diseases. It is sometimes called cedarwood oil but should not be confused with that from *C. libani atlantica*.

***Tilia cordata* & *T. platyphyllos* Limes**

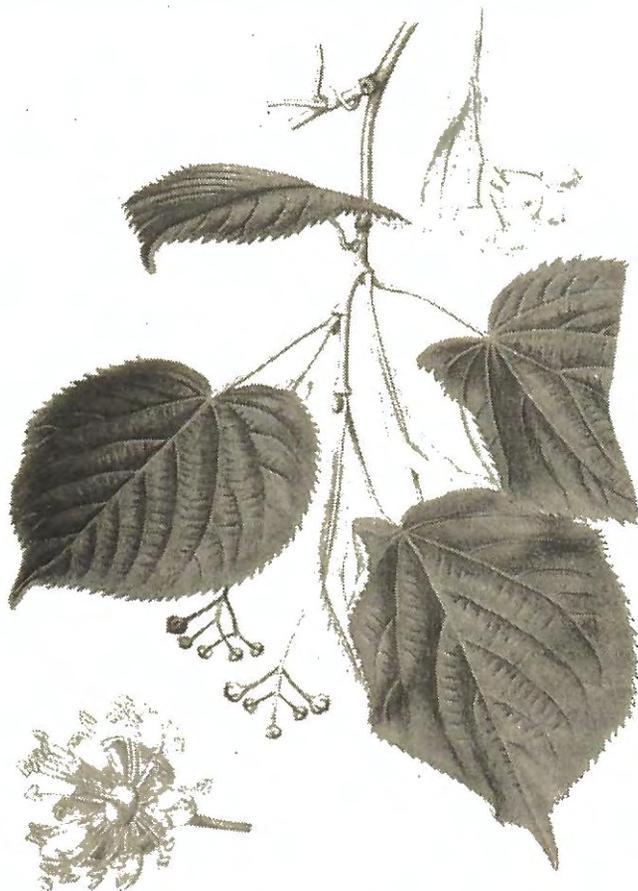
These are large deciduous European trees growing to 30 m (100 ft). They prefer a moist loamy soil, are tolerant of cutting and tolerate moderate side shade—they will grow in an understory but will not flower much until in sun. Small-leaved lime (*T. cordata*) is hardy to -35°C (-31°F) and large leaved lime (*T. platyphyllos*) to -23°C (-9°F). They flower from the age of about 20 years.

Lime flowers are used medicinally. The dried flowers contain 0.05-0.1% essential oil which contains eucosane, eugenol, farnesol, geraniol, linalool and others. They also contain mucilage, tannin, flavonoids, and various other compounds. Widely used in herb teas, they are diaphoretic as well as antispasmodic, sedative, and have other medicinal uses. Lime flowers are also used for cosmetics, mouth washes, and bath lotions.

The flowers are gathered together with bracts (sometimes without) at full bloom in May and June, prior to the blooming of

the central flowers. Care should be taken not to damage the tree during flower gathering—the best way is to cut the ends of branches with scissors and gather the flowers manually from the branches. The flowers are dried in well-ventilated shade or an artificial dryer at 40°C (104°F). The flowers have a drying ratio of 4:1. Dried lime flowers wholesale for £8-14/kg (\$6-10/lb) (the higher price for organic).

An essential oil is occasionally produced from the flowers, but is very expensive and only used in the “high quality” perfume market; a synthetic alternative is more often used. The oil is sweet and slightly spicy with a heady aroma, and contains farnesol (an alcohol). It can be used medicinally for nervous system complaints, catarrhal conditions and kidney disorders. It is said to keep wrinkles at bay when used on the skin. Linden blossom essential oil wholesales at about £500/litre (\$800/l).



Tilia cordata

***Tsuga canadensis* (Eastern hemlock)**

A medium-to-large evergreen tree from Eastern North America, growing to 20 m (70 ft). Tolerates most soils and positions; very shade tolerant when young—good in an understory. Hardy to -25°C (-13°F).

The bark of this species is sometimes used medicinally, being astringent and antiseptic. The dried bark wholesales for about £10/kg (\$7/lb).

Hemlock or spruce oil is produced from this species by distillation of needles and twigs. Similar oils are produced from Black spruce (*Picea mariana*), Norway spruce (*Picea abies*) and white spruce (*Picea glauca*).

The oil is pale yellow with a fresh balsamic, sweet-fruity odour. It contains mainly pinenes, limonene, bornyl acetate and others. It is used for muscular and joint pains, respiratory problems, and nervous ailments. It is used extensively in the USA for room spray perfumes, detergents, soaps, bath preparations, and toiletries; and in veterinary liniments.

***Ulmus rubra* (Slippery elm)**

A medium-to-large deciduous tree from Central and Southern North America, growing to 20 m (70 ft). Grows in any reasonable soil. Very susceptible to Dutch elm disease.

The inner bark of slippery elm has long been used medicinally and for food. Trees can be coppiced on a 10-year cycle to provide branches of the right age. The inner bark of 10-year old trees or branches is collected in spring, dried, and powdered. It is very mucilaginous and is demulcent, emollient, and laxative. Used medicinally, it soothes inflamed skin or membranes. Slippery elm is widely used in herbal preparations, particularly for throat and digestive tract infections, foods for those convalescing, and for babies. The powdered product wholesales for about £13/kg (\$9/lb).

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Medicinal Tree, Shrubs, and Vines for Cold Temperate Climates

Michael Pilarski, compiler

With the growing interest in botanical medicine over the past decade, new market niches have emerged for cultivating medicinal plants. Many of these plants are forest natives and have a natural place in agroforestry systems. Medicinal plants can provide permaculture growers with an economic edge that enables them to succeed in both restoring diverse ecosystems and making a living from a rural property.

I have been designing agroforestry systems for the Pacific Northwest in recent years with a focus on the medicinal values of their constituent plants. It has been important to me therefore to learn which woody trees, shrubs, and vines have medicinal qualities.

In preparing to plant medicinal perennials at my community farm in the Spring of 2001, I compiled this list of woody-stemmed plants suitable for medicinal agroforestry and permaculture systems in cold climates. Sunny Pine Farm is located in the Twisp River Valley, in the Methow Valley drainage on the eastern slope of the North Cascades mountains in Washington State. It has a cold temperate dry continental climate. Plants which appear on this list are likely to survive in cool-to-cold climates elsewhere in North America; some may range into warmer climate zones in the southern United States. All of these species can take freezing temperatures, but some are much hardier than others. Some can live all the way to treeline in the Arctic circle. Others die if it gets below 0° F. Do your homework before you decide which trees, shrubs, and vines to plant at your particular location.

The more than one hundred species listed here represent a good beginning; the list is strongly oriented to North American species.

Medicinal Bark:

Aesculus hippocastanum, Horsechestnut *Alnus glutinosa*, European Alder, *Alnus rubra*, Red Alder *Ampelopsis quinquefolia*, Virginia Creeper *Aristolochia serpentaria*, Virginia Snakeroot *Berberis vulgaris*, Barberry *Betula pendula*, Silver Birch, rossed. *Buxus sempervirens*, Boxwood *Castanea sativa*, Chestnut *Cephalanthus occidentalis*, Button Bush, *Cornus amomum*, Silky Dogwood *Cornus florida*, Flowering dogwood *Cornus rugosa*, Round Leaved Dogwood *Cornus sericea*, Red-osier Dogwood *Diospyros virginiana*, Persimmon *Euonymus atropurpureans*, Wahoo, Burning Bush, *Eucommia ulmoides*, Eucommia tree *Garrya elliptica*, Silk Tassel *Ilex verticillata*, Winterberry *Phellodendron amurense*, Amur Cork Tree *Pinus sp.*, White pine (rossed bark) *Populus tremuloides*, Aspen *Prunus serotina*, Eastern Black Cherry *Ptelea trifoliata*, Wafer Ash, *Quercus spp.*, Oak, White oak bark, rossed. Black and red oak bark used for external application products *Rhamnus catharticus* *Rhamnus purshiana*, Cascara *Rhus glabra*, Smooth

Sumac *Rubus spp.*, Blackberry *Salix spp.*, Willow *Sassafras albidum*, Sassafras *Tsuga canadensis*, Eastern Hemlock, *Ulmus rubra*, Slippery Elm. *Viburnum opulus*, Highbush Cranberry *Viburnum prunifolium*, Black Haw *Xanthoxylum americanum*, Toothache Tree, Prickly Ash

Medicinal Rootbark:

Berberis vulgaris, Barberry, *Ceanothus americanus*, Redroot *Ceanothus velutinus*, Varnishleaf *Cephalanthus occidentalis*, Button Bush, *Chionanthus virginicus*, Fringe Tree, *Cornus amomum*, silky Dogwood *Cornus florida*, Flowering dogwood *Cornus rugosa*, Round Leaved Dogwood *Fraxinus americana*, White Ash, *Hamamelis virginicus*, Witch-hazel *Juglans cinerea*, Bitternut *Myrica cerifera* *Myrica gale*, Bayberry, *Myrica pennsylvanica* *Oplopanax horridum*, Devil's Club *Rhus glabra*, Smooth Sumac *Viburnum prunifolium*, Black Haw

Medicinal Roots:

Berberis vulgaris, Barberry, *Euonymus atropurpureans*, Wahoo Burning Bush, *Garrya elliptica*, Silk Tassel *Hydrangea arborescens*, Wild Hydrangea, *Mahonia aquifolium*, Tall Oregon Grape, *Mahonia nervosa*, Oregon Grape *Mahonia repens*, Low Oregon Grape *Sassafras albidum*, Sassafras

Medicinal Twigs: *Alnus Rubra*, Red Alder, *Betula*, Birch *Calluna vulgaris*, Heather, (whole plant) *Cytisus scoparius*, Scotch Broom *Fraxinus americana*, White Ash, *Gaultheria shallon*, Salal (twigs with leaves) *Hamamelis virginicus*, Witch-hazel *Lindera benzoin*, Spice bush *Morus*, Mulberry *Myrica gale*, whole plant *Vaccinium spp.* (see species list under leaves) (twigs with leaves)

Medicinal Stems:

Akebia trifoliata, Akebia, *Ampelopsis quinquefolia*, Virginia Creeper, young shoots, *Berberis vulgaris*, Barberry, *Passiflora incarnata*, Maypop,

Medicinal Wood

Buxus sempervirens, Boxwood *Cedrus libani subsp. atlantica*, Atlas Cedar

Medicinal Leaves

Alnus glutinosa, European alder, Black Alder, *Alnus rubra*, Red Alder, *Arbutus menziesii*, Madrone *Arctostaphylos spp.*, Manzanita *Arctostaphylos uva ursi*, Kinnikinnik, *Uva-ursi*, Bearberry, *Berberis vulgaris*, Barberry, *Betula pendula*, Silver Birch, *Buxus sempervirens*, Boxwood *Castanea sativa*, European Chestnut, *Comptonia peregrina*, Comptonia, *Eriobotrya japonica*, Loquat *Garrya elliptica*, Silk Tassel *Gaultheria procumbens*, Wintergreen *Ginkgo biloba*, Ginkgo *Ledum glandulifera* *Ledum groenlandica*, Labrador Tea.

Magnolia virginiana, Sweetbay, *Ribes nigrum*, Black Currant
Salvia apiana, White Sage *Sassafras albidum*, Sassafras
Umbellaria californica, California Bay *Vaccinium corymbosum*,
 Blueberry *Vaccinium myrtillus*, Bilberry, *Vaccinium scoparium*,
 Grouse Whortleberry

Medicinal Needles/foilage

Abies alba, Silver Fir, *Abies balsamea*, Balsam Fir, Balm of
 Gilead, *Juniperus virginiana*, Eastern Redcedar *Sequoia
 sempervirens*, Redwood *Taxus brevifolia*, Pacific Yew *Thuja
 occidentalis*, Eastern White-cedar, *Arborvitae Thuja plicata*,
 Western Red Cedar

Medicinal Buds

Betula pendula, Silver Birch, *Populus balsamifera*, Balm of
 Gilead *Populus trichocarpa*, Cottonwood *Tsuga canadensis*,
 Eastern hemlock, young spring buds.

Medicinal Flowers

Crataegus spp.; Hawthorn *Sambucus spp.*, Elderberry *Tilia spp.*,
 Linden.

Medicinal Fruit

Aronia Melanocarpa, *Aronia Berberis vulgaris*, Barberry,
Chaenomeles speciosa, Flowering Quince, Mu Gua *Cornus
 officinalis Crataegus spp.*, Hawthorn *Eriobotrya japonica*,
 Loquat *Forsythia suspensa*, Weeping Forsythia, *Hippophae
 rhamnoides*, Sea Buckthorn *Juniper spp.*, *Lycium chinense*,
 wolfberry. *Mahonia spp.*, Oregon Grape, *Myrica gale Sambucus
 spp.*, Elderberry. (Blue, Black and European). *Schisandra
 chinensis*, Schisandra, Chinese Magnolia Vine *Xanthoceras
 americana*, Prickly ash

Medicinal Nuts/Seeds

Aesculus californica, California Buckeye *Asimina triloba*,
 Pawpaw *Aesculus hippocastanum*, Horsechestnut *Castanea
 sativa*, European Chestnut, *Ginkgo biloba*, Ginkgo

Medicinal Resin

Abies alba, Silver Fir, *Abies balsamea*, Balsam Fir, Balm of
 Gilead, *Liquidambar styraciflua*, Sweetgum *Picea mariana*,
 Black Spruce

Medicinal Oil

Abies alba, Silver Fir, *Abies balsamea*, Balsam Fir, Balm of
 Gilead, *Betula pendula*, Silver Birch, *Cedrus libani subsp.
 atlantica*, Atlas Cedar *Gaultheria procumbens*, Wintergreen
Pinus mugo var. pumilio, Dwarf Mountain Pine

Medicinal Tar

Pinus sylvestris, Scotch Pine (distilled from roots)

Questions

What are the optimum ages of the trees for harvesting bark
 for each species. Bark tends to get thicker with age.
 Economically speaking it might be best to wait five to ten years
 (or longer for some species).

How do the levels of medicinal components in the bark vary
 at different ages? Is older bark better than bark from younger
 wood or vice versa? This will probably vary from species to
 species.

We need to ask the same questions for rootbark. In the case
 of rootbark, we may want to dig or pull the plants out when they
 are less than five years old if they are field planted. Δ

We Stand Corrected

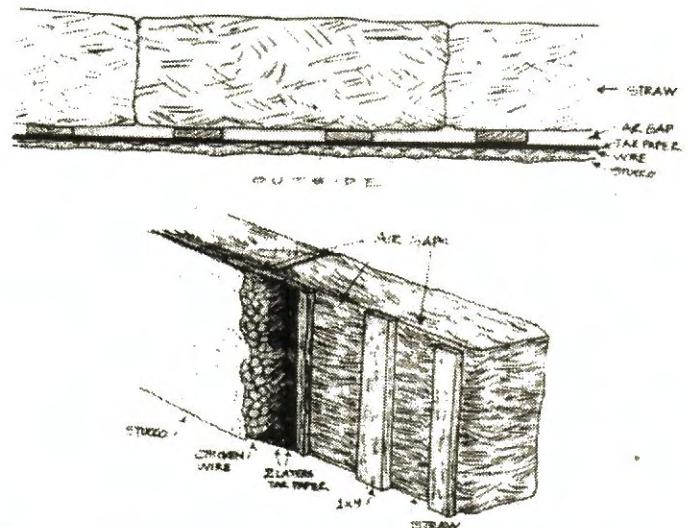
Straw Bale Picture All Wet

Dear Activists:

I want to bring to your attention that the construction detail
 printed with the article "Straw Bales in a Wet Climate" by Dean
 Still (*PCA*, #44, pp. 47-48) was NOT the Aprovecho dormitory.
 It is a construction detail for an entirely different project, located
 at Portland Community College, where moisture in strawbale
 buildings is also being researched.

The Portland Community College (PCC) project, an all
 volunteer effort incorporating as much student participation as
 possible, began in August, 1995 (two or three years before
 Aprovecho's) and has been measuring moisture content (as
 opposed to the relative humidity being measured by Aprovecho)
 since then. The data gathered to date by PCC has been based on
 an unoccupied building (i.e., no heat or humidity), in contrast to
 Aprovecho's lived-in dormitory.

As shown in the figure that you printed accompanying the
 article, the PCC construction was conventional except for use of
 the straw bales. It included an air barrier on the outside of the
 wall and a vapor barrier on the inside, both of which were
 covered with stucco. Aprovecho's air gap between the straw and
 the stucco of the exterior wall is unique, and it's a bit unclear



Will the Real Aprovecho Wall please stand up?

from the text of the article the location of the wall components
 or of the sensors. Thus, the construction detail for the Aprovecho
 dormitory would look very different than ours, and it would be
 very informative to see the correct drawing.

Joanna Karl, PE, jkarl@pcc.edu

Ginseng Speaks

Who will speak for the plants
The gentle flowers cloistered
In quiet meadow and lonely wood
Plants whose power is in their softness
Or in their strange difference?

Grandfather Ginseng will take the stand!

—Lee Murray

Robert Eidus

Panax quinquefolium (American ginseng), a relative of the Chinese *Panax ginseng*, is a member of the Araliaceae, a family of approximately 700 plants which includes spikenard and English ivy. Though the Chinese have been using herbal medicines for approximately 5,000 years and writing down information for over 4,000 years, the earliest mention of Asian ginseng is in *Shen Nong Ben Cao Jing*, the world's oldest comprehensive herbal document, written about 2,000 years ago. American ginseng, which may have been used at least as long by Native Americans, lives in the rich, shaded, and moist coves of the mountains of the eastern United States and has a range from Georgia to Maine and west into the plains. On the West Coast, wild ginseng can be found in Oregon, Washington, and British Columbia. Like its Chinese cousin, 'sang—as it's called by the mountain folk—is a perennial herb, its stem and leaves die in winter but regrow in the spring. This shade dependent plant has a fleshy, slow-growing root and short stem, and is native to hardwood forests. It is best adapted to cool, temperate climates.

The Shapeshifter

Ginseng is magical and mysterious. Although there are general patterns of growth, sometimes it will trick you. Most perennial herbs look the same each season of their growth, but not ginseng. The first three years it changes its appearance each successive year. When the seedling first emerges, there are three small leaves (said to resemble wild strawberry) on a little stem. When it unfolds in year two, there is more growth to the central stem with two prongs, each producing three to five leaflets. In the third year, three prongs emerge from the leaf stem, each bearing a palmate cluster of five leaflets. Where the prongs are joined to the stem, white-green flowers appear which later ripen into bright red berries containing the seeds.

Ginseng is the only species I know that reveals the age of each and every plant, because when the stem falls off in the fall it leaves a scar on the neck or curl. The new bud emerges just above the old scar. Just count up the scars to determine the approximate age of the plant. Each year the plant grows, more prongs may be added. As a rule four prongs indicate a seven-year-old plant that is medicinally mature. Ginseng can continue to grow more prongs as it gets older. I remember seeing a five-



prong, which is getting rare, and two of the prongs had five leaflets but two had six and one had seven.

Above the ground ginseng plants of a similar age look pretty much alike, but when you look below the surface, wild roots will vary greatly in appearance. Cultivated roots tend to be more uniform. Every now and then you can find a mature root with a human-like shape, with arms, legs, and body. These were prized by the Chinese whose ideogram for ginseng means "essence of the earth in the form of a man."

At Home in the Woods

Ginseng needs hardwood forests to block out the sun and to provide a roof. It thrives in mixed groves of poplar, beech, maple, and dogwood. If the trees above are cut down, ginseng's root and seeds dry out, a fatal condition. Clearcuts thus destroy habitat for this threatened species. Shade from the forest canopy keeps the soil cool, the roots stabilize the earth, and the trees provide a rich annual mulch of leaves. Herbaceous plant companions commonly found near ginseng include trillium (*Trillium spp.*), cohosh (*Caulophyllum thalictroides* -blue, *Cimicifuga racemosa*-black), jack-in-the-pulpit (*Arisaema atrorubens*), wild yam (*Dioscorea villosa*), goldenseal (*Hydrastis canadensis*), and Solomon's seal (*Polygonatum biflorum*).

Some of these companions help the ginseng to survive. Research by Dr. Jeanine Davis, with the North Carolina State University Agricultural Research station, has shown that goldenseal can clean up beds of ginseng infected with fungal disease. Since ginseng has a problem with fungi, goldenseal's anti-fungal properties make it a choice and valuable companion. Many Native American tribes consider ginseng and goldenseal to be brother and sister plants because they grow well together in the wild.

The Ginseng Industry

Most Asian and American ginseng is grown in an environment that is not natural. How did this happen?

Panax ginseng has been in increasingly short supply, especially in the last four hundred years. With population growth and the steady loss of forest cover to agriculture, the governments of China, Korea, and Japan long ago took measures to ensure a supply of this precious medicine. For many years

they licensed the growing of ginseng on plantations in guarded walled compounds, but only in the last century have these growing techniques been documented. Although Asian growers were successful with ginseng in a monocultural environment, very strict rules and procedures were required to achieve healthy plants.

The labor-intensive procedures developed in East Asia were largely abandoned as chemical fungicides and nasty stuff like DDT became available. Although, the worst of the chemical sprays are not used in America today, most cultivated ginseng, including woods-grown ginseng, is still heavily sprayed worldwide. Studies in recent years have shown fungicidal residues to be cumulative and toxic in cultivated roots. This discovery, along with recent EPA fines levied against Wisconsin ginseng growers who had used toxic biocides, has sounded a worldwide wake-up call to the dangers of contamination of this great plant.

At the Convention on International Trade in Endangered Species of Wild Flora (CITES), 80 countries identified American ginseng as one of the many plants that need international protection. The CITES agreements were implemented in the US in 1977 and are administered by the U.S. Fish and Wildlife Service. Despite rules and regulation governing the export of American ginseng, we are still losing this plant in the wild due to over-harvesting. Currently, more than 90% of the ginseng harvested in America is exported to Hong Kong and other Pacific Rim markets. With worldwide demand steadily increasing, the situation becomes ever more critical for this powerful tonic.

An Awakening

But I didn't learn this until 1977, when, at a health conference in Hot Springs, North Carolina, I met Hawk Little John, a Cherokee medicine man, who discussed ginseng and goldenseal. His enthusiasm and respect for plants seeded in me an ever-deepening relationship to the green world.

In 1992, Dr. Jeanine Davis of the N.C. Dept. of Agriculture, organized an historic conference on ginseng, near Asheville, where I learned much about the wonderful nature of the plant and techniques for growing it. After the conference, I went back to my land in Madison County, and with the help of a knowledgeable friend, found ginseng growing. When Paul found the plant he gave a Native American war cry to the forest spirits. After praying, we harvested this root and dropped some tobacco as an offering. It was a wonderful day.

A couple of months later, I founded the North Carolina Ginseng and Goldenseal Company in Marshall, but it was not until 1995 that I left my real estate job and decided to grow and sell medicinal herbs as a full-time business. This was not an easy choice, for though I was an experienced gardener, I was still new to forest farming and botany. But following a weeklong illness I reappraised my life and saw that selling real estate was not something I did very well. The ginseng plants spoke to me during that feverish time and asked me to help them survive. Definitely a favor worth returning.

I agreed with the plants to become a role model for the new wave of ginseng farmers.

I soon found myself trying to convince others to attempt

farming in the woods. Unexpectedly, my New York accent and urban background turned out to be a big plus. If I could learn to grow high quality ginseng there was no reason others couldn't also be successful medicinal herb farmers.

As I became a spokesperson for the plants, I "knew" that the plants, especially ginseng and goldenseal, would do their part to help me to the next level. An unexpected assist came in the form of a request from the owner of *New Frontiers* magazine to review Eliot Cowan's *Plant Spirit Medicine*. I loved the book and gave it an enthusiastic review. By learning about the spirit world of plants, I came to realize that I could communicate with them and that I had a special ally in ginseng. My heart had no problem understanding this psychic relationship. My body followed.

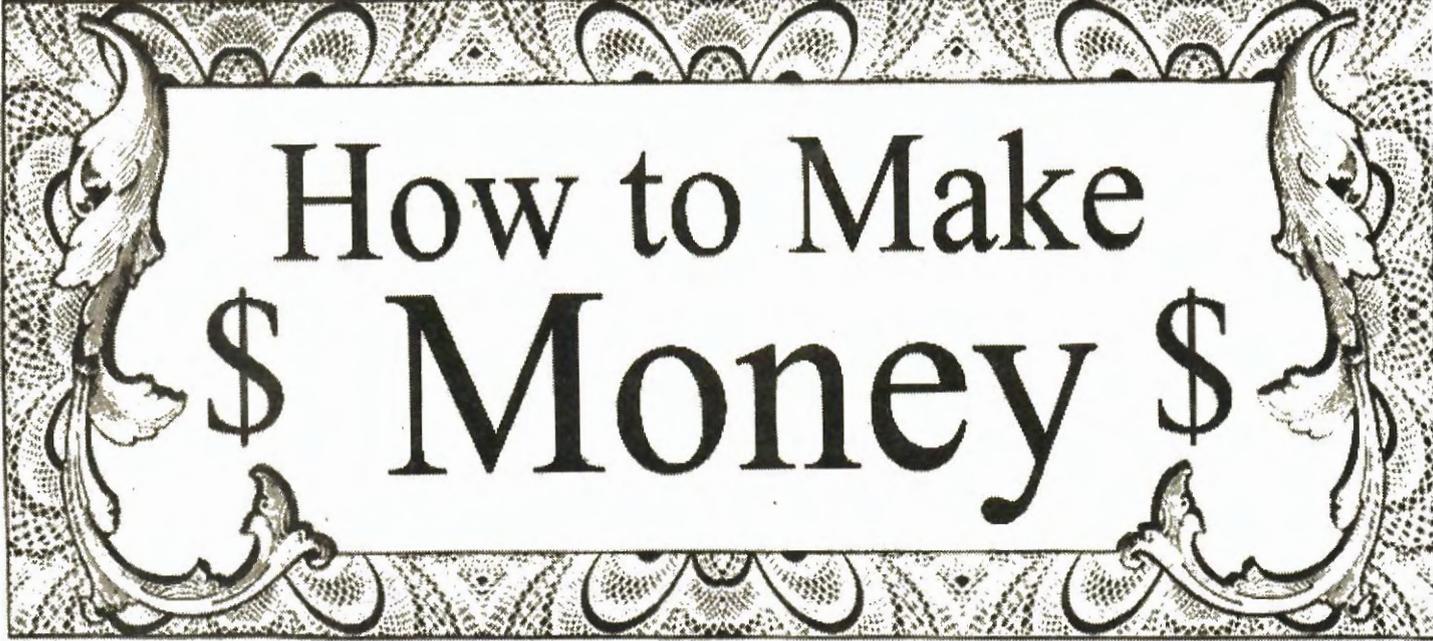
Thus, the North Carolina Ginseng & Goldenseal Co. was born with the primary goals of actively re-seeding both plants in the wild and encouraging their organic cultivation in the woods. In the last five years we have laid a strong foundation for both aspects of this work. In that time the United Plant Savers, a non-profit organization dedicated to rescuing endangered populations of wild botanicals, was founded, and the land I steward, Eagle Feather Organic Farm, became a U.P.S. Native Botanical Sanctuary. At the same time research into organic methods of cultivating ginseng has given us some important tools. Following Dr. Davis' work, we've learned to spray extracts of goldenseal on the ginseng beds to control soil-borne funguses in the fall. And now a group of people are conducting research into the use of horsetail (*Equisetum arvense*), another native plant, as a spray to curb airborne fungus in the spring.

A Growing Challenge

In some ways, however, the situation for ginseng is getting worse. Though more information is available today and interest in growing and in conservation is high, the harvest of ginseng is increasing. Last year 11,000 pounds were legally exported to Hong Kong from North Carolina. This is 2,000 pounds more than the year before. Five and a half tons may not seem like much until you consider that it takes approximately 400 dried ginseng roots to make a pound. That would mean that over four million roots were harvested in 1999. During the same year I sold 21 pounds of ginseng seed to Madison County Extension Service. That seed was divided and sold by the ounce to local farmers. If all the plants come up, (350 seeds to an ounce), that would be about 500,000 first-year plants, nowhere close to replacing all the plants taken in the North Carolina mountains. There are only a few of us selling ginseng seed in this region, and only one other Extension office, in Yancey County, is offering this program to area landowners. That leaves 31 other mountain county Extension offices pushing Xmas trees, blueberries, strawberries, or other non-herbal commodities.

You do not have to be a genius to realize that the plants are losing the battle for survival. The two-leggeds must rally round these beneficent plant allies and help save them from greed and extinction.

Robert Eidus grows ginseng near Marshall, NC. Contact him at <eidus@madison.main.nc.us>



How to Make \$ Money \$

Brendan Conley

The role of money in society is complex and controversial. Some people believe that money is corrupting, that the potential for stored-up wealth leads automatically to greed and inequality. Another view is that money is neutral, a simple measuring tool, and the danger comes only when it is misused. The truth is somewhere in between.

It is true that money can measure value, for good or for ill. But it is not neutral: the way it can be used is always partially determined by who issues and controls it. This does not mean, however, that money must be a tool of profiteers. People need a way to measure the value of goods and services that they wish to trade. The key to how a type of currency works in the economy is simply who issues and controls it. And the great secret is: we can make our own.

History

Few people realize that federal currency is a somewhat new development in the United States. Up until the mid-19th century, private banks issued their own money. Just 150 years ago, there were literally thousands of different types of currency being used in this country. It was not until the Civil War that money came under more centralized control.

The Great Depression of the 1930s threw the problem of money into sharp relief. Unemployed people were ready to work, but employers could not afford to pay them. Crops rotted in the fields because hungry people could not pay for food. In this context, towns, banks, and businesses began to issue "scrip," local currency that people could use to pay each other for services, and buy what they needed.

Ernest Morgan, founder of one such system, the Yellow Springs and Midwest Exchanges, in Ohio, describes how the project revitalized the local economy: "People brought in all manner of merchandise and produce, some of which was bought outright for scrip and some taken on consignment. From time to time we printed up a bulletin which listed the items on hand in

the Exchange store and from Midwest Exchange members; and also the services available."

With the end of the Great Depression, local money fell out of use, until the social renaissance of the 1960s inspired the modern project of creating hometown money.

Community currency

Community currency is based on promoting local economies. In an age of economic globalization, when money can be used to pay for nuclear weapons, rainforest wood, or sweatshop labor, using locally issued money is a way to put a concrete expression to our values. People need a method of exchange that emphasizes the resources that local people provide to each other. Community currency is only spent locally, so it prevents resources from being taken out of the area.

Local money also makes a community's economy less dependent on the vagaries of the global marketplace. Federal currency can change value overnight, for example in the case of a stock market crash. US dollars are no longer backed up by gold, or by anything other than our trust in the government. But community money is based on real people's labor, not stock market figures. This local method of exchange is rooted in the trust we have in our friends and neighbors.

Using community currency is a way to promote equality of access to economic power, valuing labor equally. It gives people access to goods and services, whether or not they possess federal dollars, thus helping poor people achieve fuller participation in the economy. In the mainstream economy, someone who does essential work like farm labor or construction work may be near the bottom of the pay scale, while someone who plays with numbers in the stock market may be rich. In most local money systems, people's labor is valued equally, helping to correct this imbalance.

Individuals benefit from local money in many intangible ways. People may experience a renewed sense of value in

themselves and the skills they have to offer the community. Participants will understand that their work is valued. Local money can highlight work that is usually "invisible": the caring and sharing of friends and neighbors. Community currency encourages people to interact more with their neighbors, thus forming a stronger, more secure community, where people are used to the idea of watching out for each other.

People who organize local money systems generally meet little resistance from the federal government. Issuing scrip is legal, as long as the money does not resemble US dollars. The federal government has ruled that people must pay taxes on community currency and other forms of "formal barter," but not on the informal exchange of neighbors and friends helping each other out.

How to do it

Community currency systems are organized in various ways. One well-known example in the United States is Ithaca HOURS. A nonprofit organization in Ithaca, New York issues scrip to the participants. Each HOUR, as the denominations are known, is understood to be worth approximately ten dollars. The currency is actually tied to people's labor time, an HOUR being worth one hour of labor, whether it be babysitting, carpentry, or counseling. The Ithaca organization publishes a directory of services available for HOURS, and businesses that accept them. People use HOURS to pay rent, buy groceries, and pay for various services.

Another community currency system is LETS, or Local Economic Trading System, a computer-based system of debits and credits. In this system, one need not even possess physical money in order to obtain goods and services. It's OK to have a negative balance, and if one needs to build one's balance back up, it's time to offer a service to a friend or neighbor. LETS promotes the idea of money as a simple measuring tool, rather than an instrument of power.

Community money systems are being organized all over the US and Canada. Hundreds have been operating successfully in Australia, New Zealand, and Britain as well. All it takes is a small group of people committed to promoting the local economy. An information packet is available from Ithaca HOURS on how to start up your own system.

In all, there are hundreds of community currency systems operating around the world, many of them based on HOURS or LETS. Paul Glover, founder of Ithaca HOURS, says that local money systems "stimulate us to recycle wealth locally, to shop locally, to produce jobs locally, to invest locally, to declare our trust (locally). They give us power." △

Resources

Ithaca HOURS: <www.ithacahours.org>
 LETS systems: <www.gmlts.u-net.com>
 E. F. Schumacher Society: <www.schumachersociety.org>
 Greco, Thomas H., Jr. *New Money for Healthy Communities*. Tucson, 2000.
 <www.ratical.org/many_worlds/cc/NMfHC>
 Morgan, Ernest. *Dealing Creatively with Life*. New York: Barclay House, 1999.

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Grafting to Wild Rootstocks

Oliver Kellhammer

The art of grafting had always been steeped in mystery to me. Connecting the twig of one tree variety to the roots of another seemed like some kind of plant magic whose deep secrets were known only to horticultural wizards. Of course, I was wrong. Plants have been grafting into each other since time immemorial, without the help of humans or wizards. In the forest it's not unusual to see branches of neighbouring trees or shrubs join together where they touch, if they are of the same species. This is also commonly seen in old hedges and among ivy vines. Symbiotically, the branches start to exchange nutrients through their connected cambium, or inner bark, which contains the little tubes analogous to our own blood vessels. Other trees like Douglas Firs patch into the roots of their neighbours, forming subterranean networks with which they share food, beneficial fungi, and possibly even information, in the form of phytochemical secretions.

Malus fusca - The Pacific Crabapple

My grafting odyssey started three years ago when I noticed that the bark of several young apple trees planted in poorly drained spots in our garden showed unsightly blights and cankers. Fruit quality was also suffering, with lots of spots and scabs. Excessive moisture seemed to be the cause of the problems. We live in a damp coastal Northwest climate, on the wet side of Cortes Island, British Columbia. In fall and winter it rains torrentially and often. The ground water frequently comes up to within a foot of the soil surface, and the puddles of winter rain can make the garden look like a swamp.

Domesticated apple varieties generally prefer good drainage. Our damp conditions encourage growth of the kinds of fungi and bacteria that can attack and sicken fruit trees. Walking around the garden, wondering about potential organic options for treating the diseases, I came upon several seemingly healthy, vigorous small wild apple trees I hadn't noticed before. They were flourishing but almost hidden, just peeking out of the dense salmonberry tangle along our fenceline. This location was even boggy than the wettest spots in the garden, yet the little trees seemed strong and disease-free. Closer examination revealed them to be *Malus fusca*, the native Pacific Crab apple, found all along this coast up to southern Alaska.

Completely adapted to our damp maritime climate, *Malus fusca* loves boggy soil and commonly grows along the edges of lakes and swamps. I've seen it prospering quite close to the ocean, seemingly tolerant of exposure to salt and wild weather. In our area, *Malus fusca* often grows in the safety of salmonberry thickets. The vulnerable young trees are protected from browsing deer by the salmonberry's prickles and denseness of brush. The trees bear clusters of tiny apples, which are edible and store well because of their high acidity. These mini-apples are apparently tasty when dried but, I have to admit, I was

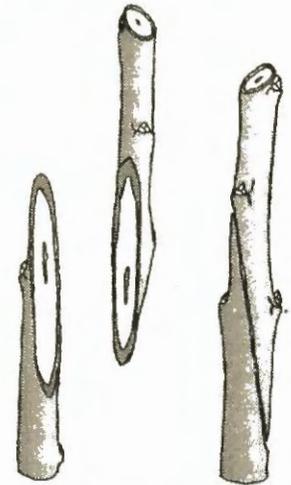
underwhelmed by the fresh fruits. They are fairly sour and seedy; the largest are about the size of my thumbnail.

So here was the perfect apple tree, wonderfully adapted to the challenging local microclimate but the fruit, alas, was bird food. Then it hit me: Why not try to graft twigs from other apple varieties to the *Malus fusca* and get plump juicy apples growing from our cold swampy soil? I had heard that, as a rule, only plants of the same family could be successfully grafted to each other. *Malus fusca* is a close relative of other apple varieties, so I thought that my idea would work. I certainly didn't have any shortage of apple twigs to experiment with. The other trees in my orchard generate piles of prunings every winter.(1)

I vowed that I would use some of these prunings early the next spring to try my hand at the grafter's mysterious art.

The Amateur's First Attempt

I soon realized that I didn't know very much about grafting. I did know that the tree to be grafted onto was called the "rootstock" or "understock," and the twigs I would try to attach to it were called "scions" or "scionwood." R.I. Garner's venerable *Grafter's Handbook* revealed an astonishing variety of kinky sounding grafting techniques like the "bastard saddle graft" and the "whip-and-tongue graft," (2) for which one needed such tweedy Victorian paraphernalia as cleaving tools, double-bladed budding knives, and grafting clay (also known as "pug"). I didn't have any of these exotic materials on hand, nor did I think I had the manual dexterity or patience necessary to perform the intricate tree surgery techniques detailed in the book. Then I remembered someone once telling me that he had successfully used a strip of plastic cut from a shopping bag to hold together a graft. That was more my style.



SPLICE GRAFT

In preparation for grafting, I stored an assortment of

Footnote 1: The nine dwarf apple trees that I have trained along wires in the chicken run are especially prolific. Enjoying better drainage than the rest of the orchard, this chicken run/dwarf apple guild is a real permaculture winner. The system produces high yields, and the hens provide cultivation, pest control, and fertilization.

Footnote 2: A local orchardist, specializing in Heritage apples swears by whip-and-tongue grafting. It doesn't look that complicated after all and I will report back after I try it this year.

scionwood in the form of apple tree prunings cut early in the winter, each twig about the thickness of a pencil and 12" (30cm) in length. These had been bundled, carefully wrapped in wet newspaper, and placed in the fridge, sealed inside a plastic bag, each with a label describing its variety. I had read that one of the secrets to success is to time the grafting so that the rootstock breaks dormancy just ahead of the scion. This ensures that when the scion "wakes up," there will be a flow of sap to feed it.

Over the next few weeks, I tried a number of test grafts using the stored scionwood.

The exact dates for grafting vary from place to place, so close observation and knowledge of local conditions are necessary. March is a good time to graft in our cool temperate climate. Agricultural extension agents, horticulturists, and local old-timers can suggest the best time to graft in your area.

In early March the buds of the *Malus fusca* trees in the orchard were swelling noticeably. Hesitantly I leaned my stepladder against a taller specimen, and ascended through a lacerating understory of salmonberry and Himalayan blackberry thorns. I carried aloft a handful of scions, a sharp pair of pruners, and numerous strips of clear polythene, half an inch wide and approximately 18" (45cm) long, that I had cut from ordinary plastic produce bags. This would serve as my grafting tape.

My first attempts were simple splice grafts. I picked out a likely twig on the *Malus fusca* and looked for a scion that matched it in diameter. Then, using sharp pruners, I cut the base of the scion at a very oblique angle. I wanted to expose as much cambium or inner bark as possible in order to increase the area of contact with the *Malus fusca* rootstock. I trimmed the receiving twig to the same angle, held the scion against it, and carefully matched the two cambium layers. Then, very gingerly, I wrapped the strip of tape around the union like a bandage, leaving it off at the end. It's the kind of task that makes you wish for a third hand, but eventually I got the knack for it, after dropping more than a few scions into the salmonberries.

The Waiting Game

At first, I was overwhelmed with anticipation, like a kid counting down the days till Christmas. Each morning I would examine the neatly bandaged scions for any sign of increase in the plumpness of the buds. Days came and went and the buds on the trees from which I had cut the scions were swelling with the arrival of warmer weather. Distressingly, the grafted scions showed no such development, still looking as starkly dormant as the day they had been collected. Little by little the *Malus fusca* rootstock started to leaf out. Still, there was no discernable connection from the attached scionwood. April rolled by and so did part of May, and the many chores of the garden began to distract me.

I assumed that the experiment had been a failure, and ignored the trees, which by now were inconspicuous amongst all of the burgeoning salmonberry foliage. Then one day in early June, I noticed that about half of the grafts had developed plump buds while others looked distinctly withered. The *Malus fusca* rootstock had by now completely leafed out, underscoring the fact that the attached scions were way behind the other apples. Over the next few weeks, the healthier looking grafts finally did

unfurl their leaves and even a few flowers, while the sickly ones shrivelled completely.

Each variety of scion seemed to stick to its own pace in breaking dormancy—some of them racing along, others plodding. By the time summer was in full swing I saw healthy looking growth from the scions of Northwest Greening, Rhode Island Greening, and Lord Lambourne while the Yellow Transparent scion was growing moderately well. A few others had languished and died, either just after leafing out or without breaking dormancy at all. It became apparent in these and later experiments, that the scions grafted to younger and more vigorously growing parts of the understock fared much better than those attached to older and weaker side branches.

Despite the occasional failures, I was elated. The fact that I had gotten a few grafts to "take" had unleashed some hidden ambition in me to become a transplant "surgeon." I was determined to learn more and to improve my success rate.

Getting the "Edge" with Wedge Grafting

Several of my first splice grafts had "taken," but it seemed a hit-or-miss affair. The scion often slipped around while being taped, potentially misaligning with the cambium. Since tape is the only thing holding the splice graft together until rootstock and scion grow a strong bond of tissue, the splice graft is mechanically weak for at least the first year. This became clear to me when a splice graft that had formed a nice union in the spring snapped under the weight of the following winter's snow.

The next year I experimented with various versions of the classic "wedge" graft and enjoyed better success. This involves whittling the bottom of the scion to a wedge-shaped point and sliding it into a corresponding cleft made in the rootstock. The wedging action gives a nice strong joint. The finished wedge graft is taped up as previously described, in order to add strength and to prevent drying out. If scion and rootstock are the same diameter, it should be easy to align the cambium layers. When the scion has a smaller diameter than the rootstock, there is still a good chance of a successful graft—if the cambium of one of its "V" shaped sides is aligned well with that of the cleft in the rootstock. If the scion is considerably smaller than the rootstock, you may consider a crown graft, which I describe in the next section.

In addition to sharp pruners, I find that a good quality snap blade knife, like an OLFA or Stanley, can be a real help in whittling down the ends of the scions and splitting the rootstock. For the latter job, I like the thick-bladed model, which I rock



back and forth slowly down through the wood of the rootstock, taking care not to split it too far or too fast. The thicker knife blade is also handy for keeping the cleft open a little while sliding in the whittled scionwood. When the cleft snaps closed, it results in a very snug fit and (if the whittling was accurate) good cambial contact.

The wedge graft is easy to perform, and my success rate has been pretty good. In this way, I have grafted numerous apple scions to both seedlings and to more mature *Malus fusca* trees. I even managed to wedge graft an apple scion to the Common Hawthorn, *Crateagus monogyna*, a close apple relative. This graft hasn't fruited yet, so I can't vouch for its long-term viability, but I have high hopes. *Crateagus monogyna*, originally a European tree, is common around here and can tolerate pretty poor conditions. It might make a useful apple rootstock and warrants further experimentation. The Pacific coast native hawthorn, *Crateagus douglasii*, should also be worth a try.

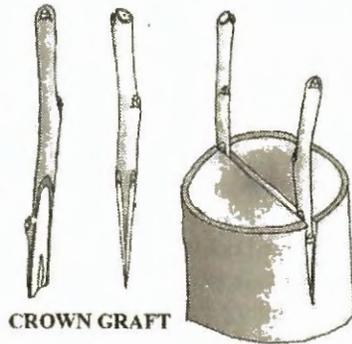
At this point I should mention that it is very important to remove the plastic grafting strip after the graft has taken and the union has strengthened. I usually do this by late summer or early fall after the spring grafting. The plastic strip traps moisture, which can cause decay or girdle the growing tree.

The Crown graft

One of the crabapple trees I was interested in using as a rootstock was quite tall, and I couldn't easily reach any of the smaller twigs at the top. Referring again to the trusty *Grafter's Handbook*, I determined to try a radical tree surgery technique referred to as "crown" grafting or "top working." This involves completely cutting off the tree's upper branches down to the level of the main stem, retaining only a small side twig to keep the sap flowing. After cutting back the tall fusca I made a cleft in the sawn-off end of the stem with a sharp axe, (3) in much the same way as I had previously used a knife to prepare the smaller rootstocks for wedge grafts.

With the crown graft, the scionwood diameter is much smaller than the rootstock, so it needs to be inserted at the extreme outer edge of the cleft so the cambium can line up on one side.

Leaving a bit of bark on the outside of the scion wedge required a delicate touch. To make the scion fit, I had to taper its end downward as in the wedge graft but also in cross section to accommodate the narrowing of the cleft towards the centre. (See illustration.) The axe kept the cleft pried open until I could slide in two scions, on opposite sides of the stem. If the rootstock's



CROWN GRAFT

Footnote 3: I used a type of Japanese axe called an "Ebinata" which is incredibly useful for this and many other gardening tasks. It looks like a cross between a machete and an axe with a little tang at the tip of the blade, to keep it from getting dull. Hitting the Ebinata's long top edge with a hard piece of wood can precisely control the splitting action. I got it by mail order from Hida garden tools in Berkeley, California. (see PCA #29-30, pg.37)

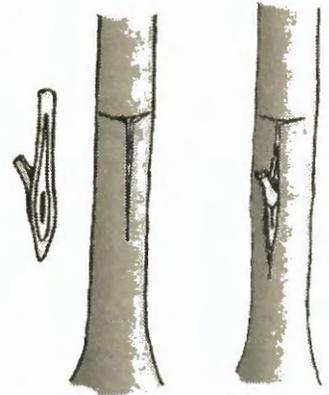
cut end had been large enough, I could have added more clefts, each with scions at both ends, giving the eventual appearance of a "crown" of scions circling the sawn-off stem.

Keep in mind that cutting the top off an older tree is quite traumatic for it, and there will be considerable recovery time. As a rule, smaller cuts on younger trees accept grafts much more readily because the wounds heal a lot quicker.

After thoroughly wrapping up the newly "top worked" stem end with plastic bag strips, I sat back and waited. Of the two scions I had stuck into the cleft, one, a Northwest Greening, was growing vigorously by early summer. The other scion languished and so I cut it off. In the event of multiple scions succeeding on a crown graft, it's a good idea to limit the number, so they won't compete with each other, depending of course on the diameter and vigour of the rootstock. The crown-grafted Northwest Greening scion seemed to grow much more rapidly than the Northwest Greenings I had previously wedge grafted onto smaller rootstocks. It seemed that the larger diameter root stock was able to feed more sap to the developing scion, speeding up its growth. If your crown grafting fails, don't despair. Just wait for the severed rootstock to sprout some new twigs, and graft directly onto them using ordinary wedge grafts, or try bud grafting as described in the next section.

Budding talent

I've heard it said that the beginner is likely to have better success with bud grafting, also called budding, than with regular dormant scion grafting. I like budding because it has several other advantages. Budwood goes further: each twig yields many scions because only a small piece, containing next year's dormant bud, is used for each graft. Bud grafting also lets you get the jump on the regular grafting season because it is done in the late summer. And, it can give you a second chance if the spring grafting didn't work out. The right time to bud graft is just when the bark of the rootstock, slit with a knife, slips easily off the underlying wood. Here, on Cortes Island, that's August, when the trees have gone through most of the growing season, and new growth is starting to harden off.



BUD GRAFT

To prepare for bud grafting, I collect budwood in the form of twigs, which have already formed next year's buds. The buds can be seen just above the base of each petiole or leaf stem. I keep these twigs in a can of water to prevent them from drying out.

Planting grafted trees

Encouraged by my early successes, and wanting to expand my options for planting fruit trees, I purchased a bundle of 25 bareroot *Malus fusca* seedlings the following spring from a wholesale native plant nursery for use as rootstocks. (4) I planned to bud graft these later in the season.



Finished bud graft

When August rolled around, and having collected budwood, I cut a T-shaped slit composed of a horizontal and a vertical cut into the bark of each rootstock with an Olga knife. I then peeled the bark away slightly to form a little pocket, ready to receive the new bud. At this stage, if the bark doesn't separate neatly from the rootstock, it is probably not yet ready to receive a graft. I prepared each bud by cutting a little shield-shaped piece of wood from the twig containing it, starting below the leaf and cutting up past the leaf stem, and including the dormant bud at its base. Trimming off the main part of the leaf, I left behind the leaf stem as a convenient handle for picking up the delicate bit of budwood. Then, I carefully slid each bud down into the T-shaped pocket, tying the bark closed with a plastic strip.

Some weeks later, the leaf stems fell off many of the bud grafts and at the same time there was noticeable swelling in some of the buds. This proved to be a good sign. By October I could tell whether a bud had taken or not, and I cleaned up any unsuccessful unions to get them ready for more grafting experiments the following spring. I discovered that in our damp climate it is important to remove the plastic strips from around the bud, or decay can set in. On those grafts that took, I cut off

Footnote 4: Since then, I have had some success propagating Malus fusca and Crataegus monogyna rootstocks from pencil-thick hardwood cuttings taken in February and stuck directly into the soil. A little rooting hormone dabbed onto the obliquely cut ends helps improve results as does keeping the cuttings in a can of water until planting. Rooting success was about 30%, so this year I will have to plant extra. I hope that hardwood cuttings will continue to provide me with enough rootstock for my grafting experiments.

what was left of the rootstock still growing above the grafted bud to direct more energy to it and accelerate its growth. The following spring several of these transplanted buds opened and developed into vigorous green twigs.

I was surprised at how quickly some of the bud-grafted scions grew. In one year they caught up to trees of the same varieties on similar rootstocks that had been wedge-grafted the previous spring. Eventually I succeeded in bud grafting Yellow transparent, Lord Lambourne, and several unidentified old apple varieties onto *Malus fusca*.

The only disadvantage to bud grafting I have found is that it must be done at a time of year that is otherwise busy in the garden. The rewards of bud grafting, however, are rich, and many amateurs and professionals regard it as their preferred method.

New Frontiers

Grafting to wild rootstocks is an exciting area of experimentation wide-open to the amateur interested in increasing fruit biodiversity. There are locally adapted varieties of crabapples, wild plums, wild cherries, etc. almost everywhere, just waiting to be used as hardy rootstocks. Wild rootstocks let you work in collaboration with nature and not against it. Agribusiness is not interested in wild rootstocks because of the considerable genetic variability amongst individual wild trees. I have found, for example, that while one of my Pacific crabapples will accept most grafts, another is much fussier. While such diversity is fascinating and useful to the permaculturist, it's probably a nightmare to commercial nurseries and orchardists who are interested primarily in uniformity and predictability.

To date I have mainly concentrated on grafting apples, but I will inevitably turn my sights to wider, wild grafting frontiers. I am sure that many new surprises await and I am interested to find out what discoveries other experimenters have made in this fascinating field. Δ

Oliver Kellhammer writes from coastal British Columbia and can be contacted at oliverk@oberon.ark.com.

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REVIEWS

Help for the Helpers review by Peter Bane

ANDREW GOLDRING, editor *Permaculture Teachers' Guide*

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A generation of teaching and extension worldwide have transformed Permaculture from a good idea into a powerful set of tools for social and environmental repair; yet this growth has been all but invisible, recorded in the workbooks and film libraries of a small cadre of peripatetic teachers. With the publication of *Permaculture Teachers' Guide*, we have undeniable evidence of the capacity of Permaculture to work effectively.

I make such bold claims because I am foremost a teacher, and so appreciate the thought and design of invisible structures that have gone into this substantial volume. Though some large-scale applications of Permaculture theory remain to be tested (we have designed villages and neighborhoods but not yet towns, unless the latest work with refugee camps qualifies...), there is little doubt of the efficacy of permaculture techniques in repairing landscape. What has always been at issue, and what we have come to learn in many painful ways over the past 20 years, is that the ability to change hearts and minds has been more important than all the rest.

This book is about how that happens.

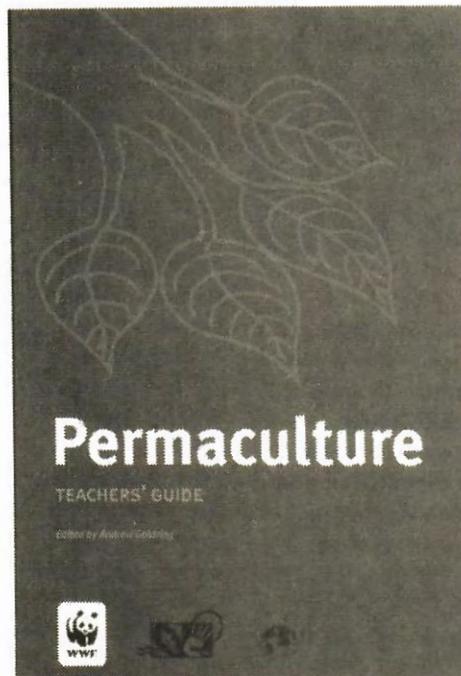
It will of course be most useful, perhaps only really readable by Permaculture teachers and those aspiring to that work. But since that is potentially almost anyone, *PTG* ought to find a devoted and growing audience.

The book is large, printed in A4 format on heavy, coated stock; it is meant to be thumbed through repeatedly, and should withstand the wear. As an international traveler I might have wished for lighter paper, but as a career teacher, I will appreciate the publishers' choice when, in a few years, it is still holding up.

The pages are laid out with lots of white

space and a clear logical organization of headings and subheadings; the whole ensemble easy on the eye. In addition to thoughtful typography, a few illustrations, some photos, symbols, and other graphic elements lighten what could otherwise have been a forbidding text.

The book is organized into five main sections, offering many points of entry: Aspects of Teaching, Central Themes, Beginnings and Endings, Aspects of Permaculture Design and Practice, and (significantly) a Convenor's Guide. Appendices add notes about the Permaculture Association (Britain), Teachers' Resources, and Working for the Diploma. Nearly three dozen contributors present as many different approaches to teaching as might be imagined; something in this book will suit your style and cast of mind, no matter what your situation or background. There are high-powered,



intellectually sophisticated analysts, sensitive empaths, and rugged, hands-on-the-drawing-board demonstrators.

I like the openness of the text and of its organization. I found it easy to plunge into the book and find my bearing almost anywhere. "Aspects of Teaching" addresses meta-levels of the art: creating the learning environment, taking care of yourself and others while teaching, transcendent principles such as inclusion and respect, and the limitations of the work. Graham Bell, author of *The Permaculture Way*, writes a brilliant introduction to What is Essential, What is Useful, and What is to be Avoided. This is the sort of thing every teacher should have on the wall of his or her bedroom: a mantra for every

day. Other essays in this section address Who Can Teach, present sample course formats, discuss what the design course is meant to accomplish, and answer other vital questions.

The next three sections are comprised of "lesson plans" from a wide range of experienced British teachers, presented in a consistent format: Why I include this session, Objective, Learning outcomes, Context, Duration, How I teach this session, and a description of the process with illustrations if appropriate. Each lesson has a section showing links to ethics and principles—the core of the curriculum, clues to mind-mapping the information, a bibliography and notes for further research. Many also show links to Agenda 21, the European Community's program for sustainability.

The Convenor's Guide is a pithy outline of essential logistics for organizing a teaching event—something I have seen published nowhere else, but which I have long and ardently desired. There is an almost desperate need for competent course organizers (or as the British say, convenors). We have consistently depended on enthusiastic but usually naive volunteers with a passion for learning about permaculture to lay this essential groundwork for extension. The wonder is that any courses have succeeded at all! Now there is at least a template from which an intelligent person might start.

It may be presumptuous to say that everything in this book will transfer to any permaculture teaching situation. Indeed, the editors' inclusion of diverse voices suggests that they believe no one approach will work all the time; nevertheless, the barriers to adoption of this knowledge by North American teachers are not primarily cultural. Twenty-first century Britain is a post-industrial, multi-cultural, technological society, and the roles, persons, and voices presented in this volume will be readily recognizable by its contributors' transatlantic peers. Arguably, teachers in Two-Thirds World settings or where literacy and language present major obstacles may find their needs slighted in these chapters, but for the great majority of native English-speaking teachers and for those bi-lingual and multi-lingual teachers in other post-industrial societies, these pages will be a gold mine.

At a time when Bill Mollison has begun paradoxically and belatedly to assert copyright claims to Permaculture and to the design course curriculum (after years of giving it away to students all over the world), this volume presents testimony to the vitality of the College of Graduates, and consequently to Permaculture's future. I would suggest further that this book, while sailing far beyond the limits of Mollison's known world, evinces a faithfulness to the Permaculture concept, both

in form and in content, which does him and co-author David Holmgren proud.

The publication of *Permaculture Teachers' Guide* is a major success for the Permaculture community. Kudos to the Permaculture Association (Britain), WWF-UK, and Permanent Publications for having the persistence, vision, and cooperative capacity to see this project through to such a fine result! △

Yakkity Yak, Yakkity Yak... reviews by Michael Pilarski

Plant Talk International quarterly magazine

Plant Talk is a high quality journal which I strongly recommend to all permaculturists interested in international news and perspectives on endangered plant conservation. Each issue contains in-depth articles with color photos and lots of news, book reviews, etc. I was quite distressed when *Plant Talk* announced this year that it was going to cease publication due to lack of funding. But the National Tropical Botanical Garden in Kauai has come to the rescue and is supporting *Plant Talk* to continue its important work with the same editing team based in England. USA subscription address is: *Plant Talk*, PO Box 354841, Palm Coast, FL 32135. Subscription for individuals is US\$28 and for organizations \$68. For more information and sample articles visit their web site: www.plant-talk.org.

KERRY WALTER and HARRIET GILLETT, Eds. ***1997 IUCN Red List of Threatened Plants*** International Union for the Conservation of Nature 1998. 862 pp.

This is the most comprehensive worldwide list of endangered plants. For each family of plants it gives the number of genera, number of species, and names all recorded threatened species. Some 12.5% of the world's flora are endangered. The *Red List* is available from the American Botanical Council's Herbal Education Catalog.

An Herbalist's Handbook review by Peter Bane

MICHAEL PILARSKI, editor ***Resource Guide to sustainable wildcrafting & Medicinal Herbs in the Pacific Northwest***

Friends of the Trees Society
PO Box 4469
Bellingham, WA 98227 USA
friendsofthetrees@yahoo.com
2000. 82pp. paper. \$8.00, postage extra.

Michael Pilarski is mad for lists. This latest in his long series of resource guides and compendia brings together a wealth of information about his latest area of specialization: collection and cultivation of medicinal herbs. Applicable to the editor's home region, the Pacific Northwest, it is wonderfully comprehensive. From essays on ethics to glossaries of plant parts to extensive plant profiles to poetry, this publication is a thick slice of a rich life.

Pilarski works both sides of the Cascades mountain range, so he represents both the maritime and interior biomes of this botanically rich region. He is also a permaculture designer and teacher of world renown and some of the resources here present the invaluable synthesis of years of experience creating and nurturing healthy ecosystems. He provides, for example, a design for a two-acre herb farm which includes a list of plants for establishment, their costs, and a table of expected yields from the system over 100 years.

A table of harvesting periods for the various herbs and a guide to propagating them, with such esoteric information as seed weights, both look especially practical. A guide to seed propagation methods should be widely useful both within and without the region.

While there is no substitute for firsthand experience and field work with the plants, this text provides the academic resource, extensive bibliographic references, and practical information that any serious cultivator of herbs would require. Furthermore the selection of material has been filtered through the mind of an ecological prodigy keenly interested in the subject.

Buy it. You need it. △

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...from the Regions

Letter from Latin Europe

Emilia Hazelip

The Masters of the World won't yet acknowledge the ecological consequences of the Dominant-Economy. In spite of now having in Europe genuine hurricanes, non-stop floods, mud avalanches, droughts, etc...., last November in The Hague, The Boys left Holland postponing any decision about climate change. In the meantime Rio '92 and all that was decided then keeps on waiting to be implemented...as if by pretending that doing nothing except "business as usual" would solve the problems!

Their irresponsibility is criminal, and if we, the people, respond by going "back to the land," putting our heads in "our dream," in our gardens, houses, and jobs, or feel content and satisfied that Voluntary Simplicity will suffice to avoid madness destroying the world...Well, this is no better strategy than the big bird that puts its head in a hole when danger strikes. Of course minimizing participation in a pathological economy is already helping the planet and ourselves, but to prevent the worst, we must activate ourselves even more.

Take, for instance, the Nuclear Lobby: For the past eight years they have been working very quietly to persuade the UN Commission on Sustainable Development to designate nuclear energy as sustainable because of low carbon dioxide emissions). If they succeed in this subterfuge nuclear reactors will be eligible for Third World Sustainable Development Programs!

Please don't let this happen. We can still stop this fraudulent designation. Contact the UN Secretary General, who is collecting inputs to report to the committee making final preparations for the Conference on Sustainable Development (CSD-9). This preparation will take place in February-March, 2001. The CSD-9 itself, where the decision will be made, will be held on April 16-27. It is entitled "Shared Goals for Global Action." (You may register your opinion

electronically at www.un.org/3sa/sustdev/ and by snailmail to the UN in New York.) And for more information: www.igc.org/csdngo and helio@globe.org.

In France the nuclear lobby is promoting a new program for producing electricity which would replace old nuclear plants with new ones. We only hear about the non-emission of greenhouse gasses from these sponsors of Radioactive Technology. Questions of where to store its contaminated trash, its horrendous history, and its dangers, are kept in organized silence. When we dare to express our opinions on legal (authorized) marches, we are tear-gassed: babies included, as happened last April when we protested in Blaye an electricity plant that was flooded and had an accident during the December '99 hurricane.

So, optimists of the world: UNITE! It's now or never, as lack of SOME ACTION is equivalent to collaboration with the Masters. While we must denounce what's going on in the High Spheres of Power, we should also try to organize energy production at the local level, and end our dependence on the Grid.

Producing electricity from human shit (and that of all the other animals kept in confinement) is a possibility that so far, *nowhere* is organized at a regional or national scale. We hear of examples of one town, one farm, but the potential so far is not developed. We must make large numbers of people aware that wherever there is biodegradable refuse (shit and other organic matter) the production of renewable natural gas is possible!

France is now dealing with Russia so that natural gas from Central Asia will be sent by pipeline to us, crossing the Chechnya country and one genocide...

Fermenting biodegradable refuse instead of burning (or composting or burying it) is a change we are not prepared for culturally. Changing the source of much of our domestic energy

would also interrupt much other "business" already well established. So until we at least lobby for the acknowledgement of such a solution, this technology won't be applied. Although there are glimmers of hope from the high-tech sector: Since the Silicon Valley workers cannot live without electricity, and California is experiencing an erratic grid power supply, they have begun producing their own decentralized power via cogeneration with fuel cells. Now hydrogen is what feeds fuel cells, and the one renewable source of natural gas from which to extract hydrogen is the anaerobic production of methane—biogas obtained from the organic fermentation of human and other shit. Who knows, maybe they can get turned-on to produce, on site, the fuel, the gas, for their cells?

In any case we must get together decentralized production of energy very locally and on site. We surely need technicians for this implementation; the digesters and cogenerating engines are already on the market: all we need is the know how, access to land, and the will to own this SOLUTION...and it's URGENT

WANTED: The whole structure of this endeavor, from technicians to lobbyists, to sellers of equipment and services...NOW.

So that a windmill may give energy
THE WIND MUST BLOW.

So that photovoltaics may give light
THE SUN MUST SHINE.

But all it takes to produce biogas
IS TO GO EACH DAY

TO THE LOO...

Quantum leap anybody? Δ

Emilia Hazelip writes from the Pyrenees region of France where she practices Synergetic Agriculture and teaches permaculture design. Las Encantadas, B.P. 217, F-11306 Limoux-Cedex, France. Tel/fax 33-46-83-15-111.

Resources and Notes

Renewable Energy World
James & James (Science Publisher) Ltd,
35-37 William Road, London NW1 3ER
U.K., fax 44-20-7387-8998.

Shit/person/day: +/-50g dry weight
20 persons = 1 kg dry matter = 0.368
cubic meters biogas = 2.5 kWh

The Urban Wilds Project

Tim Krupnik

Life in modern cities too often means concrete, high-rises, parking lots, sprawl, waste, pollution, and social erosion. Some environmentalists contend that these problems are unavoidably linked to urban culture. Others disagree, viewing cities as socially wild places, harboring treasures of cultural diversity.

As the specter of economic globalization pushes more and more people into urban areas, the ethics and "tools" outlined by the Permaculture philosophy must take root in cities. Moreover, I believe they are ideally suited to these environments, which are disturbed ecosystems. Permaculture was originally developed as a design system for restoring degraded landscapes: cities are in dire need of our attention.

Below is a description of a house in Oakland, California. It is intended to provide ideas and "tools" to Permaculturists living in urban areas, with the hope that our movement can turn attention towards the challenges of the city.

Zone Zero: The Household.

Seven or eight of us live in a medium-size house in Oakland, California, while an average of three guests dot the couches and guest spaces at any given time. In order to accommodate the needs of that many we have been forced to become creative with our resources. Extra rooms were created out of neglected attic spaces, hallways, and the garage. The household is full of people interested in social and environmental activism. Consequently, we do our best to put our ideals into practice. In the social realm, this happens through chore sharing, open communication, sharing food, and the use of consensus-based decision-making processes.

In the environmental realm, we practice a strict conservation ethic. As activists we understand that every action, no matter how mundane, is politically (and environmentally) "loaded." Rather than buying into a system perpetuated by conflict, competition, hierarchy, and



front yard garden at the author's home in Oakland, California

wastefulness, we practice resource conservation, communal living, and voluntary simplicity. This means salvaging and producing what resources we can, consuming locally, and buying as little as possible.

Central to the Permaculture philosophy is the notion that pollution is just wasted resources. In nature, there is no waste—things that appear to have outlived their usefulness, such as autumn leaves resting "dead" on the ground, are really part of the cyclic mulching process. Protecting the earth from cold and the erosive force of rain and wind, the leaves as they decay are devoured by worms, insects, bacteria and fungi, which transform them into more soil.

Similarly, the city creates (literally) tons of "waste product" daily. From recoverable construction scraps to spent vegetable oil (for Bio-Diesel), the city is rich with salvageable resources. Though it may not be a flattering comparison, urban Permaculturists are like the decomposers transforming leaf mould into soil. We dig in dumpsters and scrap yards in order to recover the materials needed for water catchment systems, beehives, worm

boxes, and furniture. Whatever food we can't grow we get from Oakland's fine array of bakery and grocery dumpsters. The recovered food is converted into multi-course communal meals.

We even built our greywater system with materials we dug out of dumpsters. Here's how it works: the shower drains outside to a constructed wetland consisting of two basins; the first is full of varying sized rocks and sand which filters the water. Cattails (*Typha latifolia* - a marshland plant) also help to clean the water in the first basin. The basins are made by digging a ditch and lining it with a "sandwich" of carpet, plastic, and more carpet—all obtained from the urban waste stream. These replicate small ponds. Not only do the cattails beautify the landscape and filter water, but they're also entirely edible. Finally, the cattail pollen can be harvested and made into a supplemental honeybee food for the winter months. In order to elongate the flow through the pond, we placed a series of Plexiglas baffles in a zig-zag pattern. They force the water to flow further, optimizing the edge effect of the pond. From there, the water is fed by gravity to the second basin

(an old deep dish washing sink, fished out of a Dumpster and plugged), which is full of water hyacinths. These floating plants pump oxygen into the water, further cleansing it.

The last part of the system is the holding tank, a 44-gallon plastic barrel (again, from the trash) sunk into the earth. This drum stores the water, which is later bucketed into the garden.

Expanding the greywater paradigm, our bathrooms have been cheaply retrofitted for optimum water usage. The plumbing below the sinks has been removed, allowing water to drain directly into five-gallon buckets. When these fill up, the water is used to nourish the garden or to rinse the toilet (by dumping it into the bowl, flushing it).

We have used appropriate technology in meeting our energy needs. The garage roof supports a solar cooker built of salvaged wood, cardboard, and a windowpane; it reaches temperatures of 450°F. It was so effective that my first attempt at a meal, which I thought would take longer to prepare than in a gas oven, resulted in a smoking, burnt mass—effective to say the least! We're also installing a solar water heater which we bought secondhand from a scrap yard for \$25. Finally, most of our light fixtures have been outfitted with low-wattage compact fluorescent bulbs (saving significantly on electric use and lower our bills).

Permaculture design even applies to our private spaces. For example, the room we converted from a garage into a living space (which I call my home) didn't get enough light, so with a circular saw, I cut and installed extra windows. They provide me with a view of the garden and our top bar beehives (top bar hives were developed by a Peace Corps worker in Africa, and are considerably easier to harvest).

The view of the hives is only slightly obscured by the bars on my windows, placed to deter thieves. (Oakland can be a rough place) To make them prettier and more functional I've grown runner beans up them. I've also installed a mini-kitchen with a sink. (This took me approximately 2-3 hours. The kitchen was built with a hand saw and a hammer. No other tools were needed. Without carpentry skills to make an elaborate set-up, the kitchen still

proved to be a functional addition to the room.) From the cutting board, I can easily reach the beans (or any other trellised crop), toss them in a pot, and prepare a meal.

The greywater from my sink drains into another five-gallon bucket. It's used to water the compost pile. The pile is also where I go when I need to pee (an ever-rich source of nitrogen). For that reason I put the pile only 15 feet from the doorstep. On the other side of my wall (I live in a divided garage, which is separate from the house) I can hear neighborhood kids clunking about in the Bike Library, where they're building bikes. A volunteer-run community resource, the five-year-old Bike Library teaches kids bike maintenance, providing tools and parts free of charge.

Just outside my door I hear Helen, a math teacher rinsing out her compost bucket. On her day off she cooks for Food Not Bombs which will do a free serving to the homeless later today in People's Park. Food Not Bombs uses our house kitchen every Monday; it's gratifying to lend your home to such good projects. This brings up an essential principle of Permaculture design—the sharing of surplus resources. Wherever your project or site may be, it is important to share what you can of it. You'll find that it enriches your life and helps to create a sense of community, making the entire project more valuable.

Zone 1: The back yard and garden.

The first thing I see when I step out my bedroom door is a box filled with chicken manure, straw soaked in horse urine and manure (nitrogen-rich) salvaged from Berkeley's horse racing tracks, food scraps, and newspaper. This mulch breaks down to soil, and provides enough of a niche to grow strawberries. They make a good, quick-picking snack food. Behind them is a stand of giant tomato plants, also growing in a box of mulch.

To start the garden, we hauled 15 large concrete blocks from the yard, revealing an area of compacted soil which has now been regenerated. When we wanted to expand the garden, the landlord forbade us from removing any more concrete, so we dumpstered some plywood and built a series of planter boxes. Our free mulch has worked superbly as a growing

medium.

With little land to work, we've gotten good at stacking functions. We have a giant box full of beans and squash: the beans climb up the ladder to the roof of the garage, leading you to the solar oven and another set of boxes full of flowers (bee forage). The runoff from watering the roof boxes is channeled to a gutter with drip holes drilled in it. This irrigates the hops, comfrey, beans, and decorative plants living below.

We made use of vertical space by planting potatoes and *yacon* (an Andean tuber) in old tires. The tires are stacked and filled with straw bedding (again, from the racetracks) to hill the plants. That way as they grow upwards the plants are contained—putting more energy into tubers and ensuring a large harvest. The tires act as a heat reservoir, helping the crop to ripen. They've also been placed in relative location to heat loving plants and the beehives, making use of their thermal mass. And when it comes time to dig potatoes, we simply take the tires off one by one.

The fence separating the garden from the apartment building next door is overflowing with wild blackberries, which provide good bee forage and make excellent pies. There's also honeysuckle, the flowers of which find their way into my salads a lot. We have various other useful plants: apples and plums, corn, squashes of all kinds, garlic, *mashua* (another Andean plant), tithonia, artichoke, sorrel, nettle, parsley, spinach, beets, chard, culinary sage, pennyroyal, earth chestnuts (which attract beneficial insects), mullein, marigolds for the bees and butterflies, lavender, tamarillos, and much more (many of our plants were donated by Wild Heart gardens and the Occidental Arts and Ecology Center—so thanks to them!) All of this occupies an extremely small space—perhaps 30' by 50' or less.

Next to the back door of the main house is a bustling grape vine, tangling its way up the security bars. Below the vine, volunteer chard and tomatoes reach for the sunlight. There are lots of herbs planted near the kitchen door for ease of harvest by the cooks. Nearby is the worm compost bin, which is our second composting system (with seven-plus people and a busy community visiting our

house for weekly potlucks, we have lots of kitchen scraps to work with!)

All the parts used for the beehive, boxes, and ponds (and the potato tires) were scavenged. Hardly a penny was spent on anything.

Zone 2: The Front Yard.

The yard is located on a southwest-facing slope, and gets ample afternoon sunlight. We tore out our lawn and put in a spiral garden to maximize the planting space and the edge effect. Water-dependent plants, like broccoli and chives, were planted at the bottom of the slope with the decorative succulents at the top. There's a host of other plants too—from grape to oregano to *yacon* to *mashua* to tithonia to rhubarb and countless other edibles.

To increase the learning edge for visitors and residents, we wrote up descriptions of the plants—scientific names, treatment, uses, and regional and geographic history—and stuck them on posts placed all over the yard. On weekends people walking their children and dogs often stop by to check out the garden and ask questions.

Zone 3. City Parks.

There are grassed median strips in many of the roads in our neighborhood. The lawns planted between their curbs are sustained by spray irrigation. Wanting to see more useful urban plants, we began a series of nighttime tree planting missions. At first people looked at us funny—five kids digging up city parks and median strips at 10 PM. But after the police saw us digging and mulching city property and didn't arrest us, we got the semi-official green light and started planting fruit trees all over the neighborhood. Cherry, lemon, lime, plum, pear, and apple trees of all varieties now dot the local streetscape. Strategically placed near the city sprinklers, they get irrigated regularly.

Zones 4-5: The Urban Wilds.

Is there a zone 4-5 in the city? I don't know. Perhaps the closest thing to these zones is the bay wetlands (a wildlife preserve). Maybe in time people will realize the importance of allowing the hills and bay shore to grow wild again. Even in the heart of the city, thousands of wild plants and animals make their

homes. As dusk comes on, owls, foxes, raccoons, possums, and countless other animals creep out to scavenge for food. And with the morning light, ground squirrels, birds, the endangered Alameda County whip snake, and countless other creatures venture out to greet the day. Though most of America's cities have been irresponsibly encased in concrete, it is important for us, as Permaculturists, to oppose unnecessary growth and sprawl. Do we really need more roads, subdivisions, or high-rises? Wouldn't it be possible instead to cultivate intensive, self-reliant households? It is important actively to protest such cancerous growth and instead promote small-scale urban development. Perhaps then we will be able to let our urban lands begin to grow truly wild. Δ

The author and friends are involved with The Urban Wilds Sustainability Project (and will soon publish a book on urban sustainability), BASIL (The Bay Area Seed Interchange Library), The Bat Cave Bicycle Library, and BREAD (Berkeley Region Exchange and Development—a local currency) contact Tim Krupnik, 5912 Genoa St., Oakland, CA 94608. Tel. 510-597-1784, email: soilfirst@tao.ca. They also teach some of the technical, "how-to" aspects of the sustainable systems described above at the annual "Do It Yourself Skill Share Conference," a free gathering for environmentalists, Luddites, Permaculturists, activists, homesteaders, and other creative, autonomous folk. To inquire about hosting a workshop, please contact: PO Box 4934, Berkeley, CA 94704. Tel.: 510-496-2740 ext. 3957 or skillshare@onebox.com.

European Convergence, Logos, and Web Pirates

To the Activist:

I want to announce the 6th European Convergence, which will be held in Slovakia in the summer of 2001. (see *Events section*)

Furthermore, we have a warning about a guy who has occupied the homepage permakultur.dk, without any relationship to the Permaculture network at all. (see *below*)

Another subject that has been discussed around are the Permaculture logos. As far as I know there are the original Australian one with the snake, and a modified English version without the elements, which is the basic one, and used all over in connection with Certificates and Diplomas. But there seems to be a tendency to create regional ones. I am sending you three examples:

- a Nepali/Hindi one, which emphasizes the people involved (see *Musings*)
- a slavic/czechoslovak one, which shows the temperate topsoil and its relation to worm culture
- and a Nordic/Celtic one.

The last of these shows, besides the four elements and the fifth element in the Celtic

solar wheel, the tree of life—the ash "Ygdrasil" with its life circle, the springs "Hvergelmer," "Mimersweel," and "Urdsweel," all connected to wisdom, the gods, and to fortune. In the roots are the dragon "Nidhug" and the evil snakes, and in the leaves the messenger, the squirrel "Ratatosk."

Lastly, we have a proposal about international permaculture communication: If any computer freak in the network would develop a Perma-version of the LINUX open source program, a lot of our transferring trouble would be solved. We could probably even transfer 72-hour course material—pictures and all—to a permanent base on the Internet.

Best wishes and love to all and hugs and kisses to the ones I know (and who know me)
Tony Andersen
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Email: vestergor@dk-online.dk

Permaculture Warning

On the Permaculture Web-network we unfortunately have to warn about an illegitimate Danish homepage, "www.permakultur.dk". The name at that home page is "Permaculture Research Institute of Denmark." The person running it is Karsten Pedersen; he is not a part of the Danish, Scandinavian, or European Permaculture Network. He claims to have a

certificate from Australia, but does not respond to our attempts to get in touch with him. As far as we can see he does not develop or research anything, but is only using the homepage as a base for ordinary internet trading.

The official Danish and European homepages are www.Permakultur-danmark.dk and www.Permaculture-europe.org

New Zealand Ecovillage Takes Shape

Robina McCurdy

In Easter 2000, Earthcare Design (the permaculture design arm of Earthcare Education Aotearoa) embarked on the ecovillage design of Valley Farm, a 400-acre property situated between Paeora and Thames, at the base of the Coromandel Peninsula in Aotearoa New Zealand. The land is pristine, fertile river valley surrounded by a wilderness sanctuary of rolling hills dense with native forest.

As the design consultant, my approach, as always, was to work in a participatory way with the clients, in this case involving them in every aspect of the data gathering, analysis and decision making. In essence they were having a crash course in Permaculture Design, combined with the methodologies and tools I have developed over many years for Sustainable Community Design & Development. I also took the opportunity to train two talented young apprentices, experienced and qualified in Permaculture, who worked shoulder to shoulder with me under my supervision, leading some of the participatory processes and having their own particular areas of research and design. Towards the end we invited some local Permaculture folk, who contributed with their specific areas of expertise, and enjoyed the vibrant dynamics of the little community we had naturally developed as we worked together.

As I customarily do with community groups, we began with the a holistic goal setting exercise I have significantly adapted from Alan Savory's "Holistic Resource Management" methodology. When I worked in South Africa, a colleague and I learned this from the Zimbabwean PELUM team, and it became our launch-off point for "The Pattern System for Permaculture Design" we subsequently developed. This method can be used for one person or a hundred people together. Every time I use it I learn more about its potential and refine it further. The outcomes of the holistic goal setting exercise is applied to Valley Farm were: values clarification, broad and detailed mission statement, forms of production inclusive of economic activity, identification of specific design elements, an easy way of designing "building guilds" based on inputs, outputs, and functions, and flexible ways of designing as a team. The whole process works with consensus decisionmaking, from the initial alignment of values to the final Permaculture design of the property.

Another of my favourite design tools is the use of a three-dimensional model of a site. I find this to be very effective for kinesthetic people, to use as a compliment to mapping. I have brought this technique across from doing permaculture designs of school grounds with

children. Often I make models from recycled materials, sculpturing the topography in a sandpit or by piling up cushions and blankets. At Valley Farm we made a paper maché model of the property to scale, covered it with plaster for longevity, and used this entirely for the participatory placement of elements before draw-up.

For the sustainability analysis and social and economic design, I selected from and modified templates and charts I had created and used successfully in the past, and also purpose-designed new tools. This project called on everything I knew about NZ's ecology, land use design, gardening & farming, buildings & technology, livelihood & economics, and community organisation & dynamics. This was because the client-landowners had done their homework so thoroughly, drawing on the learning experiences of every intentional community village they could get information about, from around the world. They are practical visionaries, with enough group involvement, "getting the job done" spirit, and business experience behind them, not to get too "starry eyed." They have taken the best advanced thinking on "sustainable economics," added to it their own vision for the NZ context, and ended up with a utopian win-win formula. Part of my role was to "reality check" this, to make recommendations for changes and assist with the staging of it.

Valley Farm is a designer's dream—it is a primarily north (sun-) facing valley with all of the elements present in their appropriate balance. There is an abundance of water for agricultural irrigation, with sufficient head on the streams for household water supply and to power a water ram for electricity generation. The sensitivity of previous owners to land use allowed forests to regenerate on most of the hilly area after heavy logging by early settlers, and consequently there is minimal erosion. The pastures are in already in mixed herb ley, bringing vitality to the soil and prime health to the cows that graze on them.

As we familiarised ourselves with the site, the ecovillage zoning became obvious. The neck of land through which everyone must pass to enter the wider valley is the village "Cultural Centre": the interface between residents and visitors. There we placed a multi-purpose community centre, administration office, cafe, display nursery, arts-craft businesses, small landscaped recreation park, and nearby, a carpark, visitors accommodation and another major business. The middle part of the farm is a "Settlement Area" - for housing, zone 1 - 3 gardens and treecrops, interspersed with smaller

livestock. Surrounding this is the typical Zone 4 production area, with high value timber tree and large animal grazing. The back part of the valley, which has a different quality about it, is a "Wilderness Area" - for light eco-tourism pursuits and retreat cabins, with the valley area fenced off and managed by cattle grazing on an ecologically sensitive rotation.

There is the question of where to place an intensive use, "outside world interface" commercial area in an ecovillage. My work with Robert Gilman of Context Institute in USA last year, and my observations of ecovillages and intentional communities around the world which have attempted to combine community life with commercial activities in the same zone, has strongly alerted me that the mixing of two activities is a recipe for stress and conflict, with the need of neither function being successfully met. The highest visitor turnover for Valley Farm will be their Educational Centre, planned as a small-scale New Zealand equivalent of the Centre for Appropriate Technology in Wales and the Permaculture Research Institute in Australia, and catering for school environmental education groups, independent workshops, etc. We positioned this on an area of land separated by a stream, and adjacent to the Cultural Centre, at the entrance to the valley.

Housing density was another major question for our team, and we examined this thoroughly. My well researched personal bias towards "cluster housing" was tempered by the clients' preferences for a more spread-out approach, the tendency of the lower areas of the land to rare "freak flooding," and the restraints of the Resource Consent, an application to the Local Authority for conditional use of land—required by law under NZ's Resource Management Act. Denis Scott, a colleague from Max Lindegger and Lee Harrison's very first NZ Permaculture Design course 16 years ago, has become a champion in this area, and will take our broadscale design to the next level, pulling in specialists in hydrology, archeology, road building, etc, to assess and officially validate the ecological viability of the site for this kind of land use.

Denis's guestimate of the permissible number of housesites is 13 - 15, also a maximum number for the "developers." Housesite selection will be effected through dialogue with the Te Hue Land Trust, which owns the property, and after common agreement, a site can be secured by a deposit payable to the Trust.

Housesite boundaries will be determined by the Trust in consultation with the resident, with fences bordering grazing pasture being the Trust's responsibility. There will be adequate space for a small family garden on each site. Community gardens will provide an abundance of fruit and vegetables to meet the

majority of household needs.

With regard to waste disposal, where houses are sufficiently close together and the topography is suitable their grey water would feed into one central evapo-transpiration bed; more isolated houses will have their own grey water systems. Each household is required to provide its own composting toilet system. As part of the buy-in, plans for several well researched options are available. The investment these households bring will freehold the land and meet the capital costs of developing the infrastructure and establishing cottage industries.

Cottage industries will include a bottled mineral water plant, time-share cabins, native tree nursery, honey production, commercial growing of medicinal herbs and a possum-based "Eco Fur" business (in NZ, these cute little animals, introduced from Australia, wreak havoc with our native ecosystems and orchards). A little ecotourism, including pony trekking, is also planned, as well as field days and building workshops demonstrating innovative, eco-friendly building methods.

This project offers the investor not only a stunning location for a home, but provides income from investment in cottage industries. Additionally there is a potential to earn income from work in any, or a number of these ventures, providing a variety of experience in one's lifestyle. Valley Farm's projected income from cottage industries on the property for the next 12 months is \$192,339.

The legal structure is a Land Holding Trust with shareholders being trustees or directors of the Trust. If subsequently the resident (shareholder) needs to leave the project, the share can be surrendered or redeemed for initial investment plus appreciation and improvements, so that provision is made for a household or individual to leave if need be and not lose their life savings. There is also provision for a capital gain on the portion of investment allocated for the development of the cottage industries. These cottage industries, while controlled by the shareholders in the Land Trust, will be operated under a Limited Liability Company administered along co-operative lines.

Valley Farm is now poised between being a farm operating three businesses with another ready to roll, and an ecovillage. The bridge between present and future, dream and reality, is a special kind of people—who are prepared to invest in a balanced relationship between humanity and the natural world, which blends the physical, spiritual, social, economic and ecological. All enquiries are welcome. Δ

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News from EPTA—

Design Course Taught at Community College

Matthew Arnsberger

Central Carolina Community College is located at Pittsboro, North Carolina, in the state's Piedmont section and within a couple of hours of the major urban areas of Raleigh-Durham-Chapel Hill (The Triangle) and Greensboro-Winston/Salem-High Point (The Triad). Like many such institutions across the United States it offers a range of accredited college preparatory and vocational training classes at moderate cost. In the past three years CCCC has expanded its focus on sustainable agriculture and environmental issues. In Fall, 1999 I had the pleasure of presenting a Permaculture Design Practicum through their Continuing Education Sustainability Program as the principal course instructor, with Harvey Harman assisting. Harvey did a great deal of the groundwork to introduce permaculture to the faculty and staff and taught the Permaculture Fundamentals course through the same college program during the previous summer.

These courses represent an important milestone in American education because they may be the first offerings of permaculture certificate courses through community-based tertiary schools. The low cost of the programs together with a schedule geared towards working adults makes them available to a much larger swath of the population—especially working farmers, than has been reached by the one-, two-, and three-week residential PDCs. This matters because sustainable agriculture is making important inroads in the Carolina Piedmont and more and more area farmers are looking for the next step to improve farm income and environmental quality.

The Practicum course was offered as 12 three-hour classes one evening a week during the fall school semester. Most of the 42 hours was spent inside a typical college classroom. Eighteen students participated in the course, and eleven design certificates were awarded. We used David Holmgren's *Hepburn Permaculture Gardens* as a case study guide, as well as numerous examples of analysis and design projects done by myself and one by David Jacke. Design Practicum certificates were awarded to students fulfilling course requirements which included completion of a Permaculture Fundamentals Course, an oral presentation, graphic requirements, and a final project presentation demonstrating an understanding of the course materials.

The primary focus of the course was

threefold: to introduce the landscape design process within a permaculture context; to apply it to a project site; and to teach basic graphic design skills.

The landscape design process we taught includes:

- developing a base map,
- defining client needs and wants,
- analyzing the site,
- establishing design criteria,
- developing various design schemes, and
- creating a preliminary landscape design.

Classes consisted of lectures, graphic design lessons, and lab time. Lectures introduced the various aspects of the design process, and included special presentations on GIS, and Permaculture Zone Five. Students seeking a design certificate were required to give a ten-minute oral presentation on some permaculture topic they had researched. Graphic design lessons focused on developing legible and useful diagrams for the design process including base maps, analysis overlays, an analysis summary, schemes, and plans. Techniques for drawing section elevations, isometric, and plan oblique diagrams were also taught. The lab time consisted of hands-on mapping and analysis exercises, graphics exercises and one-on-one project development time.

Course Evaluation

Student evaluations suggest a very positive response overall to the concepts and content presented. However, much confusion prevailed up until the ninth or tenth week of the course concerning the landscape design process. Most students got the concepts and conveyed them well in their project diagrams and presentations. I could not have taught this course were it not for my training at the Conway School of Landscape Design and my continued work in permaculture site analysis and landscape design.

A packet of course handouts (32 pp.) is available for \$22 plus shipping. Δ

Matthew Arnsberger has a Masters in Landscape Design from the Conway School, and has taught permaculture in Virginia and N. Carolina. He offers design consulting services through Piedmont Environmental Planning and Design, PO Box 674, Carrboro, NC 27510. arnsberger@mindspring.com.

Movement Musings

Organizing Permaculture

Tony Andersen
translated from the Danish
by Jo Hermann

***“What’s that?
Is it really possible to talk
about a special kind of
Permaculture organizing?”***

At the European Convergence in Czech Republic last year we discussed aspects of the fifth element out of the five: energy, water, air, soil, and spirit/organisation of plants, animals, and humans.

It seems now that the organisation of the four basic resource elements of Nature depends on the human organisation—maybe until the final collapse and destruction of any *homo sapiens* influence.

After a workshop and seminar at the Convergence I promised to try to set up an introduction for a discussion of the subject. I have noticed a similar attempt in one of the *Activist* issues last year.

I hope you’ll find the subject just as interesting as some of us, who have been working some years with Permaculture, and who have experienced the disruption of the planet and the breakdown of human societies.

Discussions within the international permaculture network show that organizational principles are fairly well-developed already.

Let us first have a look at the development of the permaculture concept and its position in global social processes: First, regeneration of natural resources by farmers, then habitation strategies, the generation of permanent socio-cultural systems, and now finally the development of actual political and social strategies, with LETS and the bioregion concept as the first steps.

As designers of permaculture we constantly confront the barriers this world sets up for the life of individuals as well as societies; by using our analytical tools and work processes we are able to handle those barriers and suggest solutions that both stay within them and push them at the same time.

There are by now numerous projects to document the validity of the Permaculture concept in relation to natural resources locally, regionally, and globally. We find that the barriers to developing and consolidating these projects further are more and more often political and administrative. This should come as no surprise, since these same barriers in principle have brought the present unfortunate environmental and social situation upon us.

What do we call democracy?

During my visits to permaculture projects and courses, I have noticed a number of characteristic organizing principles. These principles are different from those underlying the so-called democratic, parliamentary model

number of politically active citizens. In Denmark, politicians have responded still more arrogantly, and now artificially support the political parties with public money. The result has been a steady increase in the number of market analyses, advertising campaigns, and public relations strategies: politics is being sold just like laundry detergents and disposable diapers.

From courses I have taught in India and Croatia among other places, I have also gained practical experience. Both these places have suffered from so-called ethnic conflicts and purges, and still do. But in both places studies show that conflicts there and in the neighbouring states (such as Bosnia) were not provoked by hatred between neighbors, but by foreign, superimposed, centralistic and autocratic interests—in Croatia and Bosnia between Tujdmann and Milosovic, in India between the two national parties especially, the Congress Party and the Hinduist Party. The scheme is to create conflict by sending in gangs systematically to terrorize different ethnic groups in turn. This is done to secure imperialistic interests: the conflict provides a pretext for sending in troops, on the claim that the locals are unable to coexist peacefully. This practice has recently been pointed out by



based on political parties, which is being promoted globally by the dominant powers of the western world.

In western societies the political parties predominate, with methods that include committee meetings behind closed doors, fixed representation, and decisions based on majority votes. These methods have led to an ever-increasing contempt for politicians, low voter turnout at elections, and a decline in the

the World Institute for Development Economics Research (a UN organization) in the report “Social and Economic Policies to Prevent Complex Humanitarian Emergencies.”

The parliamentary democracy, which we often promote as the best form of government, may in fact prove to be exclusive and impose conflict because it makes decisions based on the vote of a majority of just 51 percent. Any group that can mobilize the majority has the

right to make all political decisions on behalf of the minority as well.

But to ensure a sustainable future with permaculture these principle barriers will have to be radically changed.

Back to basics

The answers, which have their parallels in permaculture strategies as well, lie in a higher degree of local autonomy and the development of democratically based governing. These approaches are necessary to develop governing and decision-making structures for green accounting, ecological recirculation, and bioregional planning. Of the five classical elements: fire, water, earth and air, the fifth element of spirit, or organization and culture may be the most basic: In order to organize the other four we have to reorganize ourselves.

Unlike parliamentary government, permaculture projects are characterized by open meetings in workshops instead of closed committees, sending messengers instead of electing officials, and decisions made by consensus rather than by vote. All these processes are known from grassroots movements, and they can be traced back in time as long as human societies have existed. Naturally, these work processes can be found

all over the world.

Folk institutions

In India the original Buddhist *sangam* way of meeting is accepted in the villages of the permaculture project near Pastaphur, north of Hyderabad. The principle is that all inhabitants, no matter what their religion, have the right to speak in assemblies, and decisions are made by consensus. It can be a problem then that the hierarchies (of caste, religious rank, or wealth) regain their force after the meetings when the plans are to be carried out.

Among American Indians the "talking stick" tradition has had a strong hold, and like the Nordic principles of thing-court decisions (*Ed.: the word thing derives from Old English—hence related to Norse, meaning creature, deed, assembly*), has spread to English-speaking grassroots groups.

In Arabia the *palaver* principle is well-developed. According to that principle people sit down in small groups, for instance in a cafe. They are presented with a certain problem, and then discuss it in these groups.

In Scandinavia we have the *thing*, guild, and coop where everyone is equal and has equal rights to talk and decide (though originally only if they were men, and of means).

Elements of democracy

The following cases point out the principal differences between party-based or parliamentary democracy and grassroots democracy.

Consensus instead of voting. In parliamentary circles this concept is often the subject of contempt, and it is said that unity restricts decision-making as it demands dilution and reduction of viewpoints to a corporative system without conflict. Such reasoning is pure demagogical nonsense. Consensus does not imply unity—it implies a mutual feeling or mutual acceptance. On the contrary, consensus protects minorities and demands a thorough understanding of the context and its variety since it is not possible act on a majority vote where 49% can be overruled by 51%. The heart of the consensus process is that one keeps on discussing until a mutual understanding is reached. The persons or groups that do not agree, will accept the decision if they find that it is not detrimental to their own activities or interests in a significant way. In those extreme instances when a single person or group repeatedly tries to block decisions, the "bungler principle" kicks in. When everyone else finds that a proper solution has been reached and only one person cannot see it, he is deemed a bungler who has lost his right to be taken seriously—he is kept at a distance and will not be asked to participate in further negotiations.

Messenger principle instead of fixed representation. In the parliamentary systems you are elected for a certain number of years with a broad, unspecified mandate. During that period you handle all cases brought before you, whether or not you have the knowledge required to understand them or any interest in them. Together with a system of closed committees this facilitates the making of long-term decisions and back-room deals, without having to make them public. In the messenger system the people who take an interest in and know about the cases in point are those who participate. The discussion processes where the specific, actual mandate is delegated must be open to everyone, because you will not be able to refer to services rendered or deals made in previous cases, since they most likely would have been handled by other people.

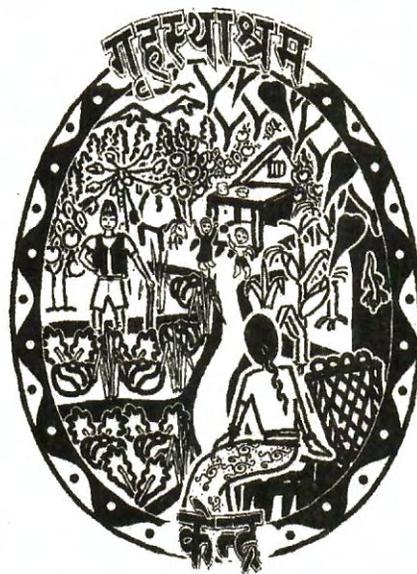
Group autonomy. It is characteristic of basic democracy that in workshops and interest groups you have full freedom to make decisions, and are not bound by authority and hierarchical decisions from outside the group. If this is not so, the group is likely to dissolve since grassroots activists won't feel like participating.

Overlaps between groups. In a system based on more groups with full autonomy, there is a risk that the general view and relationships of a project or process may be

Permaculture Learning in Community Projected for Aotearoa/New Zealand

Te Wharerangi Trust (which runs the Golden Bay Community Gardens & Environmental Resource Centre) and Earthcare Education Aotearoa (Permaculture & community development educators) are currently working on a plan to have ongoing year-long certified courses in Permaculture Design, Sustainable Land Use Practices & Organic Growing, utilising the entire bioregion of Golden Bay as a "learning campus," with the tutors being local, experienced, successful people who are actually "doing it" on places that really "show it." The course will be open to international students, and have an academic base, coupled with a strong interactive and practical learning methodology. Throughout the course, the skills learned will be practised in and gifted back to the wider Golden Bay community. Other details of concept and operation are contained in our proposal. This is an ambitious undertaking, and its time has come. We are seeking information on potential funding sources to assist us to pilot this course. Anyone with funding ideas or contacts, or the interest to participate in such a course, please get in touch with: Robina McCurdy, Tui Community, Wainui Bay, RD1,

Takaka, Aotearoa/New Zealand. Phone +64-3-525-8488; Fax +64-3-525-8659 Email: robina@win.co.nz



Hindi / Nepali Permaculture Logo

lost. In order to avoid that, it is necessary to participate in more than one group. One can then get a broad impression of what is going on and through contact with other groups include other perspectives on the whole project or process.

Toward democratic self-management

As an administrative system in a society and as a means of management these basic democratic principles have not often been put into practice. The only place I know of is Amsterdam, where they were applied to urban renewal projects, especially in the Dapperbuurt area during the 70s. In the Vesterbro section of Copenhagen we are at the moment trying to establish such a system instead of the currently accepted Area Council, which is based on party affiliation and in its parliamentary form is essentially a duplicate of the municipal government, only on a smaller scale. Among other features, it repeats the committee meetings that allow for confidential agreements—one of the reasons why so many people are wary of politics.

If an administration is not to be governed by politicians through sectoral, politically defined committees, it must have an entirely new structure. This means that our administration must be broken into pieces so that each field has its own independent office defined by its actual function: kindergartens, schools, care or homes for the elderly, roads, parks, etc. Each field of operation should be a separate entity responsible for its own budget. Cooperation between the different offices should then take place in ad hoc groups according to what the situation requires—but always in open sessions. When cases demand confidentiality, they must be dealt with by specially appointed smaller groups instead.

Instead of a fixed representation with people elected for a period of typically four years (in which they have to take a stand on any given issue), a messenger system lets the users and other people with an interest in the matter send a messenger to negotiate on the basis of a predefined mandate.

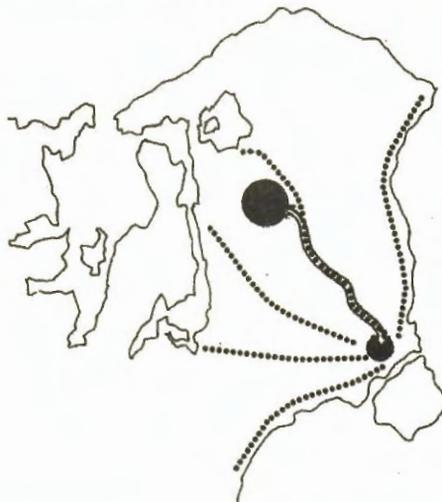
A beginning in Copenhagen

As mentioned earlier we are trying to work out such a model for the Vesterbro area of Copenhagen, built on the following structure:

Functionally and institutionally defined groups, school boards, parents councils, etc., guilds of the street or yard, and the like, form an Assembly of the People. Each year an area conference is held, and new groups or project groups can be accepted and thus acquire the administrative status of collaborating partner.

From the assembly an executive committee of 14-15 persons is elected. They have the actual authority of a municipal government. The position as a member should be a public duty so that one is required to meet and

subject to punishment for failing to do so; leave of absence should only be granted under special circumstances. Out of the executive committee three persons are elected. These are paid and share mutual responsibility for the management of the administration. These people can remain in office for only three years at a time, and each year one of them is



The 80,000 inhabitants in the most densely populated municipality in Denmark could get their basic resources from an area of 100 sq. km. near the village of Uvelse, 30 km north of Copenhagen. Only the energy resources would have to rely on a region that includes both the Danish island Zealand and the Scania area of Sweden.

replaced in order to avoid corruption.

This governmental structure is not approved, but is currently being debated in the City of Copenhagen as a possible alternative to the Area Councils. In Copenhagen as in other European cities, the Area Councils have received a mixed evaluation, which is why alternatives are now being considered. A decision is soon to be made.

To what extent these principles can be included in an overall political strategy remains to be seen. There are signs that questions concerning the distribution of wealth cannot be resolved beyond the level of the local community—this must be one of the scourges of mankind.

In Copenhagen it is the intention that the hard issues of sharing between rich and poor parts of the city and of setting minimal standards for schools, institutions, and services (to a great extent regulated by law), will still be handled within the parliamentary system in the party-based City Council.

But, in keeping with the principles of permaculture up until now, it seems right that we move forward at a moderate pace so we can still foresee the consequences. The development of principles is always the result

of concrete and practical experience—not of superior spiritual or political dogmas.

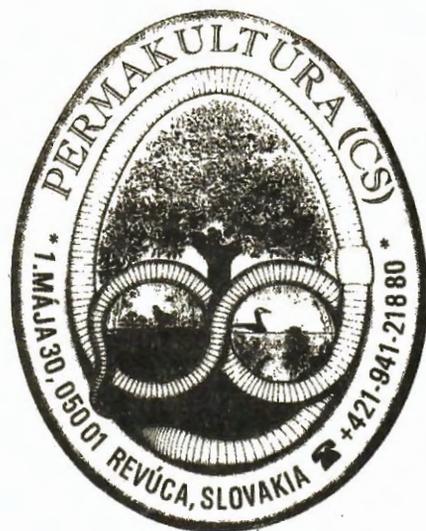
Levels of social organization

In permaculture it is a given that we should be able to manage our own dwelling. This is the center of our activities. Whether we lease or own privately or in coops, we must be able to regulate the circulation of resources related to the dwelling: water, earth materials, energy, and air. It is where we apply permaculture strategies to delay the flow of energy, accumulate nutrients, and construct plant systems.

The next level is the village or housing block. The appropriate organizational level here is the guild. It is a forum where people meet on equal terms to discuss issues of mutual interest—in guilds of the yard, block, or street. Coherent ecological analyses are made on this level too, and sustainable systems or permaculture is laid down as the goal.

The town, ward, or neighborhood is the next level, governed by an assembly of the people. Everyone has the right to participate—as an individual or as a member of a group. Groups secure a binding coherence instead of unrestricted opinionating.

The ultimate level is the bioregion. This is the organizational level on which the basic questions about distribution of wealth must be clarified. This is where resources are allocated to each local community and shared between rich and poor, powerful and powerless. It is also within the natural limits of this area that all our basic needs must be met. So even in a globalized world, this is where the fundamental decisions pertaining to our existence are made.



Slovak Permaculture Logo

Challenges of making a change

Considering the greed, cynicism, and self-indulgence with which human beings so far have ruled the world, there is no cause for grand optimism when it comes to how we can build a responsible, sensible, and just system that would allow us to make decisions on equal terms about natural resources and their air distribution.

The UN report from 1998, "Social and Economic Policies to Prevent Complex Humanitarian Emergencies" (the so-called CHE) inquires into the causes and effects of death, disease, hunger, and the refugee problem. The human sufferings that follow are unbearably well-known to everyone through the mass media, but the causes often remain unexplained. This report points out several causes, all of them linked to human decisions: the wearing down or destruction of natural resources by governments or private people and companies, the majority rule of the parliamentary democracy, and the power of people from outside the region to exploit local resources.

In a future decision-making process those causes must be countered.

The intrusion of outside interests must be limited by securing regional self-management of resources, regional ownership, etc. (This clashes vehemently with the World Bank, the World Trade Organization, and the interests of the superpowers.)

The majority principle of the parliamentary democracy, along with fixed representation and closed committee procedures, must be changed to the ways of working and arriving at decisions sketched out above.

The wearing down and destruction of nature must be countered by setting up ecological standards within the regional framework.

How such a system could be organized, I don't think you can study anywhere in actual life today. But on the regional level a party-based system with parliaments, principles for the protection of minorities, and a global set of rules for autonomy plus ecological standards could possibly be operable. Presumably, however, a local culture of self-management would be required to take care of the distribution of resources. Without that there would be nobody to implement the decisions, and none of those who actually implement and distribute the local resources would be able to control decisions, promises, and execution of programs of the political parties on a regional level.

In such a future structure, existing municipalities and states might be practical, administrative partners, but should have no independent authority. Studies from the last 100 years explicitly identify the western form of government as fundamentally nationalistic

and militaristic. It was developed in the 17th and 18th centuries in the European center of powers to create a certain balance between the regional interests in natural resources. This pattern has been repeated on a global scale, and will presumably continue as long as the present parliamentary, capitalistic, market-oriented system is allowed to prevail.

Large transnational organizations such as the EU, the USA, the FSU, China, India, and others only act as further national states in the international battle over resources.

The only transregional institution that would be able to secure regional autonomy and prevent infringement in the long run is the United Nations.

and xenophobia that follow. In those situations even well-developed, ecologically sound, integrated, and neatly implemented permaculture projects would not stand a chance.

For that reason we must necessarily develop stable societies with durable principles that outline how to make decisions and distribute wealth. I have tried to sketch some ways in the above essay. Centered around our local communities, it is oriented to ways of action similar to those as found in the zone principle of permaculture—your greatest opportunities lie in the place where you are. Once you have begun from there, you can move on to the outer zones following the laws



International Permaculture Convergence/Nepal 1991. The framework for the whole permaculture network is laid out in international meetings. In Australia 1985 and the USA 1987 it was "Permanent Agriculture." In New Zealand in 1989 it was urban ecology and LETS (economic relations). In Nepal in 1991, bioregionalism. In Scandinavia 1993, the regionalization of the permaculture network. In 20?? political and regional strategies of organization.

Epilogue

The current model of development, with capital movements in a global market guiding social development, is beginning to show severe signs of weakness. Transnational corporations and their helper states have proven themselves unable to show any respect for specific circumstances of local regions, whether of natural resources or cultural and societal features. In their insatiable need to gather and accumulate capital, they reach situations where they eliminate the very foundation for their own existence—and together with the system of which they are a part, they tend to break down.

It is such breakdowns that have spurred the revolts we see around us—the collapse of large structures with the battles, pogroms, and

of need.

The movement will be organized in the same way: from the house to the neighborhood to the area to the region, and following this movement the principles will be obvious and therefore acceptable to all involved.

So—keep up the good work! △

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Strengthening Permaculture's Foundations— Teachings from the Blue-Green Dragon

“...seeing patterns in the multiplicity of clinical events allows the Chinese physician to visualize a bodily landscape, to perceive an individual disharmony, thereby making a diagnosis, and to prescribe treatment.”

—Ted Kaptchuck, *The Web That Has No Weaver*

James Saper

The concept of pattern recognition has often left me slightly mystified and unsure of how such information could make the leap into practical application. Then several years ago I read the above description of how Traditional Chinese Medicine (TCM) is practiced. I realized that I had stumbled across an ancient practice devoted to the study of patterns and their application to health and healing.

I came across TCM indirectly because of Permaculture. My interest in Permaculture grew into an interest in medicinal herbs. That interest, in turn, led me to Chinese medicine and the book containing the above quote. Reading it, I realized I had travelled full circle to arrive at a deeper understanding of both disciplines.

Both Permaculture and TCM are concerned with understanding complex and dynamic natural systems. However, Chinese medicine is several thousand years older than Permaculture, and over that time has been continuously refined.

As I learned more about TCM, I found more food for Permaculture thought.

Some parallels

Chinese medicine recognizes that people are directly and indirectly influenced by movements and changes in nature. Permaculture is based on the understanding of converse and complimentary truth, which is summed up nicely by the adage, “everything ardens.” The two disciplines share interrelated objectives of establishing harmony between people and their environment; one looks at fostering healthy environments, the other at fostering healthy people. In both disciplines the emphasis lies in relationships and connections.

The central concepts of Chinese medicine were developed over 2000 years ago at a time when the ancient Chinese had little knowledge of human anatomy and physiology. Religious and ethical prohibitions made the dissection of human bodies taboo. So instead of looking

inside the body to understand disease, practitioners of Chinese medicine learned to gather visible information from the outside. Everything from aches and pains to the colour of a patient's complexion and tongue, from the state of the stools to the state of the emotions is taken to indicate what is occurring within the body. Diagnosis in TCM is based on a complex system of correspondences between outer conditions and inner ailments.

Chinese medicine, like the written Chinese language, is metaphoric. As patterns of signs and symptoms were recognized, metaphors were adopted to describe what was happening inside the body. Influenced by Confucian thought, with its emphasis on social structure, and by the Taoist reverence for nature, TCM interprets the human body as a dynamic balance of natural elements such as fire, water, and wind; and of the interplay between rulers, officials, and messengers.

For example, a common cold is thought of as the struggle between an external element trying to invade the body and the body's attempt to expel it. The idea of invasion by an external element is similar to our concept of “catching a cold.” Except that in Chinese terms Wind is usually the culprit, often combined with Heat, Coldness, or Damp. As these elements try to come in, our body mounts a defense. The Lung organ network is thought to rule the outermost defensive layer of our body, and so is the first to encounter the invading elements. The Lung network is also connected to our nose, so when we “catch wind,” we often experience a blocked nose and coughing or wheezing. As well, since our outermost defenses are busy expelling the invasion, their normal function of regulating skin temperature is disrupted so we often experience aches and chills. If the external elements move deeper into the body, they can disrupt the stomach, causing nausea and vomiting (i.e. flu), and generating “heat,” which we experience as fever, sweating, and thirst.

From this simple example, we can see that



TCM focuses on the person and his or her responses to disease. As any good permaculture designer knows, each situation is unique and requires solutions suited to its own locale and environment. Likewise a TCM practitioner attempts to match treatment to the unique pattern presented by each person. Unlike Western medicine, wherein the disease determines the treatment, diagnosis in TCM provides the parameters for treatment, which are then modified and adjusted according to the situation of the patient.

Western medicine tends to view disease in reductive terms. It breaks the body into ever smaller units, then analyses each in isolation, searching for the mechanism of disease. In the example of colds and flu, Western medicine focuses on identifying and countering the “causative agent,” e.g., the strain of virus. This approach has led to great achievements in surgery and antibiotics, but has had little success treating complex, multi-cause diseases such as cancer or Chronic Fatigue Syndrome.

Western medicine and conventional industrial agriculture share this reductionist perspective, rooted in the scientific method. And not surprisingly they both suffer from similar failings and blind-spots. Just as Western medicine has difficulty addressing complex diseases such as Chronic Fatigue, conventional agriculture can offer little but

op-gap solutions to the systemic problems of decreasing soil fertility and the boom-and-bust cycle of pests. In contrast, both Permaculture and TCM are holistic and integrative in their approaches and are therefore able to address underlying conditions ignored by reductionist approaches.

Traditional Chinese medicine incorporates sophisticated and refined pattern language. It is flexible, resilient, and practical. Similarly, Permaculture represents a pattern language: its principles attempt to categorize the underlying forces at work in all ecosystems. But as a pattern language, Permaculture is much less sophisticated. The variance in Permaculture principles between authors can make Permaculture look more like a collection of good ideas than a design system.

Despite differences in age, Permaculture and Chinese medicine have a lot in common—they are both methods for describing and assessing imbalance within natural systems and arriving at ways of reestablishing equilibrium. Indeed, when Permaculture practitioners in Hong Kong first attempted to translate the term into Chinese, the four ideograms they used stood for "Forever balanced Natural Method." By examining a pattern language that has developed organically over thousands of years, we should be able to strengthen Permaculture's foundations.

Strong foundation equals flexibility

People in North America often confuse acupuncture for TCM. Yet acupuncture is simply a technique, while TCM is the process that allows a practitioner to understand the problems presented by a patient and correct them. Furthermore, acupuncture is just one of several techniques available to Chinese medical practitioners. Herbs, Chinese massage, known as *Tuina*, *Tai Chi* and *Qi Gong*, and diet therapy are also used. TCM derives its flexibility from a deep understanding of health and disease.

Several years ago, the British newsletter *Lean State* published a short article by David Holmgren on Permaculture which compared extensive and intensive gardening. In the article he outlined the characteristics of low input, extensive gardening techniques such as sheet mulching and contrasted them with high input techniques like double-digging. He stressed however, that these techniques are points along a continuum and neither should be confused with Permaculture. Either could be found in a Permaculture design. Permaculture is the understanding that helps us to frame designs and to select the most appropriate strategies and techniques to manifest them. As Permaculture ideas get

applied in more and more diverse areas, it will be the strength and universality of its foundations that help us develop sustainable strategies and techniques for situations we cannot now foresee.

Theories, strategies, and tools

TCM is systematic in its analysis and treatment of disease. Foundational theory provides an understanding of health and how imbalances occur, which is then applied to diagnosis. The practitioner formulates a treatment principle to restore balance. He or she then chooses, from a range of options, the best combination for treatment. In the case of a headache due to stagnation, theory tells us why this would cause pain and why that pain might occur in a particular location. It also tells us what other signs would confirm stagnation. Once a diagnosis has been made (for example: stagnation of Qi in the Bladder channel) and a treatment principle formulated (e.g., removal of the stagnation), the practitioner then chooses, from a range of treatment therapies, the best techniques to stir the stagnant Qi. This is easily done since the materia medica, massage techniques, qi gong postures, and acupuncture points have all been categorized as to their actions and effects.

Unfortunately, in Permaculture the separation of principles into theories, strategies, and tools is indistinct. Nor are the various tools at a designer's disposal uniformly categorized. Most lists of Permaculture principles combine general theories, such as "everything gardens" with strategies such as, "create storage for water and potential energy as high on a slope as possible." Similarly, if a designer recognizes that, for example, "increased nutrient cycling" or "better social interaction" is required, a compilation of tools to facilitate these ends would greatly improve his or her ability to create sustainable systems.

Among the resources needed by Permaculture designers are just such compilations of strategies and tools. These resources can cover the range of areas commonly addressed in Permaculture design from earthwork and soil maintenance to community design and group process techniques. I'm sure that many of these types of resources already exist for architects and facilitators. These need to be identified and adapted, but we also need a framework that builds upon the existing principles.

I have tried to highlight three aspects of TCM that can guide the further development of Permaculture: a nonlinear and holistic approach, flexibility, and the distinction between theory, strategy, and technique. I do think of Permaculture as more than just a grab

bag of good ideas, despite the range of theoretical interpretation. Those variations reflect the diversity of people involved in Permaculture, their skills and interests, as well as where they live. But they also reflect a weak understanding of Permaculture principles, which are in need of further refinement and development.

In Chinese folk religion the blue-green dragon comes from the East and is responsible for producing rain to nourish the trees and plants. As Permaculture sends out branches further afield, we must ensure that its roots grow deeper. Discussion of the foundations of Permaculture is essential to this. And while the language of Chinese medicine sounds foreign and strange, I think that this ancient but very much living art has a lot to teach us all.

Footnote

In this article I have referred to both Traditional Chinese Medicine (TCM) and to Chinese Medicine. Traditional Chinese Medicine is a product of modern China and has been influenced by modern China's political and social beliefs. As a school of thought, it is distinct from other variants such as those found in Japan or Europe. All however, share a common root in pre-modern Chinese medicine. Since I'm most familiar with TCM, most examples and explanations are drawn from this style of practice. When discussing an aspect that is common to all styles I have used the more inclusive term Chinese Medicine.

Resources

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James Saper has returned to the life of a full-time student at the Oshio College of Acupuncture and Herbology in Victoria B.C. He can be reached at jsjs44@yahoo.com, or 102-575 Vancouver St, Victoria, B.C. V8V 3T8 Canada.

Towards a Model of Sustainable Health Care

Gary Pace, M.D.

Our generation's most important contribution to life on this planet may be the development of patterns of human activity that restore rather than deplete the biosphere. Clearly we are pushing the ability of the planet to absorb the end products of human activity, and it appears that the fabric is beginning to unravel. While progress has been made in developing systems to produce food (organics/CSAs/permaculture gardening) and shelter (natural building movement) while enriching life, no clear strategies for approaching health care in a sustainable fashion have emerged. Certainly, some schools of natural healing—including Traditional Chinese Medicine (TCM), western herbalism, Ayurveda—have gained a foothold in this country, but no community-based model has emerged that transcends an individual practitioner's interests, availability, and approach to finances.

Problems with Current System

One of the most destructive underpinnings of the current biomedical model of health care is the belief that problems can be broken down into discrete components and conquered. This tendency belies the complex nature of living organisms, and generally misses the point of life itself. It leads to the kind of biochemical research, impersonal pharmaceutical treatment, and expensive diagnostics that fly in the face of common sense, yet serves as the familiar foundation of health care in this country. A brief overview of the problems with the current approach should be all that is necessary, since in most regards, this system is indisputably broken. Approximately half of the population is uninsured, insurance and HMOs try to unload people as soon as they are sick, diagnostics and medications are increasingly expensive, side effects are a major issue, environmental causes of diseases are essentially ignored, the health care system consumes more and more resources with measurable declines in public health statistics, and the health care industry has become a major producer of toxic wastes, thus compromising the health of future generations. We don't need to draw out this dismal saga of setting profit before health any further; instead we need a way out. Clearly a radical shift needs to happen and it is not likely to come from the "leaders" in the industry.

Permaculture as a Guide

What would it take to make the health care system sustainable? Or to put it differently, is it possible to create a system that allows

people to get attention when they are ill, using medicines that are helpful, affordable, and non-toxic to both the person and to the environment? Permaculture serves as an exciting framework to begin to guide our planning with its emphasis on "permanent culture" and sustainability.

Any number of "permaculture criteria" exist, but let's look at the ones from Bill Mollison's *Permaculture* (p.2) *The Ethical Basis of Permaculture*: 1. CARE OF THE EARTH: Provision for all life systems to continue and multiply. 2. CARE OF PEOPLE: Provision for people to access those resources necessary to their existence. 3. SETTING LIMITS TO POPULATION AND CONSUMPTION: By governing our own needs, we can set resources aside to further the above principles.

These generally include some principles for application—look at long-term consequences of actions, use local resources, support diversity, cycle and recycle energy, use biological resources, develop self-reliance, recycle and minimize wastes, develop long term fertility.

Components of a Sustainable System

Any attempt to apply these principles to health care systems would seem to require most of the following characteristics or approaches:

- *locally based*—responsive to feedback from our neighbors;
- *common-sense allocation of resources*; accessible to all;
- *emphasizes prevention/focused on optimal health*;
- *empowering to users*—not driven by specialists or experts;
- *community involvement*;
- *low-tech diagnostics*; open to a variety of other methods (e.g., tongue/pulse diagnoses)
- *uses locally grown and produced treatment modalities, remedies*;
- *respects natural cycles*: birth and death as part of life; Spirit involved.
- *recognizes environmental and socio-cultural impacts*—especially in chemical exposure, radiation, high stress post-industrial lifestyles, and diets filled with depleted foods.

Fantasy Model

I'm not aware of any functioning models that incorporate these components. Of course, traditional societies have always developed strategies using local healers and supplies, but these are being largely supplanted by the monolithic Western model of health care. When someone is ill, injured, or dying, they

tend to go towards the point where they can expect some relief from their suffering. It is a very difficult time to make decisions that also incorporate notions of politics or sustainability. Instead we need to have the systems in place to support people in their times of need, that function well without compromising the health of future generations or contribute to destroying the ecosystem now.

My fantasy of a sustainable model of care would look something like this:

- Bioregionally based clinics with local councils making all of the decisions.
 - Providers would be drawn from the local people and trained in a variety of health care modalities that focus on low tech diagnostics, human to human contact, and a variety of therapeutic modalities.
 - Herbs, both Western and TCM, could be cultivated and formulated by local people.
 - Patrons of the clinic would do some volunteer time as partial payment.
 - Support groups and classes in self care and treatment would be a cornerstone of the center, as would aerobics, meditation, yoga, *chigong*, other forms of health promoting activities.
 - Birth would be seen as a natural process with home-birth encouraged.
 - Death would not be seen as an adversary, and help in making the transition "to the other side" would be available.
 - Activism regarding environmental issues affecting human and bioregional health would be incorporated.
 - Severe trauma and extreme care would be dealt with at regional centers where a centralization of high tech, expensive resources could occur.
 - Difficult decisions on allocation of these resources, withdrawal of life support, transplants, etc. would be made on a case by case basis by a group including family, spiritual counselors, wise elders, environmental activists, and health care providers.
- The focus would be on developing successful, supportive care for sick people and preventive care, emphasizing optimum health for humans and the ecosystem.

A call to action

What would it take to make this sort of transition? I ask people to educate us all about locally based models that are working, or have been tried with interesting results. What books or newsletters are talking about this? Maybe some of us could get together to advance this discussion. I would be willing to spearhead a newsletter, with some help from others who are interested.

The lens that a bioregionally centered, permaculture-based system offers is essential to coming up with some useful models. By

veloping a system addressing human health needs that mimics the natural processes it would be addressing, we could go a long way towards improving our long-term chances at a healthy environment, presumably reining in many of the excesses of the present system. I personally believe that this will come only by

creating alternative and parallel systems of care, given the entrenched interests calling the shots today. Δ

Gary Pace is a medical doctor, who, with his wife Margaret Howe and their children, lives

in a permaculture-influenced intentional community in Northern California called Emerald Earth. He is struggling to bring his professional work into line with his beliefs and personal life. Readers are invited to respond to him at lorax@ap.net.

Networks & Resources

Will the Bugs Win??

A sometimes-lethal type of bacteria that causes many cases of pneumonia, bloodstream infections, and other illnesses is rapidly becoming resistant to antibiotics, a government study found.

Experts have warned for a decade that overuse of antibiotics is helping germs become resistant to drugs, first to penicillin, then to newer antibiotics, raising the specter of more deaths and amputations.

"It's become even more worrisome in the past two years," said Dr. Cynthia G. Whitney of the Centers for Disease Control and Prevention. "There are definitely some strains that are fast learners."

The CDC study looked at *Streptococcus pneumoniae*, the nation's most common bacterial cause of meningitis, children's ear infections, and pneumonia. Also called pneumococcus, it is a frequent cause of bacteremia, a bloodstream infection that kills many elderly people.

Between 1995 and 1998, Whitney and colleagues collected 12,045 blood or other fluid samples from U.S. patients infected with *Streptococcus pneumoniae*. Each sample was tested against antibiotics from nine of the 10 or so classes that fight bacteria, with increasingly strong doses of the antibiotic applied until the bacteria were killed.

Over the three-year span, the percentage of pneumococcus samples resistant to three or more antibiotic classes grew from 9% to 14%. The percentage resistant to penicillin went from 21% to 25%.

Resistance was particularly high in children under five and in whites, two groups generally receiving more antibiotics than others, as well as in parts of the South.

In an editorial, Drs. Richard P. Wenzel and Michael B. Edmond of Virginia Commonwealth University said that the rise of drug resistance "should cause great concern and incite a commitment to act responsibly."

"The antibiotic era is barely 60 years old, yet the inappropriate use of these drugs threatens our ability to cope with infections," he said.

Bottom Line

Docs routinely prescribe antibiotics for common problems like the flu. They know the antibiotic is worthless against a virus. However, they do it for two reasons:

1. YOU expect some type of prescription. If your Doc. told you, "Go home, get rest and drink plenty of fluids," you would not think that was worth the cost of an office visit.
3. The doctor is covering his donkey. Due to the proliferation of meritless, expensive

malpractice suits he or she will prescribe many things just to cover all bases.

The next time your doctor wants to prescribe an antibiotic, ask if it is really necessary. Routine use can compromise your system's ability to use a life saving antibiotic should you be in a critical condition. The antibiotic age is rapidly coming to an end.

This letter is not under copyright. Plagiarize at will. The Alternative Medicine Research Foundation. <http://cat007.com> Δ

Call for Papers

Journal of Therapeutic Horticulture

You are invited to submit manuscripts to be considered for publication in the *Journal of Therapeutic Horticulture*. These may include case studies, program and services descriptions, research reports, therapeutic practice descriptions, and therapeutic design project descriptions, among others.

Author Guidelines

Submissions must be typed and double-spaced, and must also be sent on an IBM-compatible disk in Microsoft Word. Manuscripts must represent original material which has not been previously published or which is not under consideration for publication elsewhere.

In addition, authors are required to submit an abstract of the manuscript and a brief biography. For a blind review, please include a copy of the manuscript without the author's name.

The editors will consider quality, practicality, timeliness, and relevance to the area of therapeutic horticulture.

References should follow author-date format. The authority for style is the Publication Manual of the American Psychological Association, 4th ed., 1994.

Manuscripts must be accompanied by a cover letter indicating that the work is intended for publication. Graphics and photographic images are acceptable and encouraged if relevant. Authors whose

manuscripts are accepted for publication in the Journal will be required to submit a rights assignment form, which will be sent upon acceptance.

Send manuscript, cover letter of intent, abstract, brief biography, and IBM-compatible disk to: Elizabeth R. Messer, Managing Editor, Landscape Architecture Program, P.O. Box 6108, West Virginia University, Morgantown, WV 26506. (304) 293-2141 x4486. emesser@wvu.edu

Manuscripts accepted for publication will be revised and edited as necessary, and forwarded to contributors for final clearance before publication. Manuscripts not accepted for publication will be returned to the authors at the earliest opportunity. Δ

Notices of Permaculture events in North America will be accepted for publication free of charge up to the published issue deadline. Material must be submitted in hard copy form and may also be sent electronically.

Material accepted after deadline for publication will incur a charge of \$0.40 per word.

EVENTS

Permaculture Design Course Sonoma County, California

Dates: September 15-28
Location: Occidental, CA
Description: In this two-week intensive course in sustainable systems design, participants will learn how to design systems for sustainable, regenerative living. Hands-on topics include: permaculture principles, ponds, on-site water development, erosion control, forest farming, organic gardening, mulching, composting, plant guilds, pollination, alternative building materials, community economics, and much more! Upon completion participants receive a "Certificate of Permaculture Design." Some work-exchange opportunities are available for this course.

Instructors: Penny Livingston & Brock Dolman

Cost: \$1,050, residential, meals included.

Contact: Occidental Arts & Ecology
15290 Coleman Valley Rd.
Occidental, CA 95465
707-874-1557, fx/-1558
oaec@oaec.org

StrawBale & Eco-Construction Southern Ontario

Dates: March 16 to 18
Location: Orangeville, Ontario
Description: Off the Grid Workshop - the fundamentals of wind/water & solar energy, site and solar design, emergency power, efficient wood heating, Build a wind charger. Demonstrations. "How-to" plans. Cdn\$300.00

Dates: April 27 to 29
Description: Strawbale Construction Workshop - with Peter Mack & Chris Magwood (authors of *Strawbale Building*) Acquire the skills to build innovative, superinsulated strawbale structures. Hands-on workshop. Limit 20 people. Cdn\$325.00

Dates: August 22 to 26
Description: Strawbale Carpentry and Construction Workshop. Limit 20 people. Cdn\$625.

Dates: October 15 to 21
Description: Contractor's Strawbale Construction Workshop. Cost TBA.

Contact: Ecology Retreat Centre
RR #1, Orangeville, ON
L9W 2Y8 CANADA
519-941-4560
ecorc@ionsys.com

Permaculture Design Courses Western Pennsylvania

Dates: May 16-June 21
Location: Slippery Rock, PA
Description: Permaculture Design Course at The Macoskey Center, Slippery Rock University.

Dates: August 5 -19 2001
Location: Sandy Lake, PA
Description: Permaculture Design Course at Three Sisters Farm & Bioshelter

Contact: Darrell Frey
Three Sisters Permaculture
134 Orbitz Road
Sandy Lake PA 16145
724-376-2797
defrey@bioshelter.com

Climate Change Conference March 16, 17 & 18, 2001 Moncton, New Brunswick

Hosted by Atlantic Council for
International Cooperation

This is an advance notice of an important climate change conference to be held in Moncton, NB, by the Atlantic Council for International Cooperation (ACIC), a coalition of organizations working on international cooperation issues.

The conference will be held on March 16th and 17th, with an ACIC business meeting on the 18th.

Conference topics will include:

- The science of climate change;
- International issues;
- Atlantic - specific issues;
- The effects of climate change on development initiatives;
- Community economic development;
- Community resiliency;
- Individual action;
- Conserver society;
- North/South divide;
- Social justice;
- And many more.

More information will be released as the agenda is completed. Experts in these fields are being confirmed. Mark these dates down on your calendar (March 16, 17 & 18, 2001) and plan to meet in Moncton, NB!

Sarah Shima, Coordinator, Atlantic Council for International Cooperation, 125 South Knowlesville Road, Knowlesville, NB, Canada, E7L 1B1. Tel: (506)375-4795 Fax: (506)375-4221 E-mail: info@acic-caci.org

Sustainable Design, Building, Planning, Ecology & Community Vermont

Sustainable Design, Building, & Land Use

Dates: June 1-22

Description: Using the Institute for Social Ecology's 50-acre site as a laboratory, this program explores the history of agriculture, social ecology and design, organic agriculture, appropriate technology, alternative building, permaculture and ecological restoration.

Ecology and Community

Dates: June 23-July 21

Description: This month-long, intensive learning experience offers workshops and practice in the field of social ecology. Courses include: Understanding Capitalism: Global Perspectives, Ecological Movements and Social Activism, Feminism and Ecology, Radical Agriculture and Ecological Technology, Toward Directly Democratic Communities, and Public Education and Community Action.

Contact: 802-454-8493
<http://www.social-ecology.org>

Intensive Studio in Planning & Design

Dates: August 3-12

Description: The design process is a nuanced and creative one, enriched by reflection, thoughtful critique, and collaboration. In this program, a small group of returning students will work as a team on a single, major project, offering participants an opportunity for more advanced and concentrated learning. The focus will be on the further development of the designs for campus renovation and additions, particularly with respect to the ISE's needs for cooking and dining facilities, meeting spaces, and housing. The task will be to choose and evaluate building systems, develop construction drawings, and design the many details that are a part of a major project. This work may include engineering, estimating, and similar technical skills. A building project, perhaps a camping cabin to be planned during this intensive studio, and gardening activities will also be available. To enroll, students must have completed the Sustainable Design, Building, and Land Use program offered each summer by the ISE.

Earth Activist Training Sonoma County, California

Dates: May 4-18

Location: Western Sonoma Co., CA

Description: A permaculture design course for visionary activists: Learn the skills to transform a piece of land, a community, and our political and economic systems. The tools we need to envision and design a just, free, and sustainable culture are the same ones we need to challenge the vested interests that keep destructive systems in place.

Instructors: Starhawk and Penny Livingston-Stark

Cost: \$1200, scholarships are available.

Contact: Madrone
415-789-7674
vetiwitch@hotmail.com

Permaculture Teacher Training Northern California

Dates: May 19-25

Location: Garberville, CA

Description: Sponsored by the Island Mountain Institute for Sustainable Agriculture. Topics include: How adults learn; step-by-step planning of a course and teaching skills such as lecture preparation and presentation, group exercises, role playing, demonstrations and practicals, discussion sessions, using audio/visuals. Also covered: Marketing your teaching skills.

Instructors: Jude Hobbs & Tom Ward

Cost: Tuition \$300.00 (\$50.00 discount if registered by 4/29/01) On site camping with meals \$250.00.

Contact: Shemaia
220 Harmony Lane
Garberville, CA 95542
707-923-1324

5th Annual Permaculture Design Course Central Rocky Mountains

Dates: August 19-30

Location: Basalt, CO

Description: A full certificate course presented at our high-altitude demonstration site. This is one of the most mature forest gardens in North America and most of the food served at the course will come from our garden and greenhouses.

Cost: \$850
Contact: CRMPI
PO Box 631
Basalt, CO 81621
970-927-4158
jerome@crmpi.org

Village Living Residency Training in Permaculture Design Blue Ridge Mountain, NC

Dates: July 5-August 19

Location: Black Mountain, NC

Description: A six-week program including full permaculture design course certification. Additional workshops, hands-on project experience, mentoring, ecovillage immersion, and other opportunities.

Instructors: Peter Bane, Chuck Marsh, Patricia Allison, Keith Johnson, Andrew Goodheart Brown, Shawn Sudhangshu Swartz, and Earthaven Ecovillage members.

Cost: \$2000 includes tuition, materials, meals, and camping

Contact: Culture's Edge
1025 Camp Elliott Rd.
Black Mountain, NC 28711
828-669-3937
culturesedge@earthaven.org
www.earthaven.org

Fundamentals of Permaculture

Dates: July 6-14

Location: Black Mountain, NC

Description: Eight-day intensive introduction to principles and practices of permaculture in a community setting at Earthaven Ecovillage. First part of the certificate curriculum in permaculture design. Natural systems, the built environment, observation and design skills, cultivated ecosystems. How to see, think, and do the future...NOW.

Instructors: Peter Bane, Patricia Allison, Andrew Goodheart Brown, guests

Cost: \$600 includes tuition, materials, meals, and camping.

Village Design Practicum

Dates: August 10-18

Location: Black Mountain, NC

Description: Eight-day intensive practice in permaculture design for a developing ecovillage community: social design, governance, infrastructure, land use, water, waste & energy, presentations and costing; mapping & surveying. Presented by the Southeast's finest design team. Second part of the certificate curriculum in permaculture design. Prior training in Permaculture is a requirement.

Instructors: Chuck Marsh, Keith Johnson, Peter Bane, guests

Cost: \$600 includes tuition, materials, meals, and camping.

Fundamentals of Permaculture Western Michigan

Dates: June 15-23

Location: Kalamazoo, MI

Description: Intensive introduction to principles and practices of Permaculture Design. First half of the certificate curriculum presented with an emphasis on ecovillage living. Participants will assay the prospects for Manitou Arbor, an ecovillage community projected for 240 acres near Kalamazoo.

Instructors: Peter Bane & Keith Johnson

Cost: \$300 tuition and snacks for commuters; \$540 lodging, meals, and snacks (semi-private), \$580 lodging, meals & snacks, (private - places limited). Early registration encouraged. \$100 deposit required.

Contact: Sisters of St. Joseph
c/o Dr. Virginia Jones
Box 113,
Nazareth, MI 49074-0113
www.lueckdatasystems.com/~manarbey

Hands-on Garden Permaculture Short Mountain Sanctuary, TN

Dates: April 11-15

Location: Liberty, TN

Description: Practical training in how to work with water, soil, and plants. We will design and build water catchment, earthworks, greywater systems, and extend orchard and garden plantings at Short Mountain Sanctuary.

Instructors: Peter Bane, Keith Johnson
Stv Kendall, Jim Kocher-Hillmer

Cost: \$200; no one will be turned away for lack of funds.

Contact: Stv Kendall
Short Mountain Sanctuary
247 Sanctuary Ln.
Liberty, TN 37095
615-563-4397

Sustainable Living Training Buenos Aires, Argentina

Dates: May 7-21

Location: Navarro, Argentina

Description: Permaculture and sustainable community living skills taught at Gaia Ecovillage. Additional residency training is available.

Instructors: Gustavo Ramirez and members of the community.

Cost: US\$350

Contact: gaia@gaia.org.ar

Permaculture, Natural Building & Ecovillage Design Middle Tennessee

Permaculture Fundamentals

Dates: May 18-26

Description: The first half of the complete design certification course. Learn the low impact methodologies that are creating a holistic movement.

Instructors: Albert Bates, Patricia Allison, Sizwe Herring.

Cost: \$600 incl. meals & lodging

Natural Buildings

(Straw, Cob, Bag, Round Pole)

Dates: June 8-17

Description: Construct a "Nebraska Style" cabin, basic techniques of cob construction, and visit post and beam and other examples locally. Wattle and daub. Mud and stone. Turf and timber. Build with straw, cob, earthbags, wood and other natural materials.

Instructors: Sean Siple,

Howard Switzer, Albert Bates.

Cost: \$800 includes meals and lodging for 10 days, or \$325 for either weekend.

Permaculture Design Course

Dates: July 6-21

Description: The complete design certification course in 16 days. Learn everything about creating infinitely regenerative permaculture designs for farms, homes, villages, small planets.

Instructors: Morag Gamble and Evan Raymond of Sustainable Futures, Australia, with Albert Bates, Patricia Allison, Sizwe Herring.

Cost: \$1200 incl. meals & lodging

Permaculture Practicum

Dates: July 13-21

Description: The Permaculture Design Course admits PC Fundamentals graduates for the second half of the certification process. You must have taken the Fundamentals Course as a prerequisite.

Instructors: Morag Gamble and Evan Raymond of Sustainable Futures, Australia, with Albert Bates, Patricia Allison, Sizwe Herring.

Cost: \$600 incl. meals & lodging

Natural Buildings Immersion

Dates: August 2-12

Description: The 10-day Joe Kennedy intensive. Wattle and daub. Mud and stone. Turf and timber. Build with straw, cob, earthbags, wood and other natural materials. Architect and engineer Joe Kennedy has given this course in 12 countries. Assisting: Howard Switzer, Albert Bates.

Cost: \$800 incl. meals & lodging

Ecovillage Design

Dates: Oct 17-21

Description: Site selection, design for Ecovillages, consensus and conflict resolution, financial aspects, work issues, best practices. Live and work in an ecovillage for a week and get a sense of the issues.

Instructors: Greg Ramsey, Albert Bates and guests.

Cost: \$500 incl. meals & lodging

FOR ALL WORKSHOPS:

Contact: ecovillage@thefarm.org.
EcovillageTraining Center,
P.O. Box 90
Summertown TN, 38483.
931-964-4475, fx/-2200
<http://www.thefarm.org/etc/>

Advanced Training in Permaculture & Keyline Southern Oregon

Dates: August 10-20

Location: Williams, OR

Description: A ten-day intensive for basic design graduates to develop thorough assessment and planning skills. This course is geared towards individuals who desire to become more competent designers and those who wish to implement advanced Permaculture and Keyline concepts for long-term sustainable systems. Keyline systems, pond design and construction, surveying, mapping, watershed functions, stream restoration, fieldtrips.

Instructors: Tom Ward & Randy Carey

Cost: \$1,100 includes tuition, three homegrown meals a day, camping, course materials, and field trips. \$200 discount for registration before June 10. A non-refundable deposit of \$100 is required. Enrollment limited to 22.

Contact: Seven Seeds Farm
3220 East Fork Rd
Williams, OR 97544
541-846-9233
sevenseeds7@hotmail.com

Building a Rural Off-the-Grid Ecological Base Camp Northern California

Dates: June 22-28

Location: Mendocino Co., CA

Description: An advanced permaculture workshop where you will learn to install a water tank and solar pump, selectively harvest Douglas Fir trees in a way that enhances the forest, and build a camp kitchen, install solar showers, create a biological system for sewage and greywater. It is recommended that participants have taken an Introduction to Permaculture course or the Permaculture Design Course.

Instructors: Penny Livingston-Stark & James Stark

Cost: \$350

Contact: Permaculture Institute
of Northern California
PO Box 341
Point Reyes Station
CA 94956-0341
415-663-9090
pinc@svn.net

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REAL FOOD—FOR A CHANGE

by Wayne Roberts, Rod MacRae & Lori Stahlbrand

A witty book of dinner-table economics written by a trio of smart Canadians. Readers will find the links between food, cooking, health, jobs, energy, and the environment illuminating. Making the personal political, REAL FOOD offers an upbeat and comprehensive permaculture guide to design for household and community.
(1999) \$15.00, 243 pp. paper.

PERMACULTURE IN A NUTSHELL

by Patrick Whitefield

A back pocket gem, this book draws on the best examples in Britain and elsewhere to show how and why permaculture works. Excellent primer for introducing permaculture to friends.
2nd ed. (1997) \$9.00, 80 pp. paper. illus.

STRAWBALE BUILDING

How to Plan, Design, and Build with Straw

by Chris Magwood and Peter Mack, Two of Canada's leading strawbale builders have put together this clear and well-illustrated guide to building with bales. All you'll need to know about foundations, roofs, wall ties, plasters, waterproofing, and how to avoid problems.
(1998) \$25.00, 256 pp. paper. illus.

THE COBBER'S COMPANION

How to Build Your Own Earthen Home

by Michael G. Smith

A practical and clearly written guide to building with cob, or lumps of earth and straw; with charming illustrations and *joie de vivre* throughout. Covers soil composition, site work, materials, foundations, technique, sculpture, roofing, floors, finishes, tools.
2nd ed. (1998) \$22.00, 134 pp. paper. illus.

SEED TO SEED

Seed Saving Techniques for the Vegetable Gardener

by Suzanne Ashworth

The best single-volume guide to saving our vegetable heritage. Discusses techniques and references botanical classification, pollination, crossing and isolation, seed production, harvest, processing, and viability for more than 150 Common vegetables and herbs.
(1991) \$20.00, 222 pp. paper. illus.

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An excellent introduction not only to oaks, but to tree botany, evolutionary biology, ecology, and biogeography; plus useful insights into insects, fungi, and more. Clearly written, beautifully illustrated.
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The basic argument for permanent agriculture: how to feed and house yourself in any climate with least use of land, energy, and repetitive labor.
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by Robert A. de J. Hart

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2nd. ed. (1999) \$18.00, 256 pp. paper. illus.

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by Malcolm Margolin

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by Ken Fern

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edited by Michael Pilarski

A combination resource guide to organization and a fascinating collection of essays on all aspects of sustainable forestry. Pilarski's intellectual curiosity is immense. A treasure trove of material, indexed by books, periodicals, articles, and general subjects. (1994) \$27.00, 526 pp. paper. illus.

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A wacky romp through Mollison's life as an outlaw. Cartoon cutaways and bizarre sound effects seem no stranger than Bill loping along the street in front of Aussie suburban sleaze, guerrilla planting hazelnuts.

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(1993) \$10.00, 138 pp. paper. illus

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Strengthening Local Economics
for Security in an Unstable World

by Richard Douthewaite

The single best guide to local economic development we have found. Explains and documents new money systems, alternative energy, local trading networks, home-grown banking, cooperatives. Lays out a comprehensive scheme for wealth creation and conservation at the local level based on energy, food, and housing.

(1996) \$22.00, 386 pp. paper. illus.

www.permacultureactivist.net
pcactivist@mindspring.com

LETTERBOX

Use of an Old Cistern?

Dear Activists,

I spoke with you last week about your book offerings, books out-of-print (by Ruth Stout), and information on water catchments. Thanks for your help. I found two books by Ruth Stout at a used book store and a couple of your offerings in the Minneapolis library system. Unfortunately, I was unable to locate any books about water by Yeomans.

I was wondering if you knew of other specific information that I would find useful for my situation.

We moved out to my grandparents' old dairy farm. The barn has a "cistern" in the hay loft with piping connected to the dairy stalls and remnants of piping still connected to the gutters on the barn. We are expanding the garden directly south of the barn in hopes of catching that rain water, storing it in the cistern, and irrigating the adjacent crops (all with

the help of gravity). As far as the cistern goes, I think it's constructed of red cedar and looking at it from the inside, light definitely penetrates the spaces. We've received various advice as to "sealing" this catchment: a) the wood will expand when the water is in it and eventually fill the spaces on its own, naturally, b) caulk the spaces, c) line it with a plastic bag. I was wondering if you had any experience, advice, or information to send my way concerning this. This upcoming spring will be our first growing season here on the farm, and this "irrigation" system is our first priority.

Thanks,
Heidi Morlock
22285 Delaware Ave.
Belle Blaine, MN 56011

Editor: We have no direct experience with wooden cisterns. If readers have any leads or suggestions for Heidi, please reply either to her directly or to the magazine.

Back Issues of *The Permaculture Activist*

- I, 1 July '85 Permaculture In Oz
- I, 2 Nov. '85 Fruit & Nut Trees
- II, 1 Feb. '86 Garden Design
- II, 2 May '86 IPC 2 & PC Design Courses
- II, 3 Aug. '86 Int'l PC Conference Program
- II, 4 Nov. '86 Fukuoka; Keyline; Genetic Cons'vn; City Farms; Oceanic PC
- III, 1 Feb. '87 Networking; Natural Farming; D-Q Univ.; Children's PC
- III, 2 May '87 PC Restoration of Wild Lands; Design for Sacramento Farm
- III, 3 Aug. '87 Annual Planting Cycle
- III, 4 Nov. '87 Trees for Life
- IV, 1 Feb. '88 Marketing PC Products; Bamboo; Home Wastewater Treatment
- IV, 2 May '88 **Urban-Rural Links:** Economics & Community Development
- IV, 3 Aug. '88 Social Forestry; Gabions; Jap. Org. Ag.; Prodc/Cons. Coops
- IV, 4 Nov. '88 Multi-Story Tree Crops; Greening Dom. Repb; Runoff Gardens
- V, 1 Feb. '89 Permaculture: A Designer's Manual; Tree Bank; Water in PC
- V, 2 May '89 Plant Guilds; Roof Gardens; Small Livestock
- V, 3 Aug. '89 Rainforest Conservation in Ecuador; Gaia; Weed Gardens
- V, 4 Nov. '89 PC Def's; Water Conservation; Small Dams; Ponds; Keyline
- VI, 1 Feb. '90 Household Greywater Systems; Soil Imprinting
- VI, 2 May '90 **Insectary Plants;** more Greywater; Land Use for People
- VI, 3 Aug. '90 **Water:** Forests & Atmosphere; Catchment; Nepal; Pond Design
- VI, 4 Nov. '90 **Urban Permaculture:** Ecocity Conf, Soil Detox, Suburbs & PC
- #23† May '91 **Politics of Diversity;** Greenhouse Mkt Gdn; PC in Nepal
- #24 Oct. '91 **Creativity in Design:** Examples; **Index Issues #1-23;**
- #25 Dec. '91 **Design for Community:** CSAs, Restoring Forest; Garden Ecol.
- #26 May '92 **Soil:** Our Past, Our Future: Fertility, Worms, Cover Crops
- #27 Aug '92 **Integrating Pc:** Deconstructing Utopia; Grassroots Organizing; Garden Polyculture; Pattern Learning; Living Fences
- #28* Feb. '93 **Structures:** Com'n'y Dsgn; LETS; Industry; Strawbale/Timber-frame Bldgs.
- #29/30* July '93 **Networks:** Special Media Rvw; Rural Reconstr'n; Leaf Conc.; Com'n'y Food Initiatives; Pc in Palestine; Do-Nothing Ed'n; *Feng Shui*; Companion Gdng; Nature Spirits; Wilderness; Biogeog.; Network Theory; Pc Acad.
- 31* May '94 **Forest Gdng:** Energy & Pc; Mushrm Cultn; Robt. Hart's F.G., Spp for N. Cal.; Alders; Agroforestry in Belize, China; Honeylocust; N-fixers
- 32 April '95 **Animals & Aquaculture:** Rare Breeds; Animal Polyculture; Small-scale Cattle; Goat Dairy; Keyline; Ramial Woodchips; Feral Chickens; Bee Plants; Constructed Wetlands; Reed Bed Sewage Treatment
- 33 Dec. '95 **Cities & Their Regions:** Green Cities; Independent Regions; LA Eco-Village; MAGIC Gardens; CoHousing; City Markets; City Animals; Micro-Enterprise Lending; Suburban conversion; Rails-to-Trails

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Miscellaneous

Permaculture in Kentucky - Brooks Hill Farm (c/o D.B. Hill, 401 Redding Rd., #39, Lexington, KY 40517). 859-271-9499. dhill@ca.uky.edu Visitors, interns, pilgrims, potential partners welcome. -45a

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Help Wanted

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- #34 June '96 **Useful Plants:** Bamboo Polyculture; Medicinals; Pest Control; Root Crops; Oaks; R. Hart's For. Gdn; Russian Plants; Regl. Plants; Sources
- #35 Nov. '96 **Village Design:** Pattern Language; Consensus Democracy; Conflict; Historic & New Villages; Planning for Tribe; Earhaven, NC; Design for Catastrophe; Youth; Vill. Economics; EcoForestry; Natural Bldg.
- #36 Mar. '97 **Climate & Microclimate:** Climate Change; Microclimate Primer; Weather; Windbreaks; Low-Tech Sun Locator; Drylands; Cool Slopes; Subtropical Forest Gdn; Straw-Clay Bldg.; Round Beehive; Water Catch.
- #37† Sept. '97 **Tools & Appropriate Technology:** Dowsing; Workbikes; New Energy Seythes; Japanese Saws; Nursery; Ferrocement; Greywater; A-frame & Bunyip Levels; Ram Pump; Solar Toilet; Log Yoke; Cookstoves...
- #38† Feb. '98 **Economic Transformation:** The Speculative Economy; No Middle Class Pc?; Worker-Owned Coops; WWOOF; No Money!; Global Warm-What Profits?; Holistic Financial Planning; Land Use; Adopt-A-Hive
- #39† July '98 **Knowledge, Pattern & Design:** Pc: A Way of Seeing; Sand Dunes; Native Conservation.; Language, Worldview & Gender; Patterning as Process; Land-Use Planning; Teaching Pc; Vietnam; Holmgren on Pc
- #40† Dec. '98 **New Forestry:** Regl. Devlpmt.; Horselogging; Menominee Res'vn; Forest Investing; Restoration; Old Growth; Homestead Tenure; Forest Soils; Forest Farming; Woody Agric.; Rainforests; Windbreaks; Coppice
- #41* May. '99 **Natural Building:** Oregon Cob; Cordwood; Bamboo; Thatch; Ethies; High Winds; Origins of Conflict; Greenhouses; Ponds; Adobe; Road-Building; MicroHydro; Bldgs. That Live; Under \$20K Houses; Dreams
- #42† Dec. '99 **Self-Reliance & Community Cooperation:** Co-Intelligence & Self-Orgn.; Archetype Design; Sovereignty; Samoa; Mondragon; Natural Housing; Comm. Gdns.; Zone Zero; Solar Electric Tractor; Beekeeping
- #43† June '00 **Food & Fiber:** Food for Hunger; Ferments, Seasons Salads, Heirlooms, Self-Fertile Gardens, Revolution in Rice, Cold Climate Food Strategies, Edible Insects, Chilies, Food Origins, Garlic, Ethnobotany, Wild Food, Bamboo, Fencing, Fibers, Hemp, Silk, Mulch Beds, Chicken Forage
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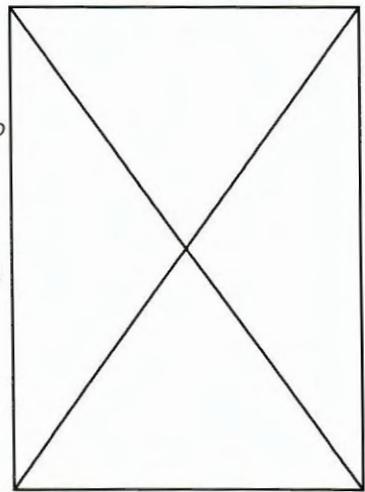
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CALENDAR

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robina@win.co.nz

March 23-24. Summertown, TN. Intro to Permaculture. Ecovillage Training Center, PO Box 90, Summertown, TN 38483. 931-964-4475, fx/-2200. ecovillage@thefarm.org

<http://www.thefarm.org/etc/>

April 11-15. Liberty, TN. Hands-On Permaculture Garden Practicum. Stv Kendall, Short Mountain Sanctuary, 247 Sanctuary Ln., Liberty, TN 37095. 615-563-4397.

April 26 - May 2. Shawnigan Lake, BC, CANADA. Natural Builder's Colloquium. Elke, 250-338-4660. info@cobworks.com

May 4-18. Western Sonoma County, CA. Earth Activist Training. Madrone Productions, PO Box 410187, San Francisco, CA 94141-0187. 415-789-7674

email: Kimjack@sirius.com

May 5-12. Santa Cruz, CA. Cob Building Workshop. Debi Baker, 145 Vick Drive, Santa Cruz, CA 95060. 831-469-4736.

debibaker@yahoo.com

May 7-21. Navarro, ARGENTINA. Learning Sustainable Life Principles. Gaia Ecovillage, gaia@gaia.org.ar

May 16-June 1. Slippery Rock, PA. Permaculture Design Course. Darrell Frey, Three Sisters Permaculture, 134 Obitz Road, Sandy Lake, PA 16145 724-376-2797

defrey@bioshelter.com

May 18-26. Summertown, TN.

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Fundamentals of Permaculture. Ecovillage Training Center, 931-964-4475, fx/-2200.

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May 19-25. Garberville, CA. Permaculture Teachers Training. Shemaia, 220 Harmony Ln, Garberville, CA 95542. 707-923-1324.

June 1-22. Plainfield, VT. Sustainable Design, Building & Land Use. Institute for Social Ecology, 802-454-8493. <http://www.social-ecology.org>

June 15-23. Fundamentals of Permaculture. Kalamazoo, MI. Sisters of St. Joseph, c/o Dr. Virginia Jones, Box 113, Nazareth, MI 49074-0113

www.lueckdatasystems.com/~manarbev

June 22-28. Mendocino, CA. Building an Off-Grid Base Camp. Permaculture Institute of Northern California, PO Box 341, Pt. Reyes Stn., CA 94956. 415-663-9090. pinc@svn.net

June 23-July 21. Plainfield, VT. Ecology & Community. Institute for Social Ecology, 802-454-8493.

June 29-July 2. Black Mountain, NC. Women's Permaculture Intro. Culture's Edge, 1025. Camp Elliott Rd., Black Mountain, NC 28711. 828-669-3937.

culturesedge@earthaven.org
www.earthaven.org

July 6-14. Black Mountain, NC. Permaculture Fundamentals. Culture's Edge, 828-669-3937.

culturesedge@earthaven.org

July 6-August 18. Black Mountain, NC. Village Living Residency. Culture's Edge, 828-669-3937. culturesedge@earthaven.org

July 7-12. Vrable, SLOVAKIA. 6th European Permaculture Convergence. Permaculture Institute of Europe, Istedgade 79, 1650 København V. DENMARK. +45-3331-5694, fx+45-3325-7179. vestergror@dk-online.dk www.Permaculture-Europe.org

July 12-20. Orangeville, ON, CANADA. Permaculture Fundamentals Course.

Ecology Retreat Centre, RR #1, Orangeville, ON L9W 2Y8 Canada. 519-941-4560, ecorc@ionsys.com

July 13-21. Summertown, TN. Permaculture Practicum. Ecovillage Training Center, 931-964-4475. fx/-2200. ecovillage@thefarm.org

August 2-5. Celso, NC. 8th Annual Permaculture Summer Gathering. Culture's Edge, 828-669-3937.

culturesedge@earthaven.org

August 3-12. Plainfield, VT. Intensive Studio in Planning and Design. Institute for Social Ecology, 802-454-8493.

August 5-19. Sandy Lake, PA. Permaculture Design Course. Darrell Frey, Three Sisters Permaculture, 724-376-2797.

defrey@bioshelter.com

August 10-18. Black Mountain, NC. Village Design Practicum. Culture's Edge, 828-669-3937. culturesedge@earthaven.org

August 10-20. Williams, OR. Advanced Permaculture and Keyline Training. Seven Seeds Farm, 3220 East Fork Rd., Williams, OR 97544. (541) 846-9233.

sevenseeds7@hotmail.com

August 19-30. Basalt, CO. 15th Annual Permaculture Design Course. CRMPI, PO Box 631, Basalt, CO 81621. 970-927-4158. jerome@crmpi.org www.crmipi.org

September 15-28. Occidental, CA. Permaculture Design Course. Occidental Arts & Ecology Ctr., 707-874-1557, fx/-1558.

oaec@oaec.org

October 17-21. Summertown, TN. Ecovillage Design. Ecovillage Training Center, 931-964-4475, fx/-2200.

ecovillage@thefarm.org

November 11-12. Point Reyes Station, CA. Pattern and Design. PINC, 415-663-9090.

pinc@svn.net

November 12-18. Point Reyes Station, CA. Starting a Permaculture Consultancy. PINC 415-663-9090. pinc@svn.net

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