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PROJECT ESTÂNCIA JATOBÁ

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The greatest beauty is organic wholeness ...
Love that, not man apart from that
-California poet Robinson Jeffers

Preface

Inasmuch as the meaning of the phrase "the person-centered approach" has reverted to its original use as a philosophy for non-directive counseling, the following article may need a word of justification for inclusion in a journal largely devoted to client-centered therapy.

In the 1970's distillations of the method drew attention as being applicable to wider social situations - education, encounter groups, large group learning experiences. Vestiges of these activities in various stages of devolpment and decadence remain.

My intention in offering this report is not to criticize any part of the spectrum of perception. Nor is it to lament the harshness of history, the good old times, the missed opportunities. It is to report on a project that I feel is consistent - if only through my own peculiar story - to Carl Rogers's work.

I would like to say how I think it relates. First of all, Rogers continually changed - his personality and his way of working - as he faced new challenges throughout his life. He did not change radically. He maintained an intention. Nevertheless, he did change.

Carl first believed that the way to help people achieve healthy personalities (children specifically) was to provide a healthful and creative environment (like foster homes). This was his notion of "giving conditions." At this time, he rejected psychotherapy - the psychotherapy of that day, at least. Later, from his own personal experiences, he came to realize that psychotherapy could be more helpful. He devoted his efforts to this task. He developed a practical and effective method. Later, he perceived the importance of social ties, relationships between people in general, groups. His attention turned to encounter groups. Then to large groups. To conflict resolution on a global scale. He was still "giving conditions" but in a manner appropriate to the needs of the day.

To connect the thoughts I wish to express I must say something about my own development. I hope my friends will forgive the following self-conscious exposition.

For some fifteen years I was one of Carl Rogers's close friends, a neighbor, and a collaborator on various professional projects. He was never my teacher. Nevertheless, I learned much from him.

I learned to cultivate and prize a spirit of discovery. This involved not being bound by conventional thinking. Not even current assumptions about "the person-centered approach." It involved following my own impulses: applying innovative methods, entering into unexplored regions of science and psychology, doing what was necessary, not what was convenient. At times this meant going against popular trends, even going against Rogers's own beliefs. Mostly, it meant going against my own unexamined assumptions.

I learned not to be embarrassed by verifying hypotheses through scientific research, through direct experience, or informed observation. I learned to be tolerant of uncertainty and ambiguity, to avoid racing to simplifications. I learned that were I true to my work, I would be changed by the experience. Responding to necessity, led to altering the direction (though not often the intent) of my work.

I have completed moderately successful fifteen-twenty year careers in both engineering and psychology. As an engineer, I designed instruments for testing components of American spacecraft. A first-hand knowledge of mechanics, hydraulics, electronics and thermodynamics was among the requirements for this endeavor. As a psychologist, I have been a professor at a California State University. At the Center for Studies of the Person in La Jolla, I helped Rogers develop a psychology of large groups. In Brazil, for ten years I was a professor in the graduate programs of two respectable universities. These activities have had as their goal the enhancement of human potential and the attempt to make the world a better place.

Although it may seem otherwise, the transition from one career to another was smooth and continuous. Overlapping, at first. Nevertheless, I mistakenly considered each occupation an end in itself. Instead, now I can see that each was a preparation for my job of the last twenty years: along with my wife, the Brazilian artist Lucila Machado Assumpção, we are preserving the biodiversity of an ecosystem (our farm is a fragment of the great Brazilian Atlantic rain forest), protecting the watershed, cultivating a system of sustainable food production, keeping rural values alive and learning to live well in a place.

Notwithstanding the higher levels of success and impact that Rogers achieved, I believe my efforts have been true to the spirit that was instilled in me by our association. At some point the speculation must be put aside and one's sleeves rolled up for action. The marketing programs must be silenced until results have justified their claims. Making the world a better place means beginning where you are.

This project has three interrelated intentions. They are:

1. ***Conservation:*** Preserving and restoring the natural landscape for the protection of biodiversity, the health of the planet, and for esthetic nourishment and delight. Explicitly,

conserving native forests, wetlands, water, energy, soil fertility, air quality, fauna and human potential.

2. ***Alimentation:*** Creating sustainable food systems to serve household and local needs for healthy nutrition. Supporting local economy, rural values, fostering social justice and neighborliness.

3. ***Education:*** Conducting scientific research, learning by doing, valuing practical knowledge, registering and disseminating knowledge. Demonstrating a robust watershed with an infrastructure based on the use of solar energy and the elimination of waste.

Human beings are not apart from nature. The land, its inhabitants and what occurs on it are considered systemically, as an integrated ecosystem. Each of the above emphases includes the intention to promote human welfare within organic wellness. By showing a decent protected forest, a decent sustainable farming system, decent energy efficient homes and offices we aim at enhancing both the environment and human potentialities. This collaboration with nature would amount to nothing less than learning how to live well in a place.

The Historical and Global Context

The wheel, whose traction drives modern farming, was invented six thousand years ago in Mesopotamia. Inhabitants of that place also devised writing, anticipating this page. Their mathematics takes the measure of our lifetime. As then, hours and minutes are parceled into 60's. In spite of the utility and permanence of their ideas, little grows on their land today.

The Hebrew prophet Moses led the Israelites into a "land of brooks of water, of fountains and springs, flowing forth in valleys and hills; a land of wheat and barley, and vines and fig trees and pomegranates, a land of olive trees and honey." Today the sun scorches a barren garden. Wind sweeps over exposed bedrock. Useable soil clings only to narrow valleys.

Out of 7th Century BC Greek agriculture, practiced by autonomous farmers on private homesteads, emerged communities of equals. Citizens were independent, practical, bold and frugal. Retaining a healthy skepticism, they were also capable of feeling shame and compassion. That is, they were reliable and fair. They took responsibility for their actions and circumstances. They defended their lands on the battlefield, their opinions in the assembly. Self-reliant, honest, industrious, they formed constitutional, locally represented government. Common sense adaptations to the realities of agrarian life, not monastic philosophic contemplation, led to the early values and political structures of western civilization.

A few hundred years later, Plato lamented that the mountains of Attica were able to keep "nothing but bees, but which were clothed, not so very long ago, with timber suitable for roofing the very large buildings." Rainfall that had previously been retained was "allowed to flow over the denuded surface to the sea."

Humans, seeking to better their lot and even with the best of intentions, undercut the values upon which living well requires. To this day they defile their homelands. In the last one hundred years, a thousand years worth of American topsoil has blown and washed away.

Worldwide, energy spent in the 20th Century was ten times more than in the preceding 1000 years. Carbon dioxide emissions in the atmosphere have increased 13 times. Today, more than half of those who live in cities are said to breathe unhealthy amounts of sulfur dioxide, which has also damaged 80% of European forests alone.

Along with increased soil loss, energy waste and air pollution, biodiversity is squandered, rain forests cut and burned, water spoiled and spent. Human relations are being degraded, social injustice is spreading and just plain ugliness abounds.

In spite of the bleak picture, some stemming of decadence has occurred. In fact, there have always been touchstones of good sense in the cascade of negligence. Even as urban and global demands were destroying the pre-Christian Greek environment, individual Maya farmers in the Yucatan Peninsula were utilizing ecologically sound principles in growing their crops. These practices continued for a thousand years. Local solutions with global vision have played and will continue to play an important role. This project is meant to discover, test, and demonstrate intelligent conservation, sustainable agriculture, sensible building and clean energy practices.

What is Estancia Jatoba?

It is a place, a watershed. Forestry engineers call it a third-order hydrologic basin. A little over 200 acres of gentle hills slope from a ridge down to the edge of the Camanducaia River. This is a tributary of the Jaguarí. It empties into the Piracicaba Basin, the principle watershed of the State of São Paulo.

This mini-basin is ringed by some twenty natural springs. A lake, about three acres in area during the rainy season, is just below the ridge. Wooded valleys on either side contribute nascent waters and runoff into a central brook. It flows slowly but steadily to a couple of acres of riverine marshland before seeping into the river.

By the first half of the twentieth century, the "productive" land here had been cleared and planted in coffee. Later citrus took its turn. A thousand lemon trees and another thousand of sweet oranges remain. From time to time, beans, rice, corn, manioc were planted. There are vestiges of coconut, peach, mango, guava, persimmon, star fruit, avocado, banana, *abiu*, mulberry, *jaboticaba*, passion-fruit, pecan and some fruits that interest only birds. A small herd of cattle grazes, until a systemic analysis of the watershed leads to a holistic plan for soil use. The pastures contain a large variety of grasses, but predominantly *Brachiaria decumbens*, *Panicum maximum* and *Pennisetum purpureum*.

At the present time, about 65 acres of the property are forest, recovering forest and wetlands; 15 acres are orchards, the rest is grazing range.

Where is Estancia Jatoba?

It is just inside the Tropic of Capricorn parallel (this manuscript is being composed at 22 degrees 39.615 minutes South; 47 degrees 2.323 minutes West; at 600 meters elevation). The land is one of the remaining fragments of the near extinct *Floresta Atlântica Brasileira*,

the great Brazilian coastal rain forest. Less than 5% of that original ecosystem (said to be the richest on the planet, in terms of endemic species) is said to be intact.

On the north side of the property is a cooperative of enterprising Dutch immigrants. The bulk of once small, diversified, family farms has been converted to high-tech greenhouses. Refrigerated Jumbo jets await their floral cargo on the tarmac of a nearby international airport. Before trading opens, a delivery of orchids and other exotic tropical plants will be made to the Amsterdam Flower Market. A few hours later, patrons will sniff Brazilian flowers at their tables in Parisian restaurants.

Economic returns and future prospects for this lucrative international commerce are excellent. The various financial ventures surrounding the industry have also prospered. Likewise, the community has benefited in improved schools, more adequate social services and generally better modern living conditions all around.

A similar story may be told for the region to the south. The installation of light industry is also strengthening the local economy. Computer, portable telephone, and pharmaceutical factories are spreading out along the interstate highway in the style of Silicon Valley. On the east and west of the property, the desire of the wealthy for gated-condominiums with mansions for weekend recreation and that of a growing middle-class for low-cost housing have provoked a respectable boom in the construction industry. All around, economic progress is strong and seems guaranteed.

These economic and social accomplishments been gained, in part, at the expense of nature. The prognosis for the environment's regional ills is not encouraging. It has been estimated that some 500 acres have been roofed over to grow the lucrative potted plants and decorative flowers. Thus, a significant quantity of rainwater that was once absorbed by the soil now pours from the roofs of hothouses becoming an agent of erosion and a transporter of contamination. Likewise, factories, homes and asphalt roads also shield the soil from water and sunshine and generate pollution. Copious irrigation and urban demands have also contributed to a scarcity of ground water and depletion of the aquifer. To make matters worse, the principle rivers in the basin are polluted with industrial waste, agricultural poisons and untreated human sewage.

Forested land is increasingly cut up by highways and streets and high-tension electrical lines in order to satisfy city values. (In the Amazon, it has been reported that 75% of deforestation occurs within a 50 kilometer swath accompanying the major highways.) Clearing for agriculture and building continues. Many riparian forests have been destroyed, leaving waterways inadequately protected. Every blade of vegetation is shaved from the embankments of rural roads. Although the world has been made safe for tulips, cell phones and delivery trucks, it is increasingly unsafe for itself. A question of concern to this project is, "How can sensible economic necessities be met while preserving vital natural resources?"

Many ecological problems (such as domestic waste disposal and city sewage treatment) require public works in order to resolve them. Nevertheless, there is much that individuals can do. Besides putting one's own house in order – conserving water and electricity, recycling domestic waste and maintaining adequate vegative cover - there is an excellent opportunity to understand (and perhaps improve) the dynamics of cultural and social

changes which are linked to ecological issues. Such learning could conceivably be transferred to other regions that will encounter similar problems in the future.

One example: The exodus of populations from rural areas swelling mega-cities seems to have slowed or stopped. Agricultural employment continues to drop, but service related activities are picking up the slack in employment. Thus, with different occupations, people appear to be staying in the countryside. Also, disillusioned big-city populations are leaking into rural areas. Depleted of fertile land and agricultural know-how, submitted to the exigencies of newcomers conditioned to be insensitive to their surroundings, these areas may not sustain a quality of life much better than the former city labyrinths. On the other hand, were more known about adaptation to such migrations, these transitions might be accomplished without taking such a heavy toll on the environment or on rural lifestyles and values.

Philosophy and Choices

A thing is right when it tends
to preserve the integrity, stability and
beauty of the biotic community.
-North American naturalist Aldo Leopold

The Project Estância Jatobá, conceived of as a not-for-profit education and research activity, is devoted to the promotion and study of human well-being, nature conservation and sustainable food systems. It is an individual citizen effort to understand and foster *living well in a place.*

The project features learning through direct experience, using local empirical knowledge as well as scientific research to understand and improve self-knowing, human relations, nature conservation, sustainable cultivation, waste management and efficient and clean energy use.

In addition to the above, it includes refining esthetic sensibilities through artistic expression and constructive imagination. Since the project approaches the subject of place and its inhabitants systemically, it intends to foster what the American prairie researcher Wes Jackson has called, "becoming native to this place." It aims to be home, farm, campus, laboratory, museum, and nature sanctuary.

Except for respect for individual spirituality, the project follows no organized religious orientation. Beyond a sensible concern and promotion of healthy human relationships and a just society, no particular doctrine of "community" is favored. A desire for a natural reserve integrated with an ecologically sound sustainable food and agriculture system that is socially responsible and economically efficient is sufficient intention.

Beauty, artistic and cultural endeavors that provide esthetic nourishment as well as clarify the human role in nature are an integral element. Special attention is given to how this place produces nutrients that include not only food but also knowledge, and hopeful enthusiasm. How "wellness" is related to this ecosystem is being studied. Efforts are being made to eliminate waste and pollution, use solar energy for efficiency and to reduce greenhouse gases, preserve groundwater, conserve soils, manage renewable resources for the

long run, safeguard human health, reverse the depletion of forests and wetlands and increase carbon storage.

The German savant J.W. von Goethe's reported advice is being trusted. "Whatever you can do, or dream you can, begin it. Boldness has genius, power, and magic in it."

Conservation of Nature: Preservation & Restoration

Water is a living thing.
Its form should be tranquil and deep,
it should be expansive, should be circling around,
should have body; it should froth and splash and shoot;
it should be alive with fresh springs,
should have volume to reach a great distance;
it should leap over waterfalls from the skies,
should crash and hit the land below;
it should be soft on a misty day and
resplendent on a sunny morning.
These are the live movements of water.
-Chinese philosopher Kuo Hsi (c. 1020-1090)

Preservation

Although the forest here is not large by Brazilian standards, it is important in a "chain of islands" that links the region's fragile biodiversity. Since the land here borders a river, a home and lifeline for wildlife is provided. Since a forest cannot be replaced by merely planting trees, it is vital to preserve its integrity. Just as it is important to protect its biodiversity, it is important to protect and enhance the forest, for its nature services, for human understanding, and delight.

Legislative steps have been taken to assure that the natural springs, forests and wetlands here will be protected by law. The property has received official approval from the Brazilian government (IBAMA: the Brazilian Environmental Institute) as an ecological sanctuary (RPPN: a perpetual private reserve to protect nature). Also, a plan for re-introducing wild animals, recovered from illegal poachers, into their native habitats is being studied.

Restoration

The project does not expect to "develop nature." It does not even intend to "conserve" nature, in the strict sense. Basically, our emphasis is on *not impeding nature's own self-conservation*, but fostering its natural growth and rejuvenating tendencies. The emphasis, as Aldo Leopold has noted, is to *perceive* the land's capacity for self-renewal and to follow that.

Already we have enjoyed our greatest success with this aspect of restoration. For close to twenty years we have protected large areas of native reserve from exploitation, invasion or destruction. From aerial photos over this period, it may be estimated that the forests over the entire property have increased some 40% in area.

Dramatic recuperation has occurred in two areas that had been aggressively deforested for agriculture before our caretaking began. On the south slope of the principle upper canyon, natural seed dispersal of a variety of species is having success in reforesting a large area. At the edge of the wetland, a pasture has thus been recovered. A regionally native pioneer tree (*Croton urucurana*) has spread over a former pasture. It covers an area of about one-and-one-half acres that lie between forest and marsh.

When dealing with natural systems (human consciousness included), how much should one "let be" and how much should one "intervene"? At the moment, increasing perception and knowledge is the favored "intervention." It is effective up to its limits and eliminates the risks of meddling. The first two examples of restoration mentioned above illustrate this approach.

Also, some actions are being taken. In such cases, it does not hurt to continually explore motives: "What is being preserved and for what?" We are proceeding thusly with a restoration project to plant native seedlings to join separated wooded sections. The fallow is due to deforestation in the past. Also, trees are being planted around freshwater springs to rejuvenate and guarantee their healthy flow. Native Brazilian species are being used for reforestation. Not merely species native to Brazil, but those specifically native to this region. In his *Oeconomicus*, written in the 4th Century BC, the Greek historian Xenophon explained the reason. He advised, "One is not likely to obtain a better yield from the land by planting trees and vines and sowing grain of the type he wishes, rather than those crops which the land itself prefers to bring forth and support."

Wetlands

A small pond near the ridge of the watershed is being recovered, having been drained for pasture in the past. Likewise, a two or three acre riverine marsh at the base of the basin is being rejuvenated. Already, an increase in aquatic life has been witnessed. Bird species that favor such environments have appeared in addition to the return of some more familiar varieties, which have not been observed for several years.

Infrastructure

A goal of the project is the construction of new buildings so that they enjoy prevailing winds, natural ventilation, sun and shadow for the most efficient thermodynamic exchange. Warm in winter. Cool in summer.

Retaining and recycling water is an important component of the plan. In addition to capturing rainwater from roofs in cisterns, used domestic water from sinks and showers will be recycled for use in toilet discharges. "Waste water" leaving the dwellings is being sterilized and used for irrigation. The use of plastic, paper, glass and aluminum containers has

been drastically minimized. Whatever is used is delivered, separated, to recycling centers. Organic materials are utilized in composts and integrated with farm production.

The use of sunlight (directly or indirectly) to provide electrical power for the needs of houses, laboratories, garages and workshops is being planned. The ideal would be energy generated by solar panels. Although, wind-generated electricity will also be investigated for viability. Thus, water will be heated directly with solar panels using convection. Electricity will be generated by photovoltaic cells, stored in conventional batteries and distributed through an inverter where alternating electric current is needed.

Small vehicles used on the property will be solar powered. Tractor engines will be converted to run on vegetable oil.

Alimentation: Sustainable Food Production

Mother earth never attempts to farm without live stock;
she always raises mixed crops;
great pains are taken to preserve the soil and to prevent erosion;
the mixed vegetable and animal wastes are converted into humus;
there is no waste;
the processes of growth and the processes of decay balance one another; ample provision is made to maintain large reserves of fertility;
the greatest care is taken to store the rainfall;
both plants and animals are left to protect themselves against disease.
-English scientist and organic farmer Sir Albert Howard

A global evaluation of the property is underway to understand the various natural relations of living things in this place. Feasible projects for creating and maintaining a sustainable food system are also underway.

What is sustainable? This question will be part of an ongoing debate that will continually shape the agriculture. What are the social consequences of the project? The moral consequences? These and other questions must also be addressed.

As a beginning, the American poet and naturalist Henry Thoreau's consideration will be adopted. That is, an activity would be "sustainable," if its cost was worth the amount of "life which is required to be exchanged for it, immediately and in the long run."

The American agroecologist Stephen Gliessman has given a practical definition that means, in part, that food production should "have minimal negative effects on the environment and release no toxic or damaging substances into the atmosphere, surface water, or ground water; preserve and rebuild soil fertility, prevent soil erosion, and maintain the soil's ecological health." Also sustainable implies the use of "water in a way that allows aquifers to be recharged and the water needs of the environment and people be satisfied." In addition to soil care, it implies maintaining crop diversity, using natural pest control, facilitating local economy, fostering good relations with neighbors, in general, preserving the health of the land and those living on it.

Pollution of air, soil and water from agriculture practice has already been eliminated. No pesticides, herbicides, nor chemical fertilizers are used on the property. Treatment of

existing orchards consists of what is currently considered "organic." The management goal is to fortify the fertility of the soil. Natural wind barriers are utilized. The incorporation of nitrogen-fixing legumes cut and incorporated, in place, as well as bio-fertilizer composts are employed. Two varieties of oranges, limes, and other fruits have been certified for sale as "natural" or "organic" products by one of the country's leading licensing agencies.

An experiment with an organic integrated system for chicken and egg production has begun. Also, cattle have been raised organically on the property for some time.

A workshop and greenhouse for maintaining a seed bank, cultivating seedlings, is an important center of activity. Not merely germoplasm collections will be maintained. Selected species will be kept as living representatives so that the process of maintaining and creating genetic diversity can take place in this ambience. The practical aspects of maintaining diversity are especially important as more and more food is produced by fewer and fewer species.

There are estimated to be some 75000 edible plants that could be utilized for human consumption. To date, only 3000 have been explored. One-hundred and fifty have been cultivated on a large scale. Twenty of these produce 90% of food currently consumed. Wheat, rice, corn and barley account for half of the world's grain production. Seventy-percent of potatoes one can buy in the supermarket come from only four varieties. Ninety-percent of chicken eggs in the United States are produced by white leghorn hens. This situation prompted Stephen Gliessman to remark, "We are coming very close to putting only one egg in all our baskets."

In planting vegetables, nuts, flowers and mixed orchards special attention is being given to facilitating the natural symbioses between plants so as to optimize land use and minimize production lost to pests. Something that worked somewhere else will not be adopted without proper evaluation for this place, at this time, under existing conditions. In every case, "Everything in its right place" guides experiments.

Education

The essence of education is to inculcate
duty and reverence. Duty arises from our
potential control over the course of events.
The foundation of reverence is this perception,
that the present holds within itself the complete
sum of existence, backwards and forwards,
the amplitude of time, which is eternity.
-English philosopher and mathematician Alfred North Whitehead

An educative goal of the project is to facilitate broad thinking, perceiving patterns, wholes, exercising imagination for living as whole persons. Aldo Leopold believed that to promote perception was part of environmental education, the only truly creative part of "ecological tourism," in his opinion. "The outstanding characteristic of perception is that it entails no consumption and no dilution of resource – only increasing information and knowledge, enlarging consciousness."

Perception, he added, is not purchased with dollars or learned degrees. The British philosopher and mathematician Alfred North Whitehead went further, asserting that the secondhandedness of the learned world is the secret of its mediocrity. The intention of this project is that perception would be provoked by direct firsthand experience, be enhanced by self-reflection, and complemented by research. It would be enlarged by different angles presented by artistic expression to further reveal what is hidden.

In summary, as J.W. von Goethe has observed, the act of knowing the natural world is not merely a subjective activity of the mind. In a real way, it is *an evolutionary development of the phenomenon itself*, as it becomes ampler, more refined.

Place is political

Knowledge of a place –
where you are and where you come from –
is intertwined with knowledge of who you are.
Landscape, in other words, shapes mindscape.
-American professor of environmental studies David Orr

In pre-Christian Greece, place was intimately connected to one's essence. *Ousia* the Greek word for "landed property," came to mean "being." People are shaped by their niche. Place is political. It shapes perspectives, policies. And what shaping is occurring with respect to the environment?

In São Paulo, university walls are scribbled with graffiti. Buildings, even artifacts, are defaced. Infrastructures are crumbling from neglect. Gardens are dying and overgrown with weeds. They serve as depositories for empty plastic cups, soft-drink cans, candy wrappers, cigarette butts and teachers' reading lists. Faucets and toilets leak. Equipment is inoperable. The lack of a solid environmental studies curriculum that begins with the university ecosystem itself supports the hypothesis that indifference to surroundings is actually (indirectly, but nevertheless effectively) being taught.

The lesson is not merely that the environment is irrelevant. The message implies, by example, that surroundings are to be disrespected. What does this imply? For one thing, that feelings are not important. One should ignore the senses. Don't see liter, don't hear noise, don't smell the products of pollution. Don't witness crime. Don't cultivate esthetic sensibility. Abstraction and second-hand ideas that are bantered about in seminars have taken the place of exercising common sense.

It is hardly surprising that many of the people responsible for the worst destruction of the environment were taught in such surroundings – university graduates in economics, banking, law, engineering, architecture, technocrats of all kinds. Without such contempt for their own environment could they have brought about such ill-fated projects of "progress," wasteful condominiums, tasteless housing projects, gaudy shopping malls, polluting factories, poorly designed highways, unsustainable energy schemes?

What does the educational institute teach about social justice and sustainable food systems? Often employees are poorly paid, poorly trained, badly supervised, and sullen. Sullenness and insensitivity are the rule of behavior from front-office authorities to the

janitors. Local economy is not respected. Food grown nearby is passed over for that provided by distant agribusiness distribution networks. The institution is often more a profit-oriented industrial plant than a temple of knowledge.

In the project being considered here ecology is not a "course." It is part of the foundation of intelligent living in the modern world. In so saying, the educative goals of this project are not different from those laid down by the Brazilian Ministry of the Environment which encourages "educational experiences that facilitate an integrated perception of the environment, making possible more rational action and capacity to respond to social necessities."

Thinking is conduct

Thinking is a social act, with moral consequences. Human beings are causing destruction of the environment. Humans can also facilitate the repair and elimination of this damage. Part of an ecological system is the perception of those who conduct themselves in its respect. Not only the biological sphere may be studied. The psychology of changing perceptions about it may also be of interest. As, doubtless, is the phenomenon known as "social diffusion:" people doing what others around them do. (Most information campaigns are said to have limited effect on changing behaviors with regard to the environment. What is significant is following one's neighbors. If one uses solar power, another is more likely to do so.) In this project we are trying out on ourselves what, if successful, we may suggest to others.

The promotion of human welfare as it relates to nature and cooperative ventures is also a goal. There are also topics in economics for study. Efficient, non-polluting energy sources, clean water, recycled waste may make good fiscal sense when more than superficial cash profits are considered. Not only in savings but also in employment. For example, the World Watch Institute has issued a report predicting dramatic increases in employment in the solar energy field. In the next twenty years, employment is expected to reach 1.7 million.

Investments in ecosystems may have direct payoffs to communities. Just some of the "services" that ecosystems provide are: Air and water purification, flood and drought mitigation, carbon dioxide storage, waste runoff detoxification and decomposition, soil renewal and soil fertility generation, pollination of crops and natural vegetation, control of most agriculture pests, seed dispersal and nutrient translocation, biodiversity maintenance (from which humanity has derived vital agricultural, medicinal and industrial products), protection from ultraviolet radiation, partial stabilization of climate, moderation of temperature extremes, wind control, support of diverse animal and human cultures, providers of esthetic beauty and psychological well-being.

New York State has reportedly invested one billion dollars in conserving the forest of the Catskills. Springs which provide water to the state's population centers originate in these mountains. By guaranteeing florestal protection for them, the state expects to save six billion dollars in downstream water treatment facilities.

The dynamics of human groups, social equality, ethics and morality are further subjects that must be confronted. For example, the loss of cultural diversity, agrarian values

and rural life as such is a concern of many. This preoccupation may be traced as far back as a theatre scene in the 5th Century BC. Aristophanes causes a farmer, cooped up in Athens, to say, "Loving peace, hating the town, desiring my country village which never ever cried out 'buy charcoal' or 'buy vinegar' or 'buy oil;' it knew not at all 'buy' but instead produced everything itself."

In fact, the preservation of some rural values may be the most important part of developing a sustainable food system. There is some chance that petroleum will dry up. Alternate fuels and fertilizers will then have to be found. Also, fertile soil and irrigation water could be depleted. These developments will likely increase food prices dramatically, since prices have been kept low by exploiting the natural resources mentioned. Even if corporate agriculture is able to feed the world, the farmer who lives on and works his own land plays an important role. Living and making a living are not separate. The land grows food and it grows a different kind of citizen. The loss of this potential is much more difficult to replace.

Demonstration

Aldo Leopold thought that the best way for people to know what a decent forest (with its inherent wildness and mystery) should look like is to show them one. Thus, part of learning will be seeing, not a manicured theme park but, a decent ecosystem. The role of "windows" may be considered. These are naturally attractive vantage points, "rest stops," where nature can be viewed without it being interfered with. Such experiences contribute both to education and human well being. Limited and discrete trails may also be used for this purpose. As well as serving for scientific research, they can provide an occasion for delight and an opportunity for researchers and visitors to identify regional native plants and animals. Plant species could be identified and tagged and growth observed. Animal sightings could be recorded.

Not only may a decent forest be seen. A decent food system may be witnessed. Opportunities for hands-on participation in agriculture may also be provided. Decent houses and other structures will also be apparent. Electrical and hydraulic systems will be transparent in order to see how a lived-in home without waste functions. Showing can also be extended with publications and video. Photographs, seeds, leaves and other items may also "register" the ecosystem in a museum/library. Objects of art may be further registers.

Scientific Research

Beyond increasing "green space," preserving biodiversity, and in general strengthening the ecosystem, the process of reforestation is particularly interesting to study. Especially since the recovery of native woods from pastures in order to offset carbon emissions is of interest in the entire hemisphere. How to facilitate seed dispersal while stemming the invasion of aggressive pasture grasses is among the questions that must be addressed.

Research programs for forest recovery may involve assessing seed banks in forest and pastures. Trapping birds and animals for examination, tagging and releasing might be employed. Catching "seed rain" to plot air dispersal patterns as well as biodiversity may also be involved. One way or another, the basic biology of the ecosystem would be assessed.

Learning is both a goal and a vital side effect of the project. We must know more about our ecosystem (what it consists of) to realize its potential. The woody species that populate the forests are currently being identified. Soon we should know what native species are present? What are missing? A leaf archive is being prepared from each evaluation. Monitoring changes is also important. In this regard we will utilize satellite photographs as well as direct observation.

In recovering pastures to forests, the role of bovines is being carefully studied. As strange as it may seem, cattle may help in several ways. It is known that range animals within the forest trample the delicate undergrowth, compact the soil, provoke erosion, defoliate vulnerable seedlings. However, it has also been noted here that some of this same behavior may have the effect of rejuvenating inactive springs. One well was revived by cattle sinking their hooves into the moist earth while milling around in search of water. Suddenly water began to flow from veins in the perturbed soil. By fencing out the cattle at this point, the spring again became active. Likewise, under controlled conditions, cattle might aid in stemming the spread of aggressive invading grasses. One area to explore is the possibility that grazing in the shadows on the south side of the forests may weaken invasive grasses to a point that natural seed dispersal becomes more efficient (prevailing winds are from the north). Perhaps through judiciously introducing and then removing animals at the right time reforestation could be facilitated.

Recovery of ponds and marshes together with the likely freedom from agrotoxics has already facilitated an increase in bird species present on the land. A recent cursory analysis (winter period) verified the presence of 75 species of birds. Clearly populations and aquatic life have already increased. Traces of increased mammalian movement have also been found.

In addition to studying restoration techniques, sustainable food production will also be investigated systemically (and systematically). That is, thoroughly and as an integral part of the watershed reserve. Plant symbiosis, seed germination, planting, nutrition, natural pest control are some of the topics that are being considered.

Additionally, there is much to learn about the infrastructure and much transferable knowledge that could derive from successful experiments. Conversion of buildings and vehicles to solar energy, design of energy efficient house and laboratory, elimination of waste (including reducing pollution, recycling aluminum, glass, paper, water, organic material), efficient thermodynamic exchanges may also be registered and analyzed.

A vital research subject will be the total biological, social and economic interaction of the watershed ecosystem with the surrounding biosphere, how it is affected by and how it might act as a counsel for "progress."

In summary, what we hope is that this property will serve as a "laboratory" for an informal (nonetheless, serious) "university of practical knowledge" in *living well in a place*.

Registration

A program for mapping the flora (plants, seeds, leaves) with photos, drawings, descriptions; the fauna, with photos, descriptions, skeletons, bird calls; the soil matrix with

samples, chemistry and biological analyses, consistency cataloging, humidity; the cultivated areas, water sources and waterways; as well as a history of the property is already underway.

Dissemination of knowledge

Different perceptions and knowledge gained by the experiences here may be disseminated through scientific articles, books, audio-visual means and art.

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