DEVELOPMENTAL CONSERVATION - A MICRO LEVEL ENVIRONMENTAL EXPERIMENT.

Text of ar. Shirish Beri's presentation at the world society for ekistics' conference 1987

About seven years ago, I bought two hectares (Five acres) of land at Nadhawade, a small village at the foothills of the western ghats (130 Kms. north of Goa - 80 Kms. southwest of Kolhapur).

The purpose of buying this land was -

To start a micro level experiment - an experiment in life style that attempted to maximize the integration and interaction of the various Ekistics elements to create self sufficiency. This self sufficiency was to be achieved by the efficient recycling of the various bio-chemical energies.

In this experiment, development and conservation are absolutely interdependent. They are almost synonymous with each other. Any act of conservation here is development in disguise and all developments done on the farm help in conservation and in creating a balanced ecosystem. May be, we could call it conservative development or developmental conservation.

The most important factors in a project like this are the user's and designer's basic attitude and approaches to life.

The more wholistic and unified the attitudes, the more integrated the development. Here every function or object is not seen in isolation, but as an integral part of a totality.

The more contented and peaceful the mind, lesser the craving for the multiplicity of consumer goods, (then, there is no confusing between possession of goods and good life). Simplicity of life style goes hand in hand with developmental conservation. It appears paradoxical to hear someone talking of conservation, while his/her life style requires exploitation of so many natural and human resources. Simplicity and satisfaction would not allow personal vested interests to interfere with the comprehensive planning goals.
A compassionate and understanding mind would have greater tolerance and co-operation with the various natural elements and social constituents. The healing of the land and purification of the human spirit are the same.

Thus the idea of this project evolved out of the above attitudes which have always remained the guiding parameters in any decision making.

Thus, here conservational activities were not started as a reaction and with specific aims and objectives but they happened to be the spontaneous consequence of a certain understanding of life.

Here, at every stage, the idea is to question the present modes and solutions to various aspects of human life at the most fundamental level and then search for a better alternative - (e.g. the way we dress, the way we eat, the way we use money, energy and so on).

A synthesis of the inner attitudes and outer actions had to happen.

This brings to my mind these words from our scriptures " One small hidden door in the innermost recesses of the psyche opens onto cosmic night ; And they said to him - Shall we then, being as children, enter? And he said to them - Only when you make the two one - the inner into outer and outer inner, the above below and the below above, only then shall you enter ".

Entering into this type of new venture would have to be marked by humility and reverence for the surroundings. The ancients had this feeling.

"Go now, stand at the crossroads. First bow down and kiss the earth and then bow down to each direction of the world".

Now, let us turn to the brass tags of the project proper.

This five acre site gradually stepped down towards a stream with a small irrigation feeder canal flowing in between. (This canal has water from January to May, it is a part of the village irrigation system and starts by the small bunding of the stream). The previous owner had planted sugar cane which is not really suited to this area. As he wanted to sell this property, there was lot of negligence and the whole place was full of weeds. There were some good old mango, kokam and other trees.

The climate here is moderate; humid with good rainfall)around 3500mm) during the monsoons. The soil on the higher contours was light lateritic whereas the one below the village irrigation canal was clayee. Soil test revealed that both had different soil nutrients and ingredients.

With this background, we could start looking at the implementation details under the various ekistics sub headings.

In reality these divisions or sub headings do no exit. The reality is undivided. But for the sake of convenience of understanding we shall stick to these ekistics divisions.

ENERGY :

All that we see around us are the various forms and transformations of the same energy - the understanding of this unity of energy give us a better understanding of its various inter and intra relationships.

The sun's energy is the most important form of energy that comes to us. In this project I have tried to maximize its use at various levels so as to increase photosynthesis - the creation of plant food - the basic food for all. This is achieved by having multilayers crops - based on the varying degrees of sunlight needs of various plants - e.g. the plantation of coconut, arecanut, bananas, cocoas, pineapple and pepper in the same zone, but at different levels. This same energy helps produce food for humans (grains, vegetables, fruits) for animal (fodder), bird (insects, small animals and fruits), insects (plants & insects), fish (insects, planktons, manure) and plants (manure, compost etc.).

Three major types of energies are used for cooking -

Solar (box type and parabolic reflector cooker).

Methane gas (Produced in the Chinese type of gas plant from animal and human exerta).

Firewood (from the dried branches of the old trees and of the new energy plantations on the farm).

The sun's energy is also used for drying pepper, arecanut, cocoas, grains, etc.

The potential of wind energy at Nadhawade is pretty poor.

The potential of energy from the flowing water could be harnessed, if a fall or deop is created in the flow.

Electricity is used for running the motor pump and for the illuminating the house.

Thought energy is also an important energy. A quiet, still mind can absorb energies from Nature and use them effectively.

Through the yoga postures, I try to synchronize the body energies with the universal energy.

NATURE : The relationship with Nature here is highly intrinsic, co-operative as I have always considered myself an integral part of Nature. Thus there is no will to dominate, conquer nature, but to live harmoniously within it.

Along with the understanding of Nature's various cycles and workings, I felt it necessary to develop a spiritually symbiotic relationship with it.

Plants, animals, insects, birds, reptiles, fish water wind, soil, sand and we ourselves have so much to do with each other. The details are explained with some examples under other sub headings in this paper.

RESOURCES :

In this project - every effort is done to maximize the use and utilization factor of all resources - and to minimize import and destruction of resources. Resources produced there are multiply used and recycled. Use of non renewable resources is minimized.

Let us take a few examples of multiple uses to which trees have been put to on our farm -

- as food - fruit, spice, grains, juice and drink.
- as fodder - napier, grass leaves of Lucerna (Hawaiin giants).
- as ground cover to stop erosion - grass, bambooes along river edge.
- as manure - through the nitrogen fixing legumenous roots of certain trees and crops (Lucerna, peas, moog etc.).
- by creation of humus
- by creation of lignoprotiens from twigs.
- as wind breaker and dust filter.
- as controller of weeds - by spreading leaves on ground under new trees.
- as timber - for construction.
    - for packing creates.
    - for stakes and props.
    - for furniture.
- as oil - ground nuts, cashew.
- as fiber for ropes.
- as medicines.
- as containers - banana leaves as plates, acreca and coconut bowls, wooden plates and ladels.
- as supports for creepers.
- as irrigation canal.
- as insulation from heat for the house and for the plants.
- as handles for tools.
- as fuel - the ash obtained after burning is returned to the soil.
- as beauty - for the joy of it - the colours, froms and textures.

Similarly the cowdung which the cow gives is used as manure, as fuel - for making gas, for plastering floors, on mud walls as water repellant, for plastering cane baskets, as food for fish, as creator of food for hens and so on.

The rocks from this farm itself have been for construction of buildings, pools the compound wall (in mud mortar), for bunding and terracing, for landscaping, for creating plants irrigation beds, for mounds below trees along with twigs for better ventilation, for making gravel, for seating, for sharpening of tools.

This approach of multiple use of the same resource as different stages is applied to all resources.

A fish pond was created in the low - swampy area with constant water supply through percolation of water from the irrigation feeder canal.

Almost all the human resources used here - skilled and unskilled are local.

BUILDINGS :

Here too, the idea was to extend the limited scope of architecture (as is generally understood and practiced today) to the sphere of total human environmental design - where landscape architecture, interiors, construction methodologies, horticulture, energy, water soil, animal insect world, food etc., are included to interact and evolve design decisions.

Conceptually, in houses, I do not like segregations and fragmentation of spaces for highly specialized functions. I wanted to create an environment that expressed the unity of life, where spaces would be more and more flowing, flexible, multi-purpose and with a greater utilization factor. This itself would be an act of conservation.

There are no fixed names of labels attached to spaces such as guest room, dining room etc., which limits the use of this space considerably. The entire planning requirements were worked out as activities and not as rooms. There is more freedom and overlapping of activities, thus conserving space and resources, e.g. We eat in the osri in chairs or on the floor, or on the tree platform near the house or near the stream, or in the angan or in the sit out near the water canal or in the kitchen itself.

This fresh and non monotonous use of space applies to other activities like sleeping, reading, working and so on.

The various building elements too interchange roles - the flooring and walls become seats and tables, the wall becomes storage display, light, air, frame and so on.

Our own house, farm aid's Quarters, garden, well, pool and service structure have been located centrally under and around large existing trees to facilitate better supervision, better insulation, shade and beauty.

The large existing trees were located first and the house was designed to grow around the trees, and integrate them in the built environment. The inside and outside spaces mingle into each other. Sometime, the garden comes inside or the house extends out in low built forms into the garden and towards the feeder canal.

The locally available laterite stone becomes a main building block for masonry, creates window slits, becomes a lintel, a covered niche, prefab step, flower-bed retainer, canal and so on.

The wood used for structural work is all located obtained jungle wood from old barren trees. The doors and windows are of local teak wood. The main osri or portico pillars are beautifully carved old wooden pillars of 55 cm diameter, which were abandoned a couple of years before by a local temple in the process of renovation, when plastered stone pillars were constructed. These were bought from the village. To go well with this conserved village heritage, a local carpenter was employed to carve the new door frames and posts.

The flooring is of cowdung and mud on ground floor (except toilets and wet areas) and timber on mezzanine. The materials are natural materials, which are cool in the summer and warm in winter. The well compacted cowdung plastered mud floor has good impact strength.

Climatically the microclimate of the house is cooler by a few degrees than the outside in summer. Cross ventilation throughout the house even with closed doors and windows helps reduce the humidity level. The heavy rainfall is taken care of by the sloping Mangalore tile roofs coming down very low on the south and west side to give maximum protection. The south west breeze also brings in the fragrance from special species planted on the windward side.

The cost of this house worked out to Rs. 540/- per sqm. in 1982.

The swimming pool (60 sq.m. area) is constructed with minimum construction and costed only Rs. 2,500/-. Fresh water is pumped from the stream for swimming. The wash out pipe is connected to the irrigation system of the coconut and arecanut gradens at a lower level - thus no water is wasted. It also acts as a water reservoir during power failure and as a play arena, when it is dry.

The farm aid Quarters and stores were constructed with the vernacular technology with laterite pillars in cement mortar and in situ and mud partition walls. This building cost worked out 1/5th of the general prevailing building costs then (Rs. 200/- per Sq.m.)

The gas plant was built on a Chinese model by local labour, which is more economical and indigenous.

The well doesn't just remain an underground source of water, but also becomes a landscape element with stepped gardens, with the pump shed camouflaged by a rockery, a cascade and a lily pool.

SOCIAL AND CULTURAL TRENDS :

It was realized that real development and conservation can only be achieved by a total shift in today's socio - economic ethos. Modern economists talk of maximizing consumption by optimal pattern of productive effort. But, here we are talking of obtaining maximum of well being with the optimal pattern of consumption, as consumption is merely means to human well being.

Efforts to install the spirit of co-operation rather than competition amidst workers and villagers are made.

This experiment has brought about greater awareness for horticulture in the village. Construction of our first gas plant here has catalyzed the construction of around 30 gas plants in the village. Nature clubs, W.W.F. and some schools had arranged campus and study tours here to study the ecosystem workings here - thus bringing about a greater awareness for conservation in the younger generation.

The two existing temples in the property are retained and some repair work and beautification has been done to the arrival spaces and deepmaalas.

Though contemporary in design, the house has the traditional elements like angan, osri, Tulasi, the shrine etc.

Traditional values respecting the trees, the stream (water), the animals are followed.

All this talk about wholistic life is summed up in this great inspring Shanti incantation from the Isha Upanishad -

ॐ पूर्णमदः पूर्णमिदं पूर्णात्पुर्णमुदच्यते
पूर्णश्य पूर्णमादाय पूर्णमेवावशिष्यते ॥
ॐ शान्तिः शान्तिः शान्तिः ॥

This is whole, That is whole, when that whole is added to this whole, you get the whole. When this whole is taken away from that whole, what remains is the WHOLE - May peace prevail.