Eco- an attitude in Planning and Architecture

By

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The first thing that one must recognise is that ECO considerations must be holistic and integral with the psyche of the society, rather than applied merely as a technological tool. It is more of a question of attitude to life rather than a segment of life that is in contradiction with the whole.

From the studies carried out in India so far one would notice that ECO approach has found acceptance with individuals and institutions and not so much with commercial developers, municipal corporations and bureaucracy. In the case of some of the housing projects which have developed commercially, ECO concerns have been used as attractions in the same lines of providing tennis courts, swimming pools etc, despite non availability of water, and hence have posed some serious problems for the end users. Empirical knowledge of energy conservation and bio-climatic pragmatism is evident in all tribal and rural societies. However, post Industrial Revolution societies that embraced new concepts of urbanisation, dependence on the automobile and exploitation of natural resources like land, air and water for individual profit changed the Eco balance in favour of consumerism to the extent of total negation of the law of nature. Hence, it would be important to re-recognise the fact that air, water and land are fundamentally common and universal resource for man and any policy of urbanisation that is only interested in its augmentation for a myopic benefit is bound to face disastrous consequences now and in future. This means that policies with regard to Development Plans have to be based on ecological studies of natural resources rather than utopian, out of the context or out-dated town planning concepts. This is an issue where the citizens, the politicians and the bureaucracy –all must share the same priorities. Potential of land should become the most important criterion to determine what use it should be put to and not, for instance, the demand of the automobile, or even, the patterns of settlements followed by squatter colonies in cities. What kind of soil is good or bad for vegetation, farms, should define where what kind of built development should come about. The common resource of the citizens of Pune there is the rich water reservoirs, rivers, hills, vegetation, wonderful climate and the surrounding green covers. These must come, first as the priority for all of us and not made into the sacrificial goat in the name of development.

Over the years, the volume of development in cities has gone up phenomenally and naturally the crisis of conservation of the natural resources is more acute than ever. With the crisis, must come the strategies for development, critical examination of development proposals, tough implementation process and watchful administration of the same. The process of building contemporary cities is far different from the organic process in which villages came about in the past. Therefore, all rural concepts of using mud sun-baked brick, recyclable organic waste for construction may not apply, directly and specifically, to the complex large projects in the cities. Does it mean that we must size down all projects to simple ground floor structures? One is conscious of the effort and research done in Japan on how cities can be built deep in the underground because of the shortage of urban land. These exorbitantly expensive solutions are certainly not the way for a third world country like India. It is not impossible to scale down the projects so as to be able to address the ecological aspects more effectively. The overall scale of built projects and the population density they cater to would determine the parameters of its Eco-effectiveness. This is where traditional communities, which interacted within themselves, were ideal from the point of view of management. That is why Schumacher's 'Small is Beautiful' makes sense. The most significant issues that will help set the parameters are related to the use of water and the disposal of undisciplined inorganic, as well as, organic waste. It is the city administration, which has to redefine these parameters and watch their implementation. Under the present administrative structure of the PMC, this is impossible to even think. Building bylaws,

which are an out dated bundle of rules, has to awaken to the social and contextual realities. Building bylaws are more interested in setbacks and straighter and wider roads, than how people's living is affected by it. They need to be drawn with the common man in mind rather than the automobile and developer. The entire urban fabric of the city needs to be seen as an opportunity to consolidate and redistribute open space with equity in mind. Pedestrian streets and spaces, and not only gardens and parks, which are useful for social and cultural interaction, are on the fringe of being obliterated in favour of the automobile. No housing project proposal can be sanctioned unless it can prove convincingly that both in its plan, as well as, management it is capable of handling its water and waste with the least burden on the city's infrastructure. The same rule ought to apply to owning a personal vehicle. Unless one can prove that one is having a legitimate car park at place of work and residence, no car can be registered in the person's name.

In the sphere of architectural design of housing, several tiers of possibilities can be looked at. This is where the lessons from traditional housing would be a useful pointer. In a village, where, a small hut could be built with local materials and community help, using rich empirical knowledge of the environment and ecology, is a model that is no more applicable, directly, for urban housing. But this model is certainly helpful in throwing light on response to climate and related detailing. Creation of courtyards, terraces, wind scoops, roof forms that help collect water, designing a protective skin for the buildings, providing thermal insulation and increasing comfort value of the house would together help reduce consumption of electricity. Many architects who have been concerned about this issue have attempted it in their designs all over the country. At the same time, it is also not necessary to be so obsessed with energy conservation as to kill the joy of architectural space. There also have been awfully bad designs that may be energy conscious but which fail to rejoice in the spirit of man. It is, therefore, important that the ECO attitude must be part of one's psyche as a designer, rather than an applied or compartmentalised view of life just to solve a small problem. No housing can really boast of design quality unless it is ECO friendly. In being so, it would inherently be conscious of climate and the use of materials, so as to evolve the elements of architecture that characterise its socio-environmental context.

I would like to now show the attempt made by us in some of the residential architectural projects that we have done since 1974 all over the country and abroad. The projects would show how one took the inspiration from the history and how the ECO consciousness was fused with architecture. One would also like to discuss the merits and failures of these attempts so as to discuss the validity of their application in the urban context of Pune.

1.0 Housing in Oman 1987:
In this housing complex which I designed in the Sultanate of Oman, I tried to create a central corridor which was insulated from the surrounding but bringing in the breeze from the sea to make it a cool space with defused light. A series of courtyards were created to ensure natural ventilation throughout the building by creating a venture effect. The measure proved to be successful, in that the central corridor became a social space where neighbours could meet. Bounced light was used rather than direct to light up the central space

2.0 Talwalkar Residence, Pune 1994:
This house was designed to avail of the fresh breeze coming from southwest and distributing it in the entire house. I designed a wind scoop, in cross section like a periscope, which goes high up in the air section and brings air into the introvert house having a double height central space that is also lit from the top. The entire construction is done in composite stone masonry using malad stone and brick. The wind scoop has proved to be successful and in addition to spreading the breeze to the bedroom that is facing east, it has become an object of curiosity for visitors, and helped give character to the building.

3.0 BAIF Staff Housing, Kaprala, Gujrath 1996:
Planned in the rural surroundings of south Gujrath, this institute deals with training farming and managerial skills of tribal communities so as to make them self sufficient. We chose the locally made brick and Mangalore tile as the basic two building materials for construction. The residential units which are one and two bed room houses, have been designed to have sloping double layered Mangalore tile roofing that achieves thermal comfort in the scorching summer sun, and collects roof water through the gutters and brings to the underground tank to be located in front of every house. The underground tank is yet to be built by the client, but when constructed will be useful in holding water for gardening. While the Mangalore sandwiched tile roof succeeds in providing thermal comfort, the poor workmanship has resulted in water leakages and dampness in some of the places. The lesson from the project is that if one wants to try anything unconventional in construction, then making of a prototype on the site is extremely important, because all repair work can be very expensive and in any case uncomfortable from the user's point of view..

4.0 Bapat residence, Pune: 1995
In this unique project several things were attempted. Firstly all the material came from an existing *wada*, belonging to the owner, and which was decided to be demolished. This new house at a different plot was designed by using all the wood that came from the *wada*. Hence it contemporised the *wadas* of Pune and was Eco friendly. The walls are in exposed brick work, built in the rat trap bond, using the Belbaum brick, the Pune brick being inferior in quality. The entire structure is in wood, recycled from the demolished house. The new design evokes the imagery of the *wada* having an inner courtyard. The attempt was satisfying in terms of meeting with the objectives. Close supervision, documentation, monitoring the work of demolition as well as the main contractor closely were the key factors, besides making extremely elaborate detailed drawings for the project.

5.0 Narendra Dengle residence & Studio 1997:
In the design of my own residence and studio, I conducted several experiments. The form of the house is like a crumpled paper, with so many angles and shapes giving it a kind of natural stability that usually is attempted with rcc structures using lot of reinforcement and concrete for stabilising squares and rectangles which are poor structural forms. Concrete hollow blocks are employed for walls as well as floor slabs, while the roofs were designed in Ferro cement. Rock wool blankets are sandwiched between PVC roofing sheets and Ferro cement slabs for thermal insulation. Hence the house is a load bearing structure with the minimum use of steel that goes in the hollows of the blocks. Angularity in the plan ensures venture effect and breeze as well as light bounce on a surface before entering the house. The use of inclined sky lights ensures little electricity consumption while providing adequate light and creating cheerful atmosphere within. The house also has a bore-well that provides water for the garden and washing, while filtered municipal water is used for drinking and bathing only. The entire kitchen waste goes into a vermi -composting pit, the compost from which is the only manure used in the fruit and vegetable garden that has chiku, guava, mango, custard apple, banana, coconut trees in this small plot of 6000 sq ft.
Generally all experiments have been successful. The lessons learnt are a) rock wool as thermal insulation has a limited life. Hollow block construction demands very careful detailing to avoid seepages and dampness. Roof top harvesting and vermi composting are simple and implemental ideas that can achieve a lot if used collectively by the society.

6.) Chobe Apartments:

This design for an apartment building, which is yet to be built, attempts to give a terrace or a court to every apartment in such way as to allow the breeze to pass throughout the building, while doing so it tries to achieve its architectural agenda.

In conclusion one would say that architectural agenda and Eco concerns are totally interlinked and if encouraged at the city level by the administration by creating room in the byelaws for them and by effective implementation procedures, housing projects would be Eco friendly, lessening the burden on the city's infrastructure and hence require the attention all those who are involved in the housing industry – to solve problems connected with technology on the one hand and marketing on the other.