

Sustainable housing trilogy

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One: Paradigm

THIS is a time of paradigm change -- a change of values and perception generating new policies and practices. Rather than looking at mere appearance, we consider beingness and significance in socio-economic and aesthetic and physical terms. How does one actually react if he is asked opinion on something's looking good, feeling good or aesthetic impact? The paradigm shift is reflected in the changing ways of seeing, thinking, and doing, and hence of evaluating.

There are two key differences between the new and old paradigms. One between reductionist and holistic approaches to things; the difference between assembling pictures from pieces, as in a jigsaw puzzle, and disaggregating wholes, like peeling layers of an onion. Two, the difference between quantitative and qualitative values: such as prices attached to things, and values of relationships. We exist in and through relationships, and

hence focus on patterns of connection and connectivity.

Housing is not what it is but what it *does* for people and their surrounding. There are three essential matters arising out of three ever-present relationships, which are the three meanings of the much-debated concept of community. Firstly, the relationships between persons. What does it do for the "person-in-community"? Secondly, the relationship between people and the related things. What do they do for "communities of communities"? Thirdly, the relationship between people and communities together with the things they do. How does it affect the biosphere, the community of all life?

Architecture is the connector between Heaven and Earth, between the metaphysical and material dimensions of experience. When we see a place or a building with an open mind, we sense it holistically. Whether beau-

tiful or ugly, it evokes that third, comprehensive relationship. Understanding its nature and seeing what to do about it is a different issue, depending on knowledge of the other two relationships contained in the "onion". It is essential to start from a perception of the whole.

Discussions of architectural aesthetics are of little interest to the laymen unless they reflect the overarching relationship between civilisation and the biosphere. The greatest threat to life on earth now lies in that comprehensive relationship. Reflections on it would widen public concern with the quality of design, the overt face of cultural decay. Those who design, build, or just talk about architecture are not the only ones to be irritated by the ugliness of the cities.

More than four centuries of industrial civilisation has weakened the overall sense of the all-inclusive relationship. The man-

made world is taken as a self-contained, autarchic exploiter of nature. It cannot be fully true as we are still dependent on the rest of life like we were before. We are obsessed with the assumed success of corporate growth and technologically-led commercial 'progress'. Therefore, the view that the human species can ignore the fact of dependent membership of the community of all species, dominates.

But this cannot be so for long. The nature cannot absorb the waste that the rapidly growing minority of consumers' society now dump on the already deteriorating biosphere, accelerating the destruction of species. Nor can the civilised society survive excessive defilement of personal relationships and the desecration of life ('pollution').

The key questions which are half the answers arise from the other two relationships in the inner layers of the "onion". At the core are

the relationships between people, the source of cultural and biological generation. The way that people relate to one another, the balance of authoritarian dependency, democratic interdependency, and competitive self-sufficiency determines the organisation of action.

So, the first question about design and building is about the effects on personal relationships. The economy of building over time depends mainly on the knowledge and skills, commitment, and care of all on whom human and material resource use depends. So, if relationships determine real material economy, they also determine the material impact of our actions on the world as a whole. The second question, therefore, is about the effects of particular ways, means, and forms of building on our capital resources - the people and their cultures, the community of communities, and the land with what it supports.

The questions reveal that a



densely populated civilisation is not possible to sustain without greatly reducing the waste generation. Genuine economy in material

use can be achieved when those with local knowledge can decide over their own local life and environment for which only they can

care by not generating more waste, and neighbourhoods for which and where most resources are used and most life-time is spent.

Two: Agenda

THE origin of many of the housing ideas in the last three decades is the UN-sponsored 1976 First Habitat Conference in Vancouver. It was when low-income housing was seen as a major issue in the sprawling developing world cities, some of which became mega-cities. The Geo Conference echoed the same concern that these would create severe environmental and social problems if not addressed and assisted.

Thus a number of new approaches surfaced. For example, the ingenuities of low-income communities were universally recognised and glorified; it was urged to utilise their potential in bringing cost-effective solutions.

In other places, resources, more importantly land, were pooled and solutions innovated. Elsewhere much later the rights of the squatters to a shelter with tenure and decent living were recognised. Or that they can solve their own problems if recognised, accepted and assisted was exploited.

Followed up through conferences and workshops, governments were influenced in accepting and promoting one or other of these approaches. Meanwhile, the international agencies came forward with technical assistance, loans for regularisation and upgrading of squatter settlements, or implementing sites and services programmes. It's a long list, spear-headed mainly by the World Bank.

However, despite innovativeness these approaches remained projects for varieties of reasons. In few cases when they were translated into national programmes, the capacities were small compared to the huge demand. Often they were not finished or were abandoned by the agencies or the beneficiaries. This and unabated influx of migrants increased the number of squatters and an ever increasing demand-supply gap in housing and services. Despite all the technical assistance and reform measures taken by the governments, the severity compounded and the solution(s) became remote.

The huge failures led to gaps between the theories based on

wrong assumptions and the reality that the vigorously promoted 'alternative' agenda was not the 'real' agenda. The real agenda was the issue of commercial exploitation of the urban land that dominates the planning of the developing world's cities. The by-laws and zoning regulations serve this agenda rather than resolve it. Also, there is a strong politician-administration-developer nexus that makes it possible. The result has been that over the last two decades low-income settlements have disappeared, their residents being pushed out to the fringes; as the city expands, they are pushed further out.

Resolving the land issues is the

key to resolving housing problems as it is an asset that gives foothold in the urban swamp, a bargain and identity. Since the end of the millennium, average land prices in the developing world cities have increased four times, construction costs have doubled, and rents have tripled, though per capita incomes increased by about 60 percent only. The trend is on the rise in the South Asian cities.

The problem with the land is more political than technical, warranting a structural overhauling and fundamental changes (for example, ownership) as through proper management more people could be accommodated. Almost all such cities would benefit from

such approaches, none more than Dhaka where a small part of the population owns the most land.

The housing demand-supply gap in these cities is enormous. Loan programmes as often advocated as the enhancer of affordability and thus solvent of housing problems, cannot make land accessible to the vast majority of people, in the backdrop of uncontrolled and ever-accelerating land prices. They would require a minimum period of 40 years to repay the cost; a 15 percent interest rate makes that impossible.

Hence the mechanism of urban land market, the processes and the forces that are determining and

operating, have to be understood to break the nexus. Land use plans have been developed, desired use has been identified, and protection of land has been granted in all the master plans of the cities in the region. In spite of all the planning, regulations and ethical barriers, the vicious cycle is not broken. It has happened in Colombia and Mexico, Turkey and Pakistan, the Philippines and Korea, in small areas where people came together and challenged the ongoing changes, where people have struggled for rights to land they occupy, together.

But, these limited examples had little impact, and couldn't be transformed to a city level. Hence transparency in the planning process

is imperative to operate many of these plans, laws and regulations; this should be the most important and inalienable urban agenda. The said transparency can only be achieved if the various interest groups are made an important part of the planning process. It can be achieved if citizens' committees have a level of executive power over the planning and resource allocation process through active participation. The excellent projects of so many pioneer housing experts failed primarily because of the absence of participation, transparency, and accountability. There were attempts to transform them into programmes, but it remained an alternative agenda, not the main one.

Three: Solution

IMAGINE life in a warm climate, enjoying the blessings of the open-to-sky spaces that are of crucial importance to architecture -- not only for the subtle and metaphysical feelings they engender within us, but also for the decisive role they can play in the creation of humane and affordable habitats. In many Third World cities, the majority simply cannot afford the kind of housing that is being produced. These shun the invaluable role of open spaces in enhancing habitat, while drastically reducing their cost. For instance, a courtyard has multiple uses: e.g. cooking, entertaining friends, children's play, etc. This has always been an integral part of the indigenous housing typologies produced in from the North Africa Kasbahs to the hill towns of Italy.

How to integrate such spaces into the new fabric? How to develop a reasonably high density

of 500 persons per hectare (including open spaces and social amenities), and yet give each family an individual house on an independent plot? Instead of stringing out the houses along a street, these can be grouped in clusters around courtyards. The basic module may consist of a number of houses arranged around a court measuring less than a katha each. We can form a larger cluster of up to two dozen houses arranged around a larger open space by repeating thrice the basic module. The larger unit in turn can be repeated thrice to form an even larger open space and so on. This is a starting point; each house can be extended and embellished as the family wishes. Architecturally, they are but a simple module. The plots on which the houses stand are all the same size between 0.6 katha (as in Duijpur Mirpur) to one katha. The scheme can cater for a wide income range,

the plot size variation should be little to ensure an in-built equity. For a poor family who might be able to afford only a lean-to, the rest of the plot provides the open-to-sky space rendering the habitat liveable, e.g. provides a place for a shady tree or a cow. The better-off families can use the same plot to build town-houses. Most London terrace houses are only about 6 metres wide; Amsterdam canal houses are even narrower, as are houses in old Dhaka mahallas.

For an incremental design, each house should stand free of its neighbours, to ensure cross-ventilation, and allow it to grow independently of the surrounding houses. At the same time, to economise on land, each house touches the plot boundaries on two adjacent sides. Windows are allowed on the free sides, and on the side abutting the central courtyard. The pattern generates a hierar-

chy of open spaces, from the most private realm to the most public, all within the context of house typologies, which are incremental - and malleable. That is a habitat in which people can add their own layers of meaning, giving personal and cultural identity to their habitat. This is the traditional way in which people have humanised the houses they live in for centuries, but is impossible to achieve in contemporary housing, because the buildings seem so intimidating, so *im-malleable*. Malleability is indeed a quality crucial to successful habitat.

Let's look at shelter from the whole city context that frustrates many stemming from the fact that they are forced to deal with the symptoms of a grave problem -- the appalling scarcity of urban land. For instance, Dhaka has the same elongation tendency towards north it had 200 years ago with a

hundredth of population. That is while demand has multiplied several-fold, supply is still a trickle. The result: galloping real estate prices and ever-increasing numbers of *basteebashes* (about 3 million). So, it is essential that we find ways, in each of our cities, of increasing the supply of urban land on a scale commensurate with the demand. Urban land means access to jobs and public transport, hence re-structuring our cities.

Opening up Yusufganj or other satellite towns could modify the North-South linear pattern of Dhaka into an East-West structure. These could be self-sufficient areas of up to half million people. The structure plan shows how to use public transport to open up land. Now, on the scale of half million people, one has the opportunity to perceive the fundamentals. For instance, what kind of housing should we build given the income

profile? Or, granted that courtyards and terraces provide additional room, can we really afford this amount of open space? Don't high-rise buildings save a lot of land for the city?

Actually, only about a third of the land in a city is devoted to housing including neighbourhood roads. So, piling up people on a particular site does not save much land for the city. But, it does deprive them of the crucial benefits of the open spaces. For decades now, architects and engineers have been searching for miracle to produce low-income housing when all along the land-use planners have stated the question wrongly to begin with. The problem of low-cost housing is not like the medieval alchemist's fevered hunt for the force to elusive touchstone that would turn dross into gold. It is rather a matter of opening up the supply of urban land, identify optimal densities,

and of re-establish land-use allocation between the diverse functions of a city.

This brings another crucial issue: typologies. Dhaka could almost be anyone of a hundred cities in Asia, Africa, or South America. The rich live in high-rise buildings, the poor in shacks -- which travel like a river of poverty through the spaces between these towers. What is frightening is not just the contrast of income levels, but the vicious discontinuity between the concrete and steel towers of the rich and the polythene lean-on of the squatters. Much of the rest of the world have lived with rich and poor. But regardless of the differences in sizes and materials between palaces and the humble abode, there was continuity. In contrast, the grotesque discontinuities we observe in our urban centres today are a horrifying portent of the breakdown within the social fabric

of society itself. Lets end with two images. One fills me with great hope, the other with a kind of despair. This man lives in a miserable existence in an unused sewer pipe -- sharing a cup of tea with a friend. It's a social occasion! Humanity in the Third World is still intact. It is probably the ultimate strength of all. The other image is a sadder one of the high-rise towers in Eskaton or Banani. Silhouetted in the foreground are the squatters and construction workers. Behind them rises a bunch of skyscrapers. Many of them are deplorable. But it is the surreal, mythic image of the city, which they yearn for, but can never attain. The discontinuity of built-form is truly horrendous. Until we find ways to change this, there can be little hope.

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Plantation: Type of trees matters more

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PLANTS, animals and microbes together constitute the essential natural biotic community of any sustainable ecosystem. Decomposer microbes are usually in plenty where the producer plants and consumer animals live together in harmony. But we the humans, known as the most destructive animal species, did not let most of the plants thrive well and thereby caused extinc-

tion of many animal species as well.

After identifying the harms we have done to nature by unwise deforestation, we are now crying for reforestation. It has been calculated that about 25 percent of the total land area of the earth and any part thereof need to be covered by forest. Only counting the total percentage of forest will not contribute to replenish natural ecosystem, rather the forests should contain many

types of plant species so that animal species specifically dependent on certain plants can sustain. Due to unwise growing human population, Bangladesh does not have enough scope to reforest about 25 percent land area. Yet we are not sitting idle, rather planting many trees every year.

It is over a decade that Bangladesh Government inaugurates the tree plantation season in June every year,

though the main plantation season can spread over June through September. The tree fairs are arranged all over the country. So tree plantation is receiving the due importance. But question arises if our reforestation comply with the needful polyculture.

I have seen patches of land in both Madhupur and Bhawal forests where after cutting or somehow clearing the natural diverse plant community, only lines of eucalyptus or acacia trees were planted. Such monoculture might have been the trend in other areas as well. Not only in reforestation attempts, we have committed the similar mistakes in selecting the kind of trees while planting saplings by the sides of highways, city roads and road islands. We make monoculture acacia (that rarely has a straight trunk) jungles by the sides of national highways. Still many eucalyptus (the known contributor to dryness through transpiring much water) saplings are planted on both sides of roads and some also in home-stead gardens!

For obvious reasons, we don't have enough space for plantation. The scanty space we find must be used optimally through planting the best species suited to the site of plantation. We need to mind the various kinds of needful trees before planting. These can be as follow: 1) trees

having fruit-bearing and timber quality together (e.g., jackfruit); 2) trees having straight long trunk and appreciable timber value (e.g., Gorjan); 3) rapidly growing varieties (e.g., rain tree); 4) trees that spread over large areas and provide shelter to birds (e.g., banyan); 5) trees that produce fibre and/or cotton (e.g., Shimul); and 6) trees having medicinal value (e.g., Neem). Besides, minding only fruits, flowers and otherwise ornamental can also be appreciated.

We know of many trees famous for both timber and fruits. Black berry (*Syzygium cumini*: Jam), jackfruit (*Artocarpus heterophyllus*), mango (*Mangifera indica*) and palmyra palm (*Borassus flabellifer*) are some of them. Black berry is famous for its tall straight trunk. The fruit it produces is smaller in size and some fruits are usually left out for birds. So this plant can act as a good source of food and shelter for our dwindling bird species. Jackfruit is our national fruit. The tree, though does not grow very tall, its quality of timber is very high. Mango is called the king of fruits and this fruit is no more in plenty; planting some mango trees by the road-sides can provide more fruits as well as shades to the pedestrians. Once palmyra palms were in plenty and these plants were a source of fruits, sugar and lastly hard

wood for frameworks of houses. There can be nothing wrong in sowing palm seeds along the sides of roads that can provide the goods mentioned above as well as act as natural strong barriers against falling vehicles.

Trees grown mainly for timber are wood-oil tree (*Dipterocarpus turbinatus*: Gorjan in Bangla), teak (*Tectona grandis*: Segun), redwood (*Dalbergia sisso*: Shishu), Indian lilac (*Lagerstroemia speciosa*: Jarul), mast tree (*Polyalthia longifolia*: Debbaru) etc. Some of them usually grow 10-15 (Debbaru and Jarul) meters straight trunk, while some may reach even 40 (Gorjan and few teak) meters. The timber of these trees is well-known. Our indigenous shikoro (*Albizia lucida*) yields a good timber as well.

Fast growing trees like rain tree (*Samanea saman*: Rendi koro) and mahogany (*Swietenia mahagoni*) are common all over the country and rain tree alone provides bulk of timber for preparing low-cost furniture. But another fast growing tree, almond (*Terminalia catappa*) is planted still only for ornamental purpose, especially in the city, around some special offices or houses. I propose planting this in plenty that grows tall trunks and is very similar to our indigenous Bahera (being of the same genus *Terminalia*), famous for medicinal value.

Banyan (*Ficus bengalensis*) is, perhaps, the largest and most spread tree in the world. We have our own variety of this. Banyan saplings are conventionally planted in bazaars to provide shades to the people. If grown to its proper size a banyan tree can serve not only as a source of shades, to humans, but with its fruits bushy top also a source of food nest to many birds. The sides of the national highways would not be very suitable for planting many banyan trees, but some planted at some distance can serve the purposes described above.

Red silk cotton tree (*Bombax ceiba*: Shimul) is now becoming rare in Bangladesh. Its timber is of low quality. But its fruit produces silk cotton that is now scanty and much more valuable than other cotton varieties. Therefore planting some saplings of this species is of utmost importance both for the sustenance of this plant species and for the pillow filling cotton.

Growing some medicinal plants is essential. We were rich in those just few decades back. Tree varieties (many are shrubs or herbs) of the medicinal plants are Arjun (*Terminalia arjuna*), Bahera (*Terminalia belerica*) and the well-known Neem (*Azadirachta indica*). Some such plants can be grown by the sides of all the national highways of the country. The forests can also

have a mixture of these trees; even some special areas can be sorted out almost in every village to establish a medicinal plant garden.

I wonder why the people planting saplings during reforestation or planting season on either side of national highways have no choice at all. Every attempt of reforestation should aim at establishing polyculture forests. The national highways can logically have 3-4 rows of trees along either side. But often only 1-2 rows are planted. That is, not only our selection of types is wrong, the distribution of those is also mistaken and seems unplanned. To sustain more trees of the right kind, saplings should be planted following a good plan. The lowest ebb of the roadside may have Jarul saplings along with some Babla (*Acacia grabica*) or even Hijal (*Barringtonia acutangula*). These plants can thrive in water. Mango, mahogany, Gorjan, Debbaru, rain tree, black berry etc. may be planted in the middle. Jackfruit, Shimul, teak, redwood etc. cannot withstand water. So these should be planted along the highest ebb. As mentioned before few banyan saplings and medicinal plants should be planted at some distance along the road-sides.

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