

Architecture: A Novel Agenda

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Abstract: Today Architecture cannot ignore the hard realities of problems of a burgeoning population; its meager resources or its limited ability to pay for a shelter but in the evolution of every society, beyond the physiological needs of survival are, also, needs of affection and belonging, esteem and self-actualization which have to be fulfilled. The present paper delineates imperative need for the architects and engineers to take cognizance of this strange phenomenon. The major aim of this paper is to invigorate the readers about architecture of infrastructure – the new landmarks of an industrial society, environmentally responsive structures, and the new architecture that should be desperately concerned about housing for the masses. It is envisaged that the paper will highlight some aspects and important points and present a future course of research for others who are willing to further their study on this particular topic.

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I. Introduction

There are no compelling reasons for raising these issues at this forum, for, at best these only touch upon a psyche but I have reason to believe that that this psyche is not a passing phase and architects and engineers, in time to come, will have to take cognizance of this strange phenomenon.

This is not to say that architecture can ignore the hard realities of problems of a burgeoning population, its meager resources or its limited ability to pay for a shelter but in the evolution of every society, beyond the physiological needs of survival are, also, needs of affection and belonging, esteem and self-actualization which have to be fulfilled.

These are being demanded by a very large and politically powerful middle class and cannot be ignored. Architecture, now, no longer, can remain cloaked into a garb of mystics of self-professed, self-righteous, scientific and aesthetic orders but is pragmatic, and aims for the betterment of all, irrespective of creed and caste, intending to create a definition of architecture, which takes into consideration the created paradoxes.

The ensuing architecture within these paradoxes will be concerned about architecture of infrastructure – the new landmarks of an industrial society, environmentally responsive structures, and would be desperately concerned about housing for the masses.

With a view to understand these new implications, it is necessary to trace certain stages of evolution and development of societies in the developing world.

Stage 1: The Changeover from an agrarian society to industrial society

We start to look at these developments by considering the advent of the developing world from a purely agrarian societies to industrial society in the last five or six decades. This has radically altered their architectural needs and aspirations in as much as that architecture no longer is to satisfy the needs of a predominantly peasant population only. Traditional building models are obsolete in the new form of urban system, since, now neither the population has the space or the time to remain satisfied with rural housing forms with their limited rural utilities. Coming out of the clutches of the feudal system the population now wants an equal share in the benefits arising out of the industrial inventions. In search for better employment opportunities, as the population migrates to urban areas, it requires better transportation facilities, more roads, more power and all other infrastructure a few enjoyed earlier. Railroads, bridges, dams, hospitals, and workplaces – all have to be built to maintain peace with a more demanding population. Secular architecture is necessary for the very existence of a political system. The advent of Multi Nationals, the opening of the markets and tremendously lucrative employment opportunities has changed the outlook and face of the middle class. We are at the threshold of becoming a consumer society where short term comforts and facilities and more in demand.

Stage 2: The dominance of artist architectural intellect in the profession of architecture

While the above is a hard reality, it is unfortunate that the official view of architecture - that has remained predominant even after 50 years of architectural theory and practice in most Third World countries; most of them in Asia and Africa, fails to appreciate the arising new parameters. All along, it generally held that the profession of architecture is primarily to be dominated by an artist architect intellect. This in turn per forces a limited definition of architecture where architecture finds very limited scope and application. This official view finds its supporters in the art-dominated schools of architecture where artistic domination create a euphoria for artistic designs superseding all else, which in time will prove very detrimental to the profession, relegating the profession to only a service sector, dominated by the engineering profession. As a consequence, with time, the profession of architecture will never hold a position where it will be able to dictate terms, either to the policy makers or to the industry in terms of policy decisions, material demand or research and development. The obvious repercussions of this will mean further strengthening of artist-architectural intellect, which is satisfied with its relegated position and is concerned with only beauty, conservation of what is beautiful, and theories of architecture far removed from realities of the present. In such a scenario, even at the academic level, it will be inconceivable to think in terms of architectural programs, which back evolution and design of infrastructure and utilities as rational studio programs for students of architecture. Designing of powerhouses, irrigation dams, windmills, oilrigs, metros, aqua-ducts, railway stations are considered specialized constructs, not deserving attention of an architect. Specializations in architecture have become routine, and seek only to make inroads into other disciplines rather than diversifying further into more specialized constructs of scientific nature.

Stage 3: The Energy Crisis in the Post Industrial Age

Form and degree of resource exploitation was a non-issue at the beginning and the initial run of the Industrial age. We had coal first – vast reserves, then the hydrothermal power and then the oil. These were cheap energy resources but only for a limited population. The Industrial revolution enjoyed this cheap power, started living in a make-believe world where a naïve belief – an over-confidence developed in our capacity to continually discover and improve energy efficiency. Mother Earth was nice. It catered to all our needs – all our new consumption patterns. The Oil Crisis of 1973, when for the first time, the life styles of advanced economies that had been fostered by an unhindered rise in energy consumption, were directly challenged; the forest die-back and oligotrophication of lakes in Scandinavian countries and southern Canada; the occurrence of wide-spread famine in Africa all through the seventies and the destruction of traditional shrub weed lands, due to pressure of fuel gathering, in Africa and Latin America; were all significant events to nudge us from our slumber. The pictures of the Mother Earth, transmitted back from American Space Missions, were disturbing. They brought to light stories of earth being a very fragile system despite its dynamism. We became conscious of our overcrowdedness, our skin cancers and our asthmatic sufferers, caused primarily by atmospheric smog, pollution and ozone depletion. The potential of nuclear energy, once regarded as the natural successor to fossil fuel, has been curtailed as a result of environmental concerns, and the true costs involved are becoming increasingly apparent. The meltdown of Chernobyl in 1986 and the continued inability to find a resolution to the problems, posed by radiated waste disposal, have focused public concern on the viability of this energy source. Thus it can be argued that we have reached a moment of transition in both our production and consumption of energy. There is a general acceptance that the present form and degree of resource exploitation in energy consumption and our associated consumption practices are unsustainable. It is a pity that the underdeveloped countries, most of them having tasted freedom after many years of colonial domination and exploitation, at the threshold of progress, per force have to address themselves to the concerns of depleting resources, which are detrimental to rapid industrialization.

Stage 4: The exploding urban agglomerations

The problems of urban housing in Third World countries, essentially, are a result of urban growth witnessed over the last 50 years, especially after the Second World War. The process of urbanization has followed a sequence consisting of a precept through which a secure and optimistic future was considered synonymous with living in an urban area. In the period immediately following World War II, this precept had serious repercussions. As empires fell and changes in inter-national trade modified the internal national economies, cities became the focus of refugees and migrants on a vast scale. As hordes of migrant established temporary and semi-permanent settlements in the urban fringes; transformed whole areas of the cities into low-rented housing; and constructed hutments and settlements in the available vacant lots of the cities, the social and spatial structure of the cities underwent drastic changes. This urban explosion was very much different than the urban explosion that the Western world has seen at the dawn of the Industrial age. The growth of cities in the United States and Europe during the 19th century took place at a time of structural transformations in the rural sector and the transformations consisted of displacement of surplus agricultural labor as and when there arose a demand for such labor by urban-based industry. Technological innovations till then were limited in nature and

the greatly increased demands of domestic and inter-national market could be met only through concentration of population at the few chosen centers. Thus, the urbanization of the Western Industrial City came into being to absorb the surplus rural labor and put it to more productive activities, where the evolution of the large-scale service sector was a by-product. Compared to this conventional growth, the typical 3rd World City was at the opposite end of the spectrum. Located in regions of far greater agricultural surplus labor, these have manifestly failed to develop an adequate industrial base. All these have been able to create is a marginal surplus through capital-intensive industrial activity and a mass of small-scale cottage industry with the obvious that these are geared more to the consumption patterns of a small middle class than to the creation of productive industry or a re-investment of capital. To some extent, though the limitations are cushioned by the existence of a large-scale service sector, the fact remains that this service sector is characterized by relatively low levels of differentiation and technical expertise and consists primarily of petty traders, temporary laborers and unskilled artisans. Comparing the two, it has now been established beyond doubt that the economic power of a European city lay beyond its boundaries and regions and had its genesis in the success of British colonialism and the vast market it provided. Consequently, the urban explosion in the population of the 3rd World cities has no historical precedents. Not only is there a staggering growth of absolute numbers but also the disturbing factor is that the increasing urbanization in developing countries is without a matching industrial base. The writing is on the wall - that within the next 10-15 years, few cities of the developed world would feature in the table of the top 20 of the most populous urban agglomerations. Mexico City, Sao Paulo, Kolkata, Shanghai, Tehran, Dhaka, Cairo, Lima, Delhi, Mumbai – all cities in developing countries- are going to be the new growth centers of the world. And in all these cities the dichotomies of under employment, colonies of novae-riche and slum districts and the rivalries of traditional and modernity are likely to cause class struggles similar to those being witnessed in Argentina today. The world should be prepared to talk about and accept urban conurbations as large as 5 crores in the very near future.

The solution to urbanization lies in industrial growth where the dilemma is, that in the present day scenario, we have to be restricted by our concerns for energy consumptions. We, unlike our predecessors, be it Frank Lloyd Wright or Le Corbusier or Mies van der Rohe, do not have the cushion of unlimited energy sources these masters enjoyed. The agenda of architecture has radically transformed.

THE NOVEL AGENDA

This new agenda has to revolve around redefining architecture and urban planning for the next millennium, which, in a nutshell, must accept to create more with less as the basis for all development strategies. Is this possible or only wishful thinking?

It was Buckminster Fuller who drew attention to the revolution in the world of communication, which has some parallel with this new agenda. He compared the inefficiency of all those tons of tons copper cable – the infrastructure which not so long ago rested on the sea bed to connect continents – with the electronic freedom that lightweight satellites and invisible airwaves now offer. Fuller never lived to see the tiny mobile telephones that were a logical extension of his many optimistic predictions about society's ability to achieve more with less.

Throughout the centuries, ingenious use of technology has enabled societies to create highly efficient structures and settlements utilizing natural and renewable materials in their construction and similar energy sources to enhance their performance. Whereas there is no doubting the fact that all those who share interest, concern, and responsibility for the built and un-built environment should reflect upon successful historical examples and aim to revive and redefine many of these forgotten principles, a romantic attachment to vernacular would restrict our thinking. A fresh beginning probably is the need of the hour.

Does this mean that in our quest for, to build more with less, we will have to make compromises in quality? No. In fact this paper postulates that in spite of this basic intent it is possible to achieve quality of environment, infrastructure and energy consumption.

The above statement is too strong and looks like a utopian dream and begets the inevitable question of how quality can be made cheap? The same question was asked when the Maruti Car project was initiated. Since the car – seen as a public mode of transportation, had to be cheap, the conventional wisdom said that the quality should be made low. Instead, an exactly opposite policy was adopted – that the car should, at the same time, be of high quality and also be kept cheap! We know now that this unusual (as seen at that time) policy has been quite practical and successful. The trick was quite simple – to produce cars in very large numbers. This necessitated mass production; mass production cut down costs and simultaneously helped to improve quality. Because the price was low and the quality was such that fuel consumption was also low, many more people, who otherwise would not have been able to afford any car, were now able to buy these cars. The result was a vastly increased market, which in turn, helped to sustain and justify mass production. So, here is an interesting paradox – quality is cheap and lack of quality expensive! There is no denying the fact that this surprising combination became possible only because a new technique was introduced – that of mass production.

Is there a parallel in the case of architecture? The answer to this lies in Housing Development Finance Corporation success story. Charles Abrams in his book, “Housing in the Modern World”, saw the lack of housing finance as the most stubborn obstacle to progress of housing in the developing world, where interest rates are prohibitive and combine with high land costs to make homeownership impossible. The establishment of HDFC, despite a very limited initial outlay, has brought in a complete transformation, where, at least, to the organized sector, housing finance is, more or less, available at the doorstep. HDFC was able to do it through availability of housing finance to such a large clientele that the prevalent lending rates became meaningless and now there is a tremendous competition amongst the banking institutions to garner this profitable market. The paradox created was not to minimize rents but maximize the number accommodated. The future belongs to sciences, which are ready to take up these challenges.

THE NEW AGE AND TECHNOLOGY

At a time, when the urban sprawl in the developing worlds is inevitable, whereas Hasan Fathy’s Egyptian vernacular has to be appreciated, there is a need for industrial building technology to get over the scarcity of materials and produce in enough quantity to offset the additional costs.

Efficiency and logic of structures will not only cut down costs but bring to light forms akin to the light-weight structures Fuller dreamt of and Frei Otto, time and again, implemented in his tensile structures.

In an age of depleting resources, architecture has to take into consideration the renewable sources of energy such as wind, solar and tidal energies – turbines and towers and solar plants – working on principles of thermodynamics and buildings where aerodynamics will dictate forms.

Architects and engineers need to look towards the genius of design of sail-boats, cars and aero planes as highly sophisticated structures and like them take into account the ergonomic criteria and thermal forces in the design of buildings.

New concepts in cladding design will prove very effective in reducing energy consumption either through their natural cavities or high performance.

Multi-layered facades, undreamt of till today, will act as natural skins to buildings and make them fully responsive to climatic changes.

Since the careful use of our resources is the prime goal and conservation and storage of energy a must, new forms of thermal insulation and efficient and more creative use of natural heat will have to be the major criteria for design of buildings in future.

In the congested cities of the future, there will be a need for incorporation of daylight balanced against unwanted heat gains and would result in new forms, diffusion systems and new materials.

An open field for research will include the potential of gases, and liquids or even organic substances as building materials.

Architects will have to contend with energy transformation processes and photovoltaic to convert light into electric energy.

II. Conclusion?

Where should all this begin – the search for environmentally responsive architecture to accommodate our millions?

Do we expect the profession or the industry to automatically respond to this agenda?

Are the practicing architects prepared to handle these challenges?

Are our academic curriculums bold enough to accept the new realities?

Let a judgment on this be pondered.

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