International Journal of Engineering Research
Volume No.7, Issue Special 2, pp : 144-146
ISSN:2319-6890 (online),2347-5013(print)
11-12 Jan. 2018

Architecture –Shaping the Built Environment

Manohar Balasubramaniam.
Professor.D.Y.Patil college of Architecture.Nerul,Navi-Mumbai.,India.
E mail: manoharbalan61@gmail.com

Abstract. The conventional approach to design has been to focus specifically on the inner core. There is attenuation in relevance as the outer core approaches .This treatise calls for an outside in approach wherein the inside core should adapt, synthesize and amalgamate with the environs. It stresses on the fact that architectural expression should not just be cosmetic but positively shape the built environment. It also seeks to establish how this approach will ensure that architecture will be sustainable, eco-friendly and has the least impact on the environment. The various measures for achieving this are enumerated, discussed and presented.

Keywords**: Environs, built environment, adapt, synthesize, sustainable and eco-friendly.**

Introduction.

"The earth does not belong to us –we belong to the earth"

The human approach to design –Architecture or otherwise has always been inside out. The inner core has always been the key component and there is attenuation in relevance as the outer core approaches. In an architectural design this manifests itself in the form of cosmetic treatment to the building façade as well as the surroundings. All the environs are shaped with the inner core as the focus and the façade as the epicenter. This has been the approach historically, in contemporary times and will be the approach in the future also. This approach needs to change. Architecture is not just about building design but should endeavor to positively change and shape the built environment. The inside core should adapt, synthesize, amalgamate and adjust to the external environs. The external parameters should shape our requirements-our requirements should not dictate the external environment. This approach will ensure that architecture will be sustainable, eco-friendly and will have the least impact on the environment.

Any approach to an architectural expression has to be holistic and not linear. Buildings are the biggest consumer of all types of resources at all stages-construction, occupation and demolition. They are also the biggest producers of waste, contribute significantly to GWP (global warming potential) and have a carbon footprint. Surface connectivity between buildings is either through roads and/or railway tracks. Thus the buildings and their connectivity defines and dominates a major portion of the built environment. The materials used for the construction of these buildings and their connectivity create UHI (urban heat island) effect and also contribute to air pollution. Buildings also consume energy for operating their essential services, work related activities and to maintain thermal comfort within their envelope. This energy consumption varies with the nature of occupation and use.

Our built environment today is created without any consideration for climate, site location or thermal comfort. All the gaps are sought to be filed in by technology which in turn is energy dependent and resource driven. The fossil fuels which are source of this energy and the resources required are finite, non-renewable and depleting exponentially. Our approach to creating built environments has to be outside-inside.

This also calls for a radical shift in the way we approach our activities. The environs should shape and dictate the activities possible in a building. The footprint of the buildings should be the bare minimum to ensure that ecosystems which are essentially linear in nature are not disturbed. The spaces we design in a building should also be multiuse, flexible and dexterous. Nighttime activities which are the biggest consumers of energy and have a large environmental, ecological and carbon footprint need to be curbed, suspended and eventually stopped.

Cutting edge research and the requisite resultant technology needs to be ideated, synchronized and harnessed to develop appropriate technologies to facilitate the out-in approach. Humans should accept, adjust, and adapt to these changes to ensure a better future for themselves and their environs.

Proposed Methodology.

"Form (ever) follows function" has been the mantra of all designers ever since architect Louis Sullivan coined the phrase .Frank Lloyd Wright took this further to a new movement called "organic architecture". All these are basically the inside-out approach. The central theme in all these approaches was the human being-his desires, needs, whims, fancies and idiosyncrasies defined the function which in turn dictated the form, shape and evolution of the built environment. The bio-cost of this approach has never been anticipated, visualized or analyzed. The environs have always been taken for granted.

A paradigm shift in our approach to such a design philosophy is needed. Environmental considerations should dictate the form. The form also must be in harmony and consonance with its environs. Human needs, desire, function and activities need to adapt and/or change with respect to this form. The revised approach should be "Function follows the form". Form has to be a dependent variable and function to be an independent variable.

The starting point for all these interventions are the "issue of human needs" which needs to be rationalized. Architecture should cease to be an expression to celebrate human desires, status, capability and ingenuity. It has to be need based, purposeful and must add value to the environs. The key here is sensitization towards the environs as human avarice and need has no limits.

The outside-in approach would ensure that each creation will have its own unique identity. The "igloos" built by Eskimos are a prime example. These dwelling units use ice as a basic

ISSN:2319-6890 (online),2347-5013(print)
11-12 Jan. 2018

building block. They ensure thermal comfort inside and at the same time blend seamlessly and harmoniously with the environs. In the Ladakh region of India which is also known as "cold desert" all indigenous architecture uses a flat roof and utilizes ice as an insulation material.

Vernacular architecture should be studied, understood, analyzed, adopted and adapted .we must not build something unless it is absolutely necessary. We must also ensure that our proposed solutions are easily and readily acceptable. Some basic principles like minimum exposed surface area, surface area to volume ration, perimeter to floor area ratio, buffer spaces, thermal lag are illustrative examples of an outside-in approach.

An outside –in approach also leads to an architecture which is free of the bondage of any particular style or "isms", has its own idiom and grammar and is timeless-it can belong to any era. This is the essence of true architecture.

The very basic human needs which need to be addressed are oxygen, water, food, shelter and sleep. Internal spaces only need to address these core issues. Green architecture which is sustainable, eco-friendly and has the least impact on the environment is the way forward.

Bio-mimicry (imitation of nature) could be a good starting point for this process. In nature all biotic elements evolve and adapt themselves to their abiotic components. They are therefore able to blend, integrate and synthesize harmoniously with their environs. Avian like birds create their nests only for hatching and rearing their offspring's. Their approach is also outside-in. Animals on the other hand seek natural formations to shelter themselves.

The other key factor would be handling of waste. The very concept of waste has to change. In nature there is nothing called waste. Everything is endlessly recycled.

Regenerative landscaping, permaculture and xeriscaping should be the leitmotif of all landscape designs. The inside and the outside spaces should seamlessly flow, fuse and amalgamate with each other.

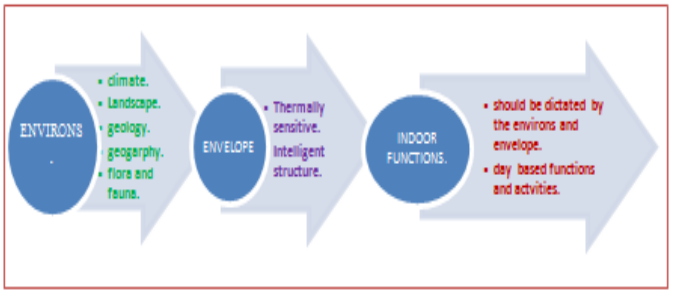
All nighttime lighting requirements externally as well as internally should be met by bio-luminescence.

All exposed faces of the structure should be designed as thermally sensitive envelopes. Sun path diagrams, wind rose charts, temperature and humidity levels along with precipitation patterns should evolve the envelope. Chameleon structures which evolve and adapt with weather patterns could be the way forward.

Renewable sources like solar and wind energy should be harnessed, harvested, stored and utilized to address all energy requirements. Revolving structures and/or facades, evolving structures and/or allied forms of dynamic structures to be developed. Cutting edge research fused with appropriate technology and implemented with local skills should be the way forward. The basic purpose of a building envelope should be

- To prevent heat gain and promote heat loss.
- To prevent heat loss and promote heat gain.

The physical environment should dictate the built environment. The built environment in turn shall shape, delineate and promote the internal activities. An outline of the proposed methodology is illustrated in the flowchart below.



Flow chart 1 : A flow chart delineating the outside-in approach to design.
Source. : The author.

Recycling and/or reusing existing waste as building material should be the priority. All our cutting edge research and technologies should be directed towards this endeavor. The building form should be organic, amoebic, compact and aerodynamic. The insides should have multifunctional flexible spaces.

Biotechnology should be harnessed to grow structures and/or their components and not construct them. The size and scale of the structure should be need based and should not reflect status, grandeur or celebration.

Biocost should be a major consideration in any project. The buildings should not be permanent on site. After a period of say 10-15 years the entire building should be dismantled and reconstructed on another site. The original site should then be restored using regenerative landscape techniques. This will ensure the ecological health of our planet.

The footprint of the building should be kept to a bare minimum. Elevated or pneumatic structures should be actively considered. Also structures like shell structures or geodesic domes which transfer very little load to the ground should be preferred. This will ensure that ecology and their ecosystems are not disturbed. All the furniture used inside shall be storable, foldable and stackable. They can thus be used only when needed.

Human settlements should be in the form of self sustainable bio-spheres. Native flora and fauna should be a dominant and integral part of this settlement. Social, cultural, religious, economic and other allied activities must be in consonance with this landscape.

The human race should learn to co-exist failing which it will cease to exist.

Conclusion.

Human must learn to adapt to site and climate and not the other way around. Their functions and activities must be commensurate with the external idioms. The basic grammar of

ISSN:2319-6890 (online),2347-5013(print)
11-12 Jan. 2018

architecture needs to be reversed. Progress and development must happen in a manner which is not detrimental to the environs.

Acknowledgements.

I wish to thank the following people for helping me realize this paper.

a) TThe management at D.Y.Patil College of Architecture, Nerul, Navi-Mumbai for instilling the appropriate culture and ambience for academics and research work.

b) Architect Sanjay V. Choudhari (Principal –DYPCA.) for his complete encouragement, cooperation, motivation and support.

References.

Journal article

i. Indraneel Roy Choudhuri and Dr.Suchandra Bardhan, Evaluating water footprints of Building construction in India,ABACUS,volume-9,number-2.

ii. Dr.Mahavir,Amartya Deb and Rajeev R.,10 Myths on Sustainable Development through an inclusive approach, SPACE volume.18, no.2,2014.p72

iii. Dr.P.S.N.Rao, Affordable Housing for Low income groups in Urban India-A prognosis of policy and practice. SPACE volume.13, no.2,2008.p82.

Books.

iv. Francis D.K.Ching, Architecture –Form, Space and Order, 2ndedition, Van Nostrand Reinhold.

v. Francis D.K.Ching, A visual dictionary of Architecture, 2ndedition, Van Nostrand Reinhold.

vi. Priya Choudhary, Human approach to Urban Planning.Copal Publishing.

vii. Javier Senosiain, Bio-Architecture, Routledge-Taylor and Francis Group.

viii. Masanobu Fukuoka, The one stalk Revolution-other India press.

ix. Racheal Carson,The silent Spring.

Conference proceedings.

x. *S.Satoh, K.Matssra and S.Asano "The study of urban form in Japan", Urban Morphology, Volume19, Number2, September 2015, p157.*