

Vernacular Green Architecture

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ABSTRACT:

Historically, without modern means, extra ordinary enterprise produced architecture often of the most distinctive character and ingenuity *in the creation of shelter with only limited means available*.

In the last few hundred years, a distinctive change is seen in the pattern of buildings which has resulted in a drastic change in the consumption of resources. We are witness to repeated and deliberate plundering of our natural resources for the purpose of building shelters for man. Today, though almost all are abreast with the latest technology in all spheres, most are ignorant to indigenous ways of construction which can drastically reduce the load on our resources. These are the technological help which has been developed intrinsic to specific environs and has stood the test of time. This paper addresses these issues and the importance of such technology in our times.

KEYWORDS: Vernacular and green.

1. INTRODUCTION:

Since the beginning of the 21st century, globalization has had a forceful impact on every aspect of our lives. From music to food, lifestyles to architecture; there are no areas of our existence that have not been affected by the global forces and values. While bringing convenience into aspects of daily living and communication, this globalization also has a homogenizing effect and threatens to reduce the meaning of architecture and its relation with the built environment that we live in. Architectural theory which encompasses all the factors that surround the art of building, is embedded within the society and is passed on from one generation to the next; thus, defining tradition. In constantly changing human eco-systems, it becomes very important and appropriate to discuss ways and means of sustaining our heritage and our tradition. Vernacular buildings are human constructs that result from the inter relations between ecological, economic, material, political and social factors. This is an integral part of our architectural heritage. Awareness of the importance of the conservation of architectural heritage is very important, especially in area where haphazard urban and rural development has taken place...

Vernacular architecture:

A term of recent popularity, this age old phenomenon, indicated by analogy with language, refers to buildings in indigenous styles constructed from locally available materials, following the traditional practice and patterns. In the present context, vernacular architecture is understood to mean the buildings *of the people*, built *by the people*. Until a few hundred years ago, the relationship between human beings and their environment was characterized by the human willingness to adapt to the environment and to live harmoniously with it. The comfort requirements were very different in the past and cannot be compared to today's demands. This was due to the fact that *people were unable to tame nature to the degree to which it is possible now*.

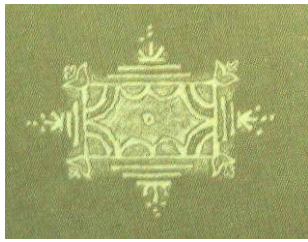


Fig. 1 A popular tattoo worn by villagers in north India, the baoli or step – well reflects their lucid understanding of their water dependant lives. The dot in the middle symbolizes life which is surrounded by water

Green:

At the purely architectural end, the scope of *green* includes:

The size and shape of the building, their usefulness, their material stability, their embodied and recurring energy loads, their embodied and recurring outputs of pollution, their longevity and vulnerability of disrepair, their recyclability and reusability and their contribution or disruption to microclimate and biodiversity.

The ecological aspect of *Green* is aboriginal to our *vernacular architecture*. It demonstrates the tremendous efforts made by man to indigenously build his own house... based on generations of collective wisdom... of a traditional community.



Fig. 2 In the red or in the green ?

The typical urban lifestyle, with its linear metabolism, puts us in the red on the resources scales for future generations. To make the needle swing the other way we must devise circular metabolisms using green principles.

2. IS GREEN NEW TO US?

The populaces, who have lived with nature and in the closest environs of it, have been the creators or the explorers of the most green and sustainable elements we use today to make our *green buildings*. Their buildings, their huts, their habitat, their structures are made out of the material which the site itself offers them. The practice of harvesting and conserving the rain water in desert areas like Rajasthan, by the local people, using the non porous stone slabs, and earth pits - is what we see, in the buildings having the highest energy efficiency levels today. Sprinkling of water on the porous mud floor and terraces made of mud phuska - providing cooler air at night and preventing the heat in that 'MUD' hut during the day time - is what determines the concept behind the wind towers that we see on the Green Building Sites in the present day. (The concept of evaporative cooling) The internal courtyards in houses seen in cities of Jaisalmer and havelis of Gujarat formed ideal open spaces creating shade through built form itself. Use of Khus pads as curtains against verandas and balconies - so that they could allow cool and moist air, when wet; as seen in the residences and hotel resorts - have their origin from the houses and the havelis of Jaisalmer.

Ethics and Ecology:

We all are responsible not only to ourselves but also to our future generations and therefore we must prepare to face challenges of the future. In so far as this is true, whenever we assess the life cycle of a project – we must ask whether and to what degree this project is crisis proof i.e. whether it will survive the future energy crisis - which is now very reasonable to expect. Hence – an ideal building would be self-reliant with respect to energy utilization and would mostly service itself through environmental energy and resources taken from its immediate surroundings.

Traditional architecture is characterized by a wide range of styles, morphological elements and construction techniques. Though climate was one of the primary factors that formed indigenous methods, it is certainly the source of every single structural or morphological element. Apart from climate, locally available materials have contributed to the evolution of types and shapes of roofs and construction techniques applied. Pitched roofs prevailed in regions with high precipitation; their geometry has varied as a function of building typology, for example between detached and terraced buildings. Flat roofs are quite common in coastal and southern regions.

3. WHY SHOULD WE BE STUDYING THIS?

3.1 Need for Identification

The original of all habitats is “troglodyte” living (cave living), and is a tradition that wisely continues in some parts of the world even today. Humans have lived in the caves for over forty thousand years. The cave is our original cradle. Our body feels comfortable when the cave conditions are re-created.

The growing concern with the environmental and the ecological questions that arose in the 60's and the 70's, led to the search for an architecture that is environmentally compatible or sustainable. Buildings constructed of earth, wood or other natural materials, that are energy efficient and make little or no impact on the nature of a site, and its resources, were designed with these ‘green’ issues and their solutions in mind.

Vernacular architecture, mostly of the pre-industrial times – invariably “got it right” and was in many ways and instances the result of the constraint on resources’ availability, whether financial or imposed by natural conditions. Most of our traditional concepts have found their way in the current building designs. The practice of building houses adjoining to one another in order to form courtyards emerged from the systems of vernacular huts built close together for protection against animals and forces of nature.

At any stage, man's development and his achievement in time, has been marked by two factors:

- *Resources*
- *Technology*

Resources have been the chattels which he could exploit to its maximum using the best technology available...i.e. let's say that (R) is the measure of the resources and (T) as the measure of technology. So that so the product 'P=(R x T)' gives us the status or the development at a certain stage.

Stage 1 (the past):

Earlier man had ample resources. But he lacked in the technology and the skill of extracting it. Thus (R) was high, but (T) lacked its contribution to make the product $P=(R \times T)$ a significant quantity.

Stage 2 (today, the present):

Man has ample resources and of course, enough technology to use them to his convenience and needs. Thus the product $(R \times T)$, today is a significant total.

Stage 3 (the future):

Man will have the finest of the technology, but the asset in terms of resources(R) will become very limited. Thus even if the technology (T) is considerably large, the resources (R) reduces the product.

Thus as a *conclusion*, the future will be in the same position as the past was. Thus we will need the same mutual understanding between us and the nature if we want to sustain, the understanding which the vernacular architecture had.

3.2 Respect for the site

In folk traditions, we find slowly evolving ways of putting buildings together, based upon the available resources gathered by hand, or at best with the use of rudimentary tools: buildings with their size, forms and surfaces directed by a combination of necessity and ritual. Traditional methods using human labor to prepare the site for a building have been replaced by massive, time and labor saving, earth moving technology and explosive devices. Rather than permitting the site to inform the design, the commonly used modern mechanized methods have the capacity to recreate the characteristics of a site within hours to suit the design. For example, building with the cob wall technology, digging out the footprint of the house will usually provide enough material to build the walls.

We should never forget that the fundamental aesthetic power is derived from the sense that every architectural detail is an extension of context.

4. CONCLUSION

4.1 Where does a traditional habitat feature in the green ratings of today?

What could be a better example of a green building than that which is made out of the resources provided by the site itself?

This means, the materials or the resources don't leave the site. Thus the ecological foot print of the site does not change even after the dwelling is created. Thus the change of the embodied energy of the site is restricted to a minimum. To minimize the effect of the harsh climate and the climatic

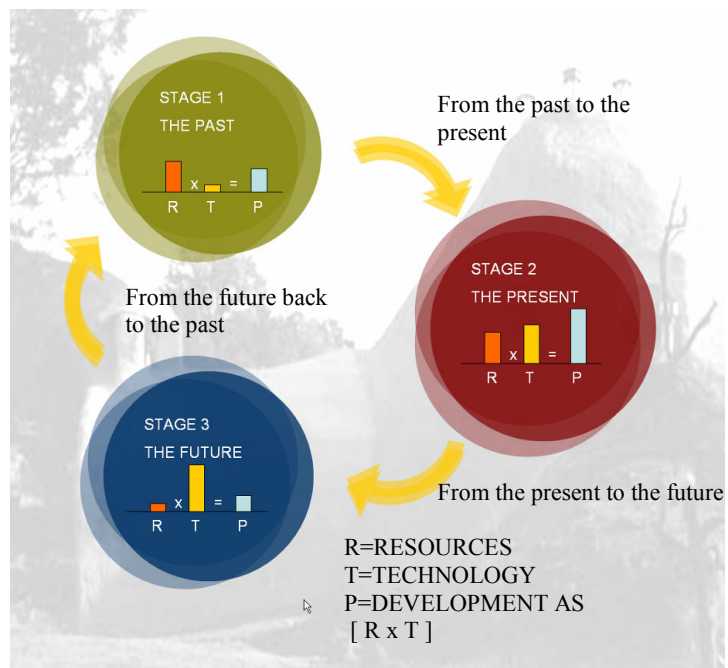


Fig. 3 explaining different stages in time in terms of resources and technology

changes, the traditional dwellings set themselves in such a manner so that in totality they reduce the impact of the climate on the building, keeping in mind the respect for the Mother Nature earth.

For instance, either they can shade each other (e.g. of Jaisalmer, India) or they could minimize the heat loss to the surroundings (like in Leh, India).

We know that the technology and the materials that we have inherited from our ancestors are not capable of building what we see as the upcoming skyscrapers, converting our calm cities into glass clad or concrete jungles. But adequate research and development of these can give us results that can fulfill the requirement of not all, but most of us. Over hundreds of years, the inhabitants of each climatic zone, of countries across the world have left examples for us to analyze and learn from them. Few think, that effectively the traditional techniques and the materials work out to be equally expensive, when compared to the modern materials. But it is for them to understand that the reasons for the high expenditure on maintenance of the traditional construction are mostly due to the lack of knowledge and awareness that they are carrying with them today.

Traditional buildings are not only habitats, but are also pure reflections of our culture. Incorporating and accepting the buildings and the expertise from someone who is not original to our culture, tradition, and is not sustainable to our climate; won't lead us anywhere in the course of time. Building should be taken as piece of pottery that should be crafted out of the capabilities and understandings of culture and tradition taken together. We have man made natural habitats coming up today like the EDEN that are adding to the definition of natural environment.

We have examples of buildings today having almost 100% glazing which have 50% of their annual energy consumption (electricity) going into providing adequate light on the work tables. Also the maximum of their energy consumption goes into maintaining comfortable temperatures.

The question is do we really need that...?

We are actually designing *solar cookers* today and then refrigerating them.

We must understand that comfort is not a product provided by air conditioning – but it is merely one of the ways to achieve it. ASHRAE also defines comfort as a state of mind.

We have only one planet and we must try and understand the dynamic nature of it and “Human beings” can very easily disturb its ecological balance.

4.2 Nothing built today is truly green...

Most of the works of the contemporary architects of environmental architecture would not be considered legitimate example of “*true green*”, if we follow the strict definition of conservation technology. No form of shelter constructed today with the exception of habitats built by few aboriginal cultures, can be credited as authentically green.

Every absorber plate and foil insulator required to build a solar collector, every chemical detergent used in a waste composing plant, every ream of paper needed to spread the ecological message and every drop of jet fuel consumed in transporting environmentalists to the international conferences places an additional drain on our resources.

The fact that the materials have developed in a chronological order of time, iterates the human tendency to explore building materials and energy efficient technologies close to the human comfort levels.

We should not be left with the belief that everything is vernacular, yet nothing is vernacular any more. The vernacular is not dead, and it has not ended. What has ended, or should end is our conception of it as the only harbinger or authentically, as the static legacy of a past. What will emerge, as vernacular; will be in form of a political project, a project whose principal mission will be the dynamic interpretation and re-interpretation of this past in light of an ever-changing present...

This - I believe will be the vernacular architecture of the 21st century...

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