

LIVING FOOTPRINTS

Sustainability and traditional wisdom

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ABSTRACT

The COVID-19 pandemic has shown us the reality. During this time of crisis, we are relying upon old tradition wisdoms of using Turmeric, tulsi, and hot water for sustainability. No wonder, even in the technologically modern 21st century, solutions can be found in olden times. Navaghras, Navseeds, Ayurveda and yoga belong to ancient times and there is so much to learn from it. What is sustainability - is it livable conditions, is it safe comfortable conditions, is it old living methods, or is it modernization/urbanization

I believe it is Simple Living. Sustainability is a style of life, a way of living, and gives us a social, cultural, and economic identity. Sustainability is not a term to be understood; it is a life to be practiced. Human beings' everyday activities are the essence of sustainability - the way we live, work, produce, plant, act and build.

Indian architecture is far more sustainable than its urban counterparts and has blended sustainability in unique ways with traditional Wisdom. The amazing skills were shown by primitive and peasant builders in dealing with climatic problems and their availability to use minimum resources for maximum comfort. Modern architecture has more advantage of acquired knowledge, but traditional wisdom can help drive maximum sustainability. Most of the wonderful buildings of the world were not made by architects, but by the local people, 'Architecture without an Architect.

Advocates of sustainability acknowledge that traditional architecture embody wisdom on which sustainable living should be based. It forces us to think how to establish a Sustainable community of pure survival inspired from our Traditional wisdom. In my paper I would like to highlight Traditional Wisdom skills for sustainable built form.

Keywords-Sustainability, Traditional wisdom, Architecture, History, Heritage, Vernacular, Culture

INTRODUCTION

The word **sustain** means “to hold up” or “to support from below,” a society needs to be supported by its people in the present and future. Our ancient societies took care of their community through the amalgamation of natural and physical environment with cultural, social, and mystical values. These are the societies where sustainability is evident and livable as daily practices.

Vernacular architecture is a **sign of identity**; it is the “**mirror**” of nations that reflects place, time, and culture. **Architecture is built by people** for mankind.

Traditional Wisdom

Traditional wisdom as seen in Vernacular architecture is increasingly damaged and gradually lost. Natural resources depletion and fast vanishing species are a reflection of the man’s insensitivity towards the environment. The low-tech, environment-friendly and energy-efficient design principles makes **vernacular architecture sustainable**. This design style imparts the structure with flexibility, a longer lifespan, energy conservation, waste minimization, low-cost maintenance and more. **Traditional constructs** are a result of a dialogue and proven model between the ecological, economic and social factors of a particular region. It is a wisdom bank that can lead to creativity in modern-day designers and professionals.

Joseph Kennedy defines vernacular architecture: “**an architecture style that develops from the particular climate and social conditions of a place**”. Building can be modern, convenient and smart, and at the same time be energy-efficient, sustainable and environment-friendly with a touch of old-world grace and charm. Vernacular architecture, in the World, is a model for sustainability; it embodies different cultural values, which may be applied in the conceptual design of buildings today. Traditional Indian wisdom is the best tool to teaching sustainability.

The modern building in India lack contextual unity with the past. Many regions have introduced tighter building standards and zoning regulations (e.g., fire safety, building life expectancy, energy codes), which make vernacular techniques difficult or impossible to apply. The benefits of vernacular architecture have been recognized throughout most of the long human history, but have narrowed in the modern period; however, they are now returning and influencing sustainable building design.

Modern architecture in India is a poor imitation of the west in terms of forms and technology. The industrial revolution and mechanization of materials have influenced the global architecture and set a new definition of aesthetics.

Vernacular architecture, such as the igloos of the Inuit people, or Tuareg tents - the folk structures evolved over thousands of years - allow people to survive easily in the most severe climate conditions on earth. Therefore, it is essential to encourage new approaches to vernacular architecture that go beyond the perspective of architects alone, to promote the emergence of an improved built environment.

For example, **Christopher Alexander** and his partners attempted to identify adaptive characteristics of traditional architecture that were applied across cultures. This novel idea simply comes from the

observation that most of the wonderful places of the world were not made by architects, but by the local people.

Architects are embracing regionalism and the tradition evidenced in the ancient structures, arguing that these structures have been proven to be energy efficient and highly sustainable. In the era of rapid technological development and massive construction, there is still much to learn from the cumulative knowledge embedded in traditional structures.

China, Iran, Malaysia, Turkey and India have emerged as research center of vernacular architecture while Russia, Central Asia, Africa, America, and Australia still lack studies.

In order to progress sustainable architecture and buildings in the future, designers must first have knowledge of the past and use these strategies as a well-balanced approach to achieve optimal environmental efficiency. In Nabatean buildings temperatures were controlled by proper construction of the walls. These were made three layers thick and were hermetically sealed on the outside and the inside with a porous insulating layer between. Slot like windows placed below the ceiling facilitated ventilation and stopped penetration of dust. Temperatures were high in the rooms in winter and considerably lower than the heat on the outside of the building in the summer. The extremely small courts around which were grouped the living rooms only helped in this matter.

Another way in which traditional architecture dealt with this problem was through the use of wind catchers. Such scoops or towers protrude above the densely built urban form and catch air flowing at higher velocities compared to that within the urban open spaces. This air is cooler than that within the city. Respond to the climate

Traditional construction takes into consideration the orientation, planning and layout of the building in accordance with the climatic conditions. The non-mechanical techniques like conduction, convection, radiation and stack effect and the layout of the home results in high-performing, climate-conscious structures.

Employ local materials

Use of indigenous and local materials directly reduces the need for transportation, cuts down costs, offers a resilient supply chain and limits energy usage in general. For example, thatch is a waste material obtained from dry crops. It is biodegradable, highly economical and is proved to embody considerable insulating properties when used correctly. Timber, Stone, bamboo, grass are other prominent materials particular to the vernacular of different regions of India. Conventional 'modern' materials are often produced and applied involving ecologically harmful processes.

Be environmentally friendly

The local architecture is sensitive to nature, and keeps in mind the landscape and on-site conditions. A low-footprint home that respects the surroundings before, during and after the construction truly abides with traditional wisdom of building design.

Be socially and economically sound

Local workers and craftsmen built houses with their available knowledge and skill sets. This turned out to be an economical and socially uplifting strategy of construction generating employment for local craftsmen and professionals in the region and also led to the development of specific styles of architecture according to the availability of skills and resources of that region thus preserving local heritage and creating a cultural legacy that we see in different areas today. The successful coexistence of nature and built environment in vernacular architecture has proved that a sustainable and environmental friendly development is also achievable through the indigenous quality of a region. The vernacular architecture, in the World, was exposed to extensive deterioration and destruction, due to the rapid modernization and drastic economic, social and cultural changes that took place. The paradigm of 'sustainable development', describes three conceptual pillars as the facilitators of sustainable development.

Economic sustainability refers to rationalized production and consumption, with a provision for the future needs. Production must satiate current requirements of consumption, but not at the cost of the future upheavals.

Social sustainability as defined 'a way to achieve the protection, promotion, and preservation of these values for future generations. This includes human rights, preservation of diversity, protection and promotion of health and safety, intra and intergenerational equity among many others'.

Environmental sustainability means ecosystem integrity, carrying capacity and biodiversity. Resources must be generated faster than they are lost. Wastes must be emitted no faster than they can be assimilated by the environment. The interlinking and integration of the three pillars leads to bringing about an all-round holistic development.

For me, vernacular architecture is the built environment (city, architecture, and interior spaces) created based on the society needs. It is built in accordance with the natural environment fulfilling people's physical, economic, social, and cultural norms.

In the past three decades, the world witnessed great awareness toward environmental dilemmas such as global warming, resources depletion, energy, air and water pollution, waste, population growth, and globalization.

In his book "**Encyclopedia of Vernacular Architecture,**" **Paul Oliver**, an architectural historian and writer, accentuated the multidimensional relation between society and vernacular architecture: "*It is particular characteristics of vernacular architecture that each tradition is intimately related to social and economic imperatives; it has developed to meet specific needs within each cultural milieu*".

The reevaluation of vernacular architecture can offer an indefinite source to develop worthwhile ecological solutions for the built environment responding to society needs.

In traditional societies and for centuries, people have lived in harmony with nature; they grew their food from surrounding region and developed their lifestyle in accordance with the available

resources. They have construct buildings using the local building materials available in the surrounding environment using their hands and developing building techniques affiliated with the physical characteristics of these materials.

Change in historic urban environment is inevitable and is to be embraced –turning our cities into urban museums, frozen in some artificial construct of their past is neither an option nor appropriate. The key to long term livability of our cities is to manage changes through processes that provide us with such conservation solutions that are sustainable and maintain the intrinsic values of the natural environment that respect the values if historic heritage and support the kind of societies that we wish to pass on to our future generations.

We may rely on passive thermal controls provided by a well-designed house, rather than energy-based HVAC installations, or on daylighting rather than artificial lighting.

Three reasons can be suggested for **preferring passive controls**:

- 1 economic: the operation of active controls costs money; passive controls are more economical, even if their capital cost is somewhat higher
- 2 environmental: active controls use energy; reduced (or avoided) active controls lead to energy conservation, thus conservation of resources and reduction of emissions.
- 3 aesthetic: a building designed to be in sympathy with its environment

Worsening climatic conditions have changed the way we plan and make infrastructure nowadays. We plan for buildings to stay cool naturally, have more sunlight, and last longer. All while using recycled material and use more efficient ways of construction.

Many of the historical monuments, that were built centuries ago still stand strong and have faced many climatic and man-made disasters. They were built with mainly sand and by breaking rocks, take two of the seven wonders– The Taj Mahal (Marble) and The Great wall of China (Stone).

Traditional architecture is a result of true ethical commitment to the local people, their cultures and traditions. But, the influence of Western culture and the need to build an internationally acceptable construction style have led to a reduction in traditional building solutions. The new generation of inhabitants looks for an increased level of comfort in their houses and such standards can only be met by using modern machinery which has substantial initial costs and higher energy demand. However, with careful use of traditional solutions, it is possible to reduce energy needs drastically and use enough architectural style to build a more pleasant home. A mixture of modern and traditional methods to construct a building can be cheap, efficient, and sustainable for generations to come.

Tradition is both a potential launch pad for new ideas as well as a potential hindrance. The present task therefore is to better understand the reciprocal relations between the two, the way one complements, feeds into, stimulates, or hinders the other.

Open minds to Sustainable changes

The changes that can be made in our practices like unnecessary travel, use of essential services, work from home practices, use commercial and retail facilities, impact on tourism and recreation facilities and introspecting the sensitivity of space, dimensions, emotions and sentiments in architecture.

Sustainable Human cities are the need of the hour. Smart city is a fashionable word. We need more responsible cities with focus on walkability, cyclability with open and breathable spaces. Remote working has actually given us lots of advantages in terms of energy saving, time saving. Looking back in our traditional ways of design through century old cities like Jaisalmer and the passive design systems used there might be the way to go forward.

Need to open Indian minds to totally new ways of thinking about Indigenous materials and learning from Craftsmen wisdom in coherence with Nature .Traditional architecture teaches us concepts that do not alienate the community from its content.

The evolution of the Built form should be a result of interaction between the user and his environment which not only includes natural but social, cultural and economic environments.

One of the salient qualities of vernacular architecture is to evoke **Delight in the user** as well as the onlookers. **The old-time wisdom still has a lot to offer.**

Sustainable Practices

Before modern heating and air conditioning was widely available, people still found ways to keep their homes well lit and comfortable. The way a house is situated can have a big impact. "Orienting the home to catch sunlight and breezes can reduce the reliance on other energy sources for heating and lighting. "The house should be situated in such a way that helps to cool it in summer and heat it in winter, while capturing as much light as possible."

It takes some careful planning to achieve maximum efficiency. The architect needs to consider where sunlight falls on the house at different times of the year, as well as what direction the wind travels across the property. The placement of windows and doors is another important factor. "In older buildings, we often see that the front and back doors are in a direct line with one another, as are windows. This allows breezes to sweep through the house and cool it."

External shutters, often seen as a simple home decoration, can have an impact on energy savings as well. Another traditional feature is the large front porch with an overhanging roof. "The porch is a wonderful passive cooling technique for homes. Not only does it offer shade, it also creates an extra living space that can be used comfortably through much of the year. Simple color and landscaping techniques provide ways to save energy, too. "Planting a row of deciduous trees along the south side of the house will shade it in summer. "Once the leaves fall in winter, the sun can shine through and warm up the home, while the trees still provide a wind break."

Sustainable village -Odanthurai (South India)



Odanthurai is a village in Tamil Nadu noted for its Green House Project Scheme. The village generates sustainable electricity for its own use, as well as for the Tamil Nadu Electricity Board.

Rapid development, focused on the community, has seen the building of a primary school, a middle school and a high school in the village

Solar street lighting and biogas is produced using human and cattle excrement. It is connected to each house for cooking purpose. People are provided with free training to setting up small shops and some of them are now making jute bags and mats.

Positive impact on the environment can be made by making small changes in our daily habits

1. Unplug device chargers when they're not in use. Change to eco light bulbs.
2. Save water in the bathroom with a low flush toilet. Low-flow shower heads and faucets can reduce water consumption up to 50 percent.
3. Set the thermostat in the mid-20s to conserve energy and save on costs. Control heat from the sun with closed curtains in summer and open curtains in winter.
4. Xeriscape (landscape with plants that need little to no irrigation) .Compositing of organic waste
5. Paper bags - use them as biodegradable trash bags in your home.
6. Use non-toxic cleaners. Natural cleansers – baking soda, borax, lemon juice and vinegar – can be used for many cleaning tasks in the home.
7. Capture and use rainwater with a rainwater storage system. The water can be used for non-potable purposes, like watering outdoor plants. Add a filtration system for potable water that can be used for drinking, bathing and laundry.

Traditional Indian wisdom is full of instances where human sensitivity towards nature is glorified. The principles of sustainability were established years ago in Vedas, Jain, Buddhist texts, and Kautilya's *Arthshashtra*.

Inferences

Through this study I found that the following trends in the research on vernacular architecture need to be strengthened:

To provide a stronger theoretical and practical basis for effectively preserving the values of vernacular heritage and protecting the ancient building stock.

To investigate the perception and expectation of occupants living in existing vernacular architecture.

To study whether modern systems can implement in old traditional skills, thereby meeting present living standards without changing their original/traditional forms and/or features

Conclusion

Sustainability has been extensively reported in the Indian scriptures. The 4 *Veda*, the *Upanishads* and the 18 *Puranas* are inundated with expressions in the forms of invocations and eulogies to different Gods and Goddesses. Vedism is a way of life based on scriptures called *Aranyakas* which were written by sages who lived in the forest. Lessons from ancient wisdom provide holistic vision and approaches judiciously in solving our problems.

Development is essential and inevitable for growth and evolution of humankind. We should also be able to manage the well-being of the future generations who are the distant stake holders. Conflict between the short-term immediate gain and the long-term larger benefits will arise and therefore, it is the responsibility of each one of us towards a sustainable world.

The Indian traditions focus on the harmony and well-being of the large human order based on cooperation and sacrifice for the future generations and preservation of resources; this is currently being emphasized by many scholars as 'sustainability. In other words, traditional societies were the real pioneers of sustainable development over time in the perspective of natural and built environment.

It can no longer be disputed that the resources of this earth are finite, that its capacity to absorb our wastes is limited and that if we want to survive, we cannot continue our ruthless exploitation of the environment.

As Human beings, we have immense responsibility for sustainable development.

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