PUNE RESEARCH TIMES ISSN 2456-0960
AN INTERNATIONAL JOURNAL OF CONTEMPORARY STUDIES VOL 6, ISSUE 2

VERNACULAR ARCHITECTURE : A REVIEW

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ABSTRACT

Vernacular architecture is a form of architecture that considers all of the needs and requirements of the inhabitants, as well as nature, building materials, and cultural traditions and values. It evolves over time to reflect the community's culture, traditions, history, climate, residents' desires and needs, and economy. Structures designed by professional architects are not considered as vernacular architecture. The main concept of vernacular architecture is architecture that is not intentionally or knowingly planned. It is designed specifically for the local environment, using local environment. Architect Paul Oliver stated that vernacular architecture is "the architecture of the people, and by the people, but not for the people". The main purpose of this study is to investigate passive/ bioclimatic/ environmental ecological design principles/ measures/ features to achieve a comfortable living environment, eco-friendly and energy-efficient architecture.

Keywords: *Vernacular Architecture, Vernacular Planning, Local Resources, Tradition, Climate Responsiveness, Indian Vernacular Architecture, Sustainability, Building Scale, Vernacular Buildings.*

1 Introduction

The term "Vernacular" is derived from the Latin word "vernaculus" which means domestic, native, indigenous. ***(O. Paul, 1997)*** Vernacular architecture is now considered a sustainable

architecture model, and the techniques that are now the foundation of sustainable building are derived from elements and features of this style of architecture. Nowadays in modern life, every technology and technique for comfortable life is available. ***(F. Mirahmadi, H. Altan,2017)*** With growing concerns regarding the future well being of our environment in terms of energy consumption, global warming and the provision of housing for the rapidly growing population, architects and developers are actively seeking ways to minimize the negative impact on the environment while providing for contemporary needs. As 'sustainability' is becoming a topic concerning professions within the built environment, there are many contemporary, renewable solutions being developed in order to tackle the issue. Relatively recently however, there has been research carried out regarding the use of vernacular architecture for a more sustainable future.***(H. Ghodsi,2012)***

In general, vernacular architecture refers to buildings that are designed using local technology, craftsmanship and building materials that are locally available to ensure climatic comfort for users. Vernacular architecture thus portrays the geographical, cultural and historical characteristics of a specific area as well as the period of time. There are various forms of vernacular buildings found across the world. For Example, Igloo, Desert mud houses, Cave temples of the Buddhist era, Hindu temples of Khajuraho, Mughal Forts and Palaces, Havelis in Rajasthan, Floating houseboats of Kashmir, Bamboo construction in Bengal and Assam, Chettinad houses from Tamil Nadu etc. So, it is prominent that a particular architectural style is derived in a specific region blending local resources, tradition and climate responsiveness into the buildings.

Statement of problem:

The population in our country has grown at a phenomenal rate. That has placed great strain on the non renewable resources. The ecological footprint has increased tremendously. It is putting the built environment under great pressure. Since vernacular architecture uses natural, readily available materials, vernacular architecture is environmentally friendly. As a result, embracing the vernacular style of architecture is important for a long-term future.

Objectives:

1. To investigate passive/ bioclimatic/ environmental ecological design principles/ measures/ features to achieve a comfortable living environment, eco-friendly and energy-efficient architecture.
2. To learn about vernacular construction techniques.
3. To study social cultural values of vernacular architecture.

Scope:

The aim of this study is to show how vernacular architecture is one of the most important sources of knowledge for understanding and explaining a community's ideas, opinions, rituals, practices, and belief systems, as well as its family and interpersonal relationships and neighborhood ties. Official and monumental buildings are considered independent of local architecture.

Methods:

The findings of this article are based on literature review. The literature reviewed is a mix of articles and papers about the study of Vernacular Architecture, basic study of materials, structural implication and construction techniques. Intensive literature review has been carried out to identify as much information as possible from existing literature.

FACTORS INFLUENCING VERNACULAR CONSTRUCTION

Locally Available Materials:

The first factor influencing the development of vernacular construction practices is related to the availability of local building materials. In many areas, the locally available resources have governed the use of the following constituent materials for walls:

1. Adobe (mud blocks or whole walls)
2. Masonry (stone, clay, or concrete blocks)
3. Timber

Frequently, a combination of materials has been used in the construction.

Vernacular Planning Concept:

Indian vernacular planning involves planning and designing a built environment with the informal, functional design of structures. It is mostly found in rural areas of India, with structures built using local materials and designed and planned to meet up with all the needs and requirements of the local residents. The structures built are not just made by using vernacular materials but even the planning is done keeping in mind the necessities of native society and culture. The builders and planners of these structures are untrained in formal architectural design. This is reflected in their work which reflects the rich diversity of India's climate, the local building materials, and the elaborate variations in the social customs and craftsmanship. The rich vernacular tradition of India starts from the natural settings of the site, and responds to metaphysical concerns, climate, local skills, construction materials and

appropriate technology. The form of a building plan is correlated with the cultural, historical background and planning traditions of a particular region. The concept may be discussed in Macro and Micro level. ***(D. Kaninika, 2015)*** The layout of vernacular structures is an important factor that influences and drives their design. Many cultural, historical, and urban planning patterns have been connected to the archetypal form of a building plan. The size of the building is ruled by its particular use. The mixed-use buildings necessitate construction of an additional floor, which calls for increased wall load-bearing capacity, especially if these walls also need to withstand earthquake effects. It should be noted that the building size is also related to the population pattern and housing density in a given area.

Typology:

Depending on the rural and urban settings, vernacular architecture can be described as 'rural' and 'urban' respectively. Proposes a category of vernacular buildings based on their usage.

Architecture Reflects Culture:

Architecture is a product of the culture that it was designed for. And architects usually aim to construct spaces for the times and the people who will use them, becoming inherent problem solvers. They don't just construct solid and strong buildings. They build ecosystems where, now and in the future, individuals can gain in numerous ways. All is about the big picture. The relationship between architecture and culture is one that has been studied for many years. But what's happening now is much more revolutionary. No longer is a static creation that performs well for a while, the mindset now to build in a way that adapts to a culture's changing needs.

Climate and Architecture:

A fundamental purpose of architecture is to provide shelter from the elements; that is, to purposefully shape the immediate physical, as well as social and aesthetic climate in which we live. This energy – originating in the sun, and converted into a variety of forms – represents a recurring and persistent source of income, which builders have drawn upon for millennia. Most of the traditional and modern buildings built as vernacular buildings are well lit and well ventilated/climate responsive to reduce the use of artificial lighting and air condition systems. There was a strong use of microclimatic management of making use of water bodies in forms of canals, pools or fountains etc in open spaces like the courtyards. This helped to modify the unfavorable climatic impacts of hot and dry climate. The thick walls were used to introduce time lags in the fluctuating diurnal cycle. Light is one of the most important aspects of architecture both in terms of quantity as well as in terms of its qualitative aspects like glare. Most of our buildings had grills and fenestration/façade work

done to control and manipulate light by means of strategies like Jalis or double windows with wooden Louvers etc. Many religious buildings such as mosques or masjids and temples also used similar strategies to control light and air movement.

Building Material:

The availability of local building materials has a great contribution in the development of vernacular construction. Materials used in old and contemporary buildings are different in many properties, such as density, thermal conductivity and heat transfer. These differences affect the thermal performance of the buildings. Traditional building materials, such as timber, stone and clay, are undergoing a revival in that they offer sustainability where the more labour intensive and costly materials, such as (reinforced) concrete, fiberglass, glass and steel, are unrealistic in terms of budget. Result of a complex balance between material, shape and natural context, vernacular architecture is the most integrated architectural form in communion with the environment. As vernacular buildings are always realized with a direct participation of the first owner, they constitute the expression of practical and spiritual needs of each community, sharing same values systems. Synthesis of centuries of life experiences and building traditions, vernacular architecture is a synthetic and symbiotic harmony of individuals, community and the built environment. ***(I. Ciotoiu, N. Georg,2010)***

CONCLUSION:

Though this style of architecture is less common in modern times, it is still encouraged for long-term construction. Since the construction industry absorbs a substantial portion of the world's resources and contributes substantially to global greenhouse gas emissions, it poses a danger to human survival. Architects, architects, and town planners will collaborate to construct green buildings, which will help to promote sustainable growth. Architects are currently concentrating on vernacular buildings in order to make them more energy efficient and sustainable. Even in this age of rapid technological innovation and urbanization, there is still space for vernacular tradition to be adopted. It can be used as a blueprint for long-term growth by integrating historical lessons with modern technology. The study of local vernacular architecture will assist in developing a green building design strategy. Indian traditional architecture is well known for combining energy conservation and sustainability. As a result, vernacular architecture is one of the most beautiful architectural styles in the world. Since it uses natural, readily available materials, vernacular architecture is environmentally friendly. As a result, embracing the vernacular style of architecture is important for a long-term future. Since it uses natural, readily available materials, vernacular architecture is also environmentally friendly. Using local materials is also cost efficient since these materials are readily accessible and do not require transportation.

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