

# Reflecting on Vernacular Architecture and Lifestyles

Ar. Shreyasee Shinde

**Abstract**— The current pandemic has had a lasting effect on us all. It has made us reconsider how we groom ourselves, how we interact with each other, and most importantly how we perceive and dwell in spaces. Looking back at our traditional values, this paper attempts to seek knowledge from some of our customs and practices, and from how we lived.

Our building techniques and design of spaces blend in with these traditional values and create a diverse interweave of climate-responsive architecture. The use of local materials, function-oriented house layouts, water that sustains and brings life to spaces, all become a part of a great piece of architecture legacy. Some spaces speak with the play of light and shadow- some open up and invite in a part of the universe in the house through courtyards, some that close and shelter from the elements. And then there are transitional spaces that challenge the very notion of a threshold- a unique social space with a multitude of uses.

The concept of zero waste that in recent years is gaining popularity, was an inherent part of the lifestyle in the past- use of recycled materials in daily life. This zero-waste technique also reflected architecturally. Food waste management gave rise to Chabutaras. Some unique social spaces emerged from rainwater harvesting and water storage like *hauks*, *water kunds*, and *step-wells*. Several examples highlight this sustainable way of living. This paper will analyze and reflect on all such examples from different parts of India. Understanding this vernacular architecture response will be the key to building for the future.

**Index Terms**— climate-responsive architecture, traditional values, transitional spaces, vernacular architecture, water management, zero waste systems.

## 1 INTRODUCTION

# H

UMANS have always been able to sustain, survive, and flourish on Earth even in the most challenging circumstances. The spirit of living and thriving is inherent since time immemorial. As we evolved, our spaces evolved with us. Mud, stone, and wood were the building materials of earlier houses all across the world. In India as well vernacular architecture took roots with the use of these materials. Spaces created thus were not only defined by their function but also by the social setting of that region.

Many structures emerged right from religious and institutional to residential all following a certain geometry and rule. The creation of sacred spaces like temples was also defined by a set of rules. Each element had a name, each dimension was specified according to the divine laws. The book on King Bhoja's *Samrāṅganasastradhārā*<sup>1</sup> elaborates on this aspect where the ancient scripts define the use, size and material of every element of a temple [1]. It also notes down what are the duties of an architect and how he needs to master both theory and practice.

*“sthāpatyamucyatesmābhiridānāmprakramāgatam |  
jñātenayenajñāyantesthapatināmgunāgunāh || 1 ||*

1. Now we will explain the features of an architect, following the (stated) order. Understanding this, one understands good and bad qualities of architects.

*sāstram karma tathāprajñāsīlamcakriyāyānvoitam |  
Laksyalaksanayuktārthasastranīsthonarobhavet || 2 ||*

2. Erudition, practice, wisdom and discipline endowed with activity:

He should be a man well-versed in the sastras and in the proper meanings of things defined and their definitions.

*samudramganitamcaivajyotisamchandaevaca |  
Sirājñānamtathāsīlpamyāntrākarmavidhistathā || 3 ||*

3. *Samudra*,<sup>2</sup> mathematics, astrology, and *chandas*,<sup>3</sup> Knowledge of *siras*,<sup>4</sup> the crafts, and the preparation of mechanical contrivances

*etānyangānījanīyādVāstusāstrasyabuddhimān |  
Sāstranusarenabhyudyalaksanāicalaksayet || 4 ||*

4. The intelligent person should know these limbs of the science of Vastu, By ascertaining perfectly the *marmas* (sensitive points) and their perforations, together with the type of *siras*.<sup>[1]</sup>

The concept of *Vāstu Purush Mandalas* was on this lines- where the house was treated like a cosmic, sacred space, divided into 9 squares and spaces designed accordingly. Every room in the house was oriented keeping in mind its purpose.

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This paper will elaborate on a few examples on vernacular architecture techniques throughout India to understand and infer from the way of living.

## 2 VERNACULAR ARCHITECTURE IN VARIOUS PARTS OF INDIA

### 2.1 Himachal Pradesh- Climate Response

The mountain areas of Northern India show a unique style of architecture. This region is home to tall deodar trees and high mountains of slate stone. The locals, therefore, build houses of these naturally available materials. The houses in a typical village are stepped, along the contours and closely spaced. The plinth of the house is made up of slate stones. For the framework, slate stone and beams of deodar wood are placed horizontally in alternating layers, to make the walls of the house. The walls are thicker at the bottom with bigger pieces of stones, and decrease in size as they go up. The gap between the wood beams infilled with rubble to give support to the frame. This interlocking technique, known as the *Kathkuni* construction technique provides strength and movement to the structure which is key when building in earthquake-prone areas. [2]

The use of stone and wood without any mortar or binding agent makes it a dry masonry construction. As the finishing is rough and the stone is uncoursed, it makes it easy to construct. The slates on the roof are placed in such a manner that the rain and snow can slide off easily. In the event of an earthquake, these tiles slide off and fall outside instead of coming crashing down inside the house. The rubble inside the framework stops the cool wind from entering the interiors.

Spatial planning is done in such a way that the cattle are kept on the lower levels while the living spaces are on the upper levels. Verandahs are used for social gatherings during the summers. During the winter months, most activities take place indoors in the warmth of the walls and the heat emitted from the cattle in the lower storeys.



Fig. 1. Image showing Kathkuni construction technique- Jana, Himachal Pradesh

### 2.2 Maharashtra-Spatial Experience

The Maharashtrian Wada (dwelling) developed and flourished during the reign of the Peshwas. A typical wada rectangular in plan, with courtyards in the centre surrounded by rooms on the periphery. The first courtyard (*pahila chowk*) was a public chowk where guests were entertained. The second courtyard (*dusra chowk*) was a private one, usually restricted to the use of house members. This courtyard has a passage running around it called as *Osari*. An *osari* was a space between the open courtyard and the closed rooms. This transitional space creates a fascinating realm. It is neither inside nor outside.

This space is known as the fold [3]. This fold is an in-between space where the linearity of the boundaries is interrupted. There is no strong anchor point that ties this boundary together. This space challenges all that is real and physical. It challenges the notion of borders, privacy. It is the space of transformation and passages, where a multitude of things intermingle and events unfold.

Venturi notes that designing from outside in, as well as the inside out, creates necessary tensions, which help make architecture. [4]



Fig. 2. Image showing the play of light and shadow in a transition space- Osari (Sardar Purandare Wada)

Within the area, a spatial layout was determined by the application of a structural grid of square units known as *khann*. The *khann* measurement varied from anywhere between 1-2 metres depending on the size of wooden members for beams available. Each point of intersection on the grid, i.e. the four corners of a *khann* were marked by a column. [5]

Rooms were rectangular, attached by common walls. Staircases were single flights embedded in walls. Water was channeled through nearby lakes and dams into the house or nearby water cisterns (*hauds*). Some houses had private wells. Water was used aesthetically through water fountains (*pushkarnis*).

<sup>1</sup>Theory and Practice of Temple Architecture in Medieval India- Bhoja's *Samranganasutradhara* and the Bhojpur Line Drawings by Adam Hardy.

<sup>2</sup>*Samudra* here is in the context of not only reading the hand, but to recognizing various features (of the face, body, etc.) and making predictions based upon them.

<sup>3</sup>*Chandas* is the study of prosody, but is also used in the sense of design, or architectural rhythm (plan and elevation).

<sup>4</sup>*Sirasare* orthogonal lines lain over the site or field in its ritual transformation into the deity housing vastu.

### 3 WATER MANAGEMENT TECHNIQUES

#### 3.1 Mandu, Madhya Pradesh

The *JahazMahal* in Mandu, Madhya Pradesh is a well-known example of efficient water management techniques. Mandu lies in a relatively hot climate of 25-30 degree Celsius. The orientation of the *JahazMahal* is North-South thus bringing in the cool breeze as much as possible. Many water structures lie within the premises of this palace also adding to the coolness of the structure. Some of these are from ponds, step-wells, wells, and cisterns. A unique piece of water architecture is seen here- *Kamal Kund*. Where the water inlets spiral around in an interesting pattern thus allowing the flow to settle and slow down before it enters the pond. The spiral track is lined with sand and pebbles to filter out suspended particles and allowing them to settle[6].



Fig. 3. *Koorma Kund*, a pool shaped as a tortoise [6]



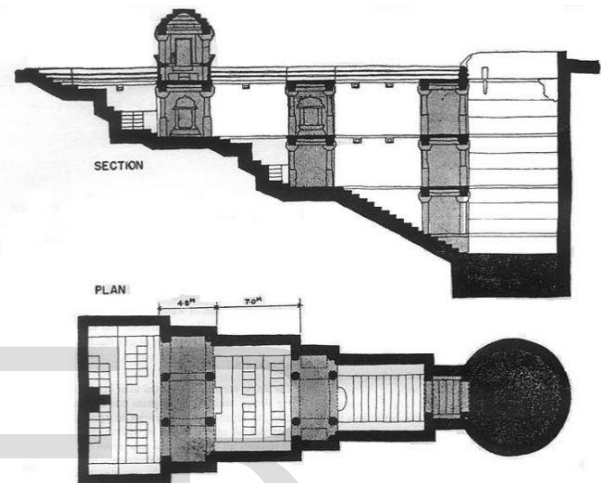
Fig. 4. The spiral channels that would slow down and filter the water before it entered the *Kund*[6]

In some palaces, rainwater collected and stored in terraces would be channelized through a gap between walls thus cooling them down and providing comfortable internal living spaces. The water which now got heated from absorbing the heat from the walls would be then passed to baths in the lower levels. This showed a well thought out and efficient water

management plan.

Step-wells in Gujarat and Rajasthan were a successful example of climate responsive thriving social space. A typical step-well has 2 access points- one a circular well that is accessed from the ground level to draw water. The other point acts as an entrance with steps that go underground to the lower levels.

During extreme heat it is impossible to stay in the streets for a long time. The step-wells thus acted as social pavilions where people could sit and catch-up and kids could play, enjoying the cool breeze that the well water provided. The space provides a fascinating example of the play of levels and contrasts, of light and shadow, of above and below, of movement and stillness.



[7] Fig. 5. A step-well from Gujarat. The levels acted as social spaces in summers.

### 4 ZERO WASTE SYSTEMS

The concept of zero waste is not novel but rather been practices from centuries ago. The meaning and setting might have changed, but the idea of not wasting food was and is prevalent. In Gujarat there were free-standing structures called *Chabutros*- (from *Kabutari*. e. pigeon) literally pigeon towers. People used to share their leftovers in these towers which fed all kinds of birds. The underlying religious significance of feeding one's ancestors would also be fulfilled by these practices.



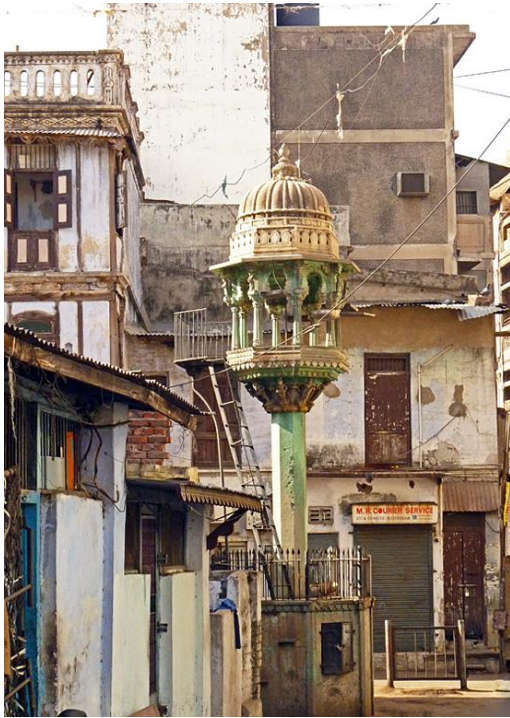


Fig. 6. A typical design of a Chabutro

Auroville, a universal city practices food waste management practices. The Solar Kitchen in Auroville, which is open to visitors is a great example of self-sustenance and zero waste system. The Aurovilians<sup>5</sup> grow their own food, visitors can eat in this huge solar powered kitchen by paying for a meal to experience how the system works. You can take as much food as you want but finish what you have on the plate. Once you've eaten, you take your plate to the dustbins to dispose of any leftover in the bins depending on solid and liquid foods. The total amount of food waste is displayed at the entrance to create general awareness. The minimal food waste is then collected and used in farms as manure.

## 5 CURRENT ADVANCES

Cost-effective and sustainable construction techniques in the Indian context were used by many architects. Among them, notable contribution was of Laurie Baker whose designs were not only sustainable but primarily built for lower-middle class clients.

His buildings highlighted the use of brick- a humble yet versatile material, which he used in different ways to create patterns (brick jaali screens), which facilitated natural airflow throughout the structure and kept spaces cool. The building's interior in addition to creating intricate patterns of light and shadow. His designs always boast traditional Indian sloping roofs and terracotta tile shingling with vents to allow hot air to pass through and keep the interiors cool and comfortable.

One of the most relevant examples of sustainability in the Indian context is the development of Auroville- a universal

city based near Pondicherry. The city provides a constant ground for experimentation and its development revolves around key aspects like environmental restoration, organic architecture, solar passive architecture, vernacular building materials and technology, rainwater harvesting, renewable energy, solid waste management, and so on.

Many experimentations using local materials and craftsmanship is explored by architects throughout the city.

Notable among these buildings are: The Wall House designed by Anupama Kundoo, which focus on three aspects- cost-efficiency, using local materials, and climate responsive architecture.

Experiments conducted by the Auroville Earth Institute are constantly aiming towards these goals. Many of their key projects have won sustainability awards on national and global levels.

Auroville, in a way, bridges the gap between the traditional knowledge and techniques to building the cities of today. A sustainable way of living which has somehow phased out in the last few decades in the urban context. The goal of this paper is to identify this link that will help future city designs in not just India, but all over the world.



Fig. 7. Brick samples and roofing prototypes developed at The Earth Institute, Auroville

## 6 CONCLUSION

Based on these successful practices of vernacular architecture and sustainable lifestyle techniques used all across India, it is evident that they work and can relate to any climate setting. We can go back and learn a great deal from these practices, modifying them to cater to the needs of the present and the future. The motto of everything in moderation is aptly applied in today's scenario where we have all that we need but still crave for more- where our social stories portray a different reality.

Our past has taught us to learn and adapt to our natural settings- to be one with nature. Ultimately what we aim for is adaptability, integrity, sensitivity to the surrounding, and timelessness.

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