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ABSTRACT

Walls are fundamental elements of architecture. In their capacity to create shelter they are universal. The objective of this paper is to study and analyse walls in their role of constructing social and cultural meaning in the built environment. The paper thus entails a study of walls as material culture in the context of patterns of belief, customs, gender and community. The paper focuses on the manner in which this meaning is embodied in the wall as construction technique, material and aesthetics. The interplay of a climatic response and a socio-cultural solution will be described. Vernacular architecture from five climatic zones of India will be studied. The paper will therefore look at walls as a cultural response to the environment and will describe the varying systems which different cultural traditions have produced to respond to the environment. Vernacular architecture from five climatic zones of India will be studied. Through a set of parameters which define their architectural language in terms of the physical properties of the walls, the paper discusses the way walls are articulated to convey meaning based on cultural differentiation. Amos Rapoport's compendium of ideas is used as a theoretical framework. The discussion restricts itself to walls in domestic architecture of India with a few global examples for cross comparison. The paper ultimately looks at walls as a product of cultural response to the environment through varying resilient systems present in vernacular architecture and re interpreted to contemporary conditions visible in some of the contemporary architecture of India.

Keywords: vernacular, walls, culture, aesthetics, architecture

Introduction

Vernacular architecture is a response to the environment. Vernacular architecture does not employ architects. It does not employ technological advances to overcome situations but uses local knowledge and skills to negotiate issues ranging from climatic conditions, social issues and defense and political issues. Vellinga “proposes widening the vernacular concept so that it includes all those buildings that are ‘distinctive cultural expressions of people who live in or feel attached to a particular place or locality.’”¹ This compendium of knowledge which is based on specific cultural norms and practices specific to region and people is invested as tradition being passed on from generation to generation in amongst other things its building techniques and architecture and present as its material culture. A worldview which uses value systems organize its meaning is expressed in the built environment. Studies on vernacular architecture are vast and concentrate on all aspects of the dwelling as a whole. The presentation will focus on the aspect of material culture as present in walls in habitats. Vernacular architecture is considered as a process. “Vellinga’s approach certainly facilitates the perception of vernacularity as a dynamic process. Kopytoff emphasised the processual character of all kinds of buildings being driven by the continuous change in their use, function, and meaning (1986). Research on dwelling traditions belongs ... no more to architecture than to anthropology, archaeology, geography or art and architecture history—to name just a few’ (Bourdier 1989, 36). It is impossible to separate a house providing physical shelter from the dweller in the house: that is the person who lives and works in the house and gives it an identity.”²

Scope and Limitation

India has a vast source of examples of vernacular architecture. For this presentation a few samples across five climatic zones of India will be analysed in terms of the role of walls as ‘objects’ of material culture. The paper focusses only on the typology of habitat.

Methodology

Case study approach using examples across five temperature zones of India.

Literature Review

Definitions

Dr Catherine Freely describes ‘material culture’ as “the changing relationships between people, things, places and time.”³

“**Material culture** is the aspect of social reality grounded in the objects and architecture that surround people.”⁴

“**Material cultural** can be described as any object that humans use to survive, define social relationships, represent facets of identity, or benefit peoples' state of mind, social, or economic standing.”⁵

“The term “Vernacular” is derived from the Latin word “vernaculus” which means domestic, native, indigenous.”

The Encyclopedia of Vernacular Architecture of the World defines vernacular architecture as:

“...comprising the dwellings and all other buildings of the people. Related to their environmental contexts and available resources they are customarily owner- or community-built, utilizing traditional technologies. All forms of vernacular architecture are built to meet specific needs, accommodating the values, economies and ways of life of the cultures that produce them.”⁷

Building Type Definitions Based on Materials

In vernacular architecture, “a tentative line maybe drawn between two groups of building. Those constructed of short lived materials-mud, sticks, grass-are defined as *kaccha* (hindi for unripe, raw, incomplete).They contrast with *pukka* (proper, ripe, cooked)structures made to last, using more tenacious material-worked stone or timber, burnt bricks, lime plaster. Many combine several ingredients: Indian architects refer to them as semi-pukka buildings.”⁸

When looking at a theoretical approach Dr Catherine Freely in the Introduction to Material Culture, lists out as “significant points within a theoretical framework for an analysis on “material culture”

- Agency
- Dualism
- Object /subject”⁹

From the various lists of approaches in anthropology Dr Freely has listed in her Introduction to ‘material culture’. “The social life/cultural biography of things approach by Igor Kopytoff seems most appropriate for this study.”¹⁰

In ‘The Biographical approach’ Igor Kopytoff points out to questions raised in ascertaining material culture as “What sociologically, are the biographical possibilities inherent in its “status” and in the period and culture, and how are these possibilities realized ?Where does the thing come from and who made it?”¹¹

A culturally informed economic biography of an object would look at it as a culturally constructed entity, endowed with culturally specific meanings and classified and reclassified into culturally constituted categories.

Amos Rapoport argues that vernacular architecture is based on indigenous customs folk traditions and not designed by “architects.”

In House, Form and Culture Rapoport suggests that there are three factors that determine vernacular architecture. They are socio-cultural, climatic and

material and construction. Further he reiterates that socio-cultural factors in instances override climatic factors.

He lists five socio cultural factors-

1. some basic needs
2. family
3. position of women
4. privacy
5. social intercourse¹²

In meaning in the built environment, Amos Rapoport comments on the significance of a 'symbolic approach' whereby architecture conveys meaning based on a "symbols."

"this approach has proved particularly useful..., mainly in, traditional culture, in which fairly strong and clearly strong schemata are expressed through the built environment,"¹³ postulates that the vernacular environment is organized around time, meaning and communication, through fixed and non -fixed elements. The wall is in most cases a fixed element. A partition internal wall or screen can be movable or non-fixed element and communicates a reading of domains. By virtue of its location the wall participates in creating domains. Fixed architectural elements communicate signs for reading of domains. The architectural language Rapoport argues is universal within the community and therefore understood.

Rapoport says that we divide our world into domains-front/back, private/public etc. where contrast he says plays an important role in establishing these cues. "Once domains are defined, and their equivalence or difference established, cues need to be used to make them visible."¹⁴

Norberg Schulz's theory of phenomenology as discussed in three of his books –Genius Loci, Towards a Phenomenology of architecture, Intentions in Architecture and Existence, Space and Architecture is essentially about the 'essence' of architecture. Schulz maintains that his approach to architecture has psychic implications and his view is that "architecture represents a means to give man an 'existential foothold'"¹⁵ A spirit of place is created.

Derived from Heidegger's philosophy, Schulz maintains "Man dwells when he can orientate himself within and identifies himself with an environment, or in short when he experiences the environment as meaningful."¹⁶

Space becomes 'place' through this process of the intangible materializing and expressing its presence through physical elements. "Spirit of place" is the phenomenological response achieved. A place has identity which is connected to how we experience that place. Architecture is to be understood in existential and concrete terms. The basis of concrete phenomena is character. Tectonics and materiality are modes of expressing character.

"The character of a work of architecture is therefore first of all determined by the kind of construction used; whether it is skeletal, open and transparent, (potentially or in fact)or massive and enclosed."¹⁷ Space is linked to the wall in the context of culture as it achieves its sense of being as being based on cultural beliefs and patterns that dictate its form and character.

“In general the boundary and in particular the wall, makes the spatial structure and colour contribute to promoting character. Materials have their own sense of presence. Material visible as continuous or discontinuous extension, direction and rhythm.”¹⁸ “In the wall, thus, earth and sky meet and the way man ‘is’ on earth is concretised by the solution of this meeting.”¹⁹ Horizontality and a heavy base he says tie a wall to the ground while verticality expresses a connection to the sky. Openings in a wall make concrete inside outside relationships. Openings in a massive wall massive promote a sense of interiority and their size alters perception. Small niched openings emphasise massiveness.

Colour, texture and illumination are also significant as polished surfaces are reflective and weaken mass concentration as opposed to roughly hewn surfaces. “The light finally, models the shapes.”²⁰

Simon Unwin in his book ‘the wall’ classifies the wall into

- Marker
- Enclosure
- Inhabited wall
- structure

Yatin Pandya in “Elements of Spacemaking” suggests a framework for looking at architectural elements

Walls are protective barriers and used in the vernacular to store things. “The door connotes an act of passage between two realms”.²¹

In Spatial narratives he talks about the concept of ‘Layering’ in spatial organization, as a method of preserving hierarchy and ensuring security and privacy.

He also suggests as prevalent in vernacular architecture certain themes

- Duality of existence
- World within a world
- Part as whole and whole as part

In ‘Thematic spaces’ Kulbushan Jain points to the significance of threshold spaces –the ota as it is referred to in Gujarat and the thinnai as it is referred to in South India. Threshold spaces are carved out of the façade and constitute the interface between public and private.

Nold Egenter comments in anthropology of architecture “the use of fetishes in vernacular architecture and on cultural meaning in structural and constructional technique in ‘fibrous architecture’ in architecture made of reeds and nondurable materials.

From these readings, the study of walls can be organized under therefore subsequent themes and a framework of ideas -

1. Wall as a socio-cultural object

Meanings invested in it related to

- People

- Technique, construction
- material
- Cultural norms i.e.: beliefs, etc.
- Aesthetic expression
- Time and place

2. Determinants of Walls

External Walls

- Defense.....political issues
- Climate
- Socialnorms, behaviour
- Materials
- Skill

3. Typology of habitat based on material and construction

- Kucha.....
- Semi pakka
- Pakka

4. Context

- Natural environment
- Settlement/rural/town

5. Role and physical attributes

- Size and enclosure - height, and thickness
- Permeability....openings
- Material
- The continuous wall as street façade
- Common walls in continuous houses
- Architectural features
- Marker
- Boundary
- Barrier
- Inhabited wall

6. Articulation and response to environment

- Permeability....openings
- Material
- Shading
- Ventilation
- Thermal protection
- Orientation
- Architectural features/elements

Aesthetic style

7. Basic typology of shelter

- Fort..Palace
- Settlement..individual house
- Natural environment...individual house
- Urban ...individual house

8. Typology of housing based on spatial organization and size

- Hut.....single room. Toda house, Bhunga functionally flexible or with two or three roomsapprx Warli House
- Multi storey pakka house with no courtyard.....kath kuni Himalayan house
- Courtyard House
- Wada, Haveli, Theravad, Illam, Agraharam house etc.

9. Occupation

- Nomadic farmer, herdsman, agriculturalist.
- Caste denomination..Brahmin
- Merchant/tradesman.....Hindu and Muslim
- Royalty

10. Socio-Cultural themes

- Privacy
- Dualism
- Hierarchy
- Gender
- Sacred and profane

11. Architectural precepts

- Layering
- Part to whole and whole to part
- Composition

Climatic Zones

As vernacular architecture is a response to the environment, a classification based on climatic zones becomes pertinent to the analysis of the habitat and extends to a focus on the study of “the wall”.

There are five major climatic zones in India (refer Figure 1).

1. Hot and dry
2. Warm and humid
3. Temperate
4. Cold
5. Composite

Hot and Dry Climate Zone

The north-western part of India, namely Jaisalmer, Jodhpur, the Thar Desert (Rajasthan and partly Gujarat) come under this climate zone. Some areas of this region are prone to earthquakes.

The region is flat, sandy and rocky; and sparsely vegetated. Havelis, fort palaces – (refer Figure 1).

Warm and Humid Climate Zone

This region covers the coastal region of India. Kerala and coastal cities Mumbai, Chennai, and Kolkata. The region has abundant vegetation.

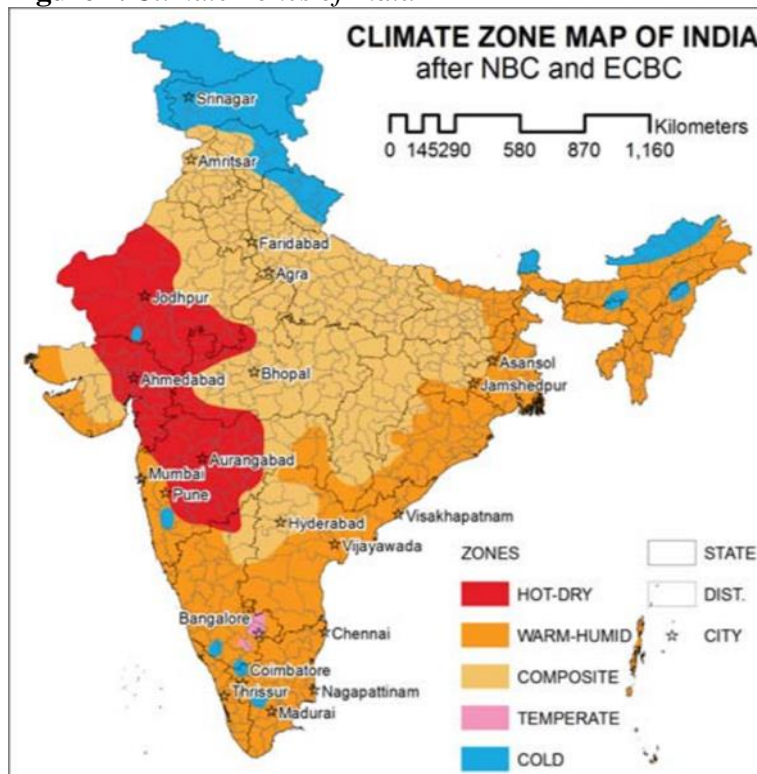
Kerala – vernacular houses, courtyard houses (Pukka structure).
Warli house-(kucha structure) (refer Figure 1).

Cold Climate Zone

The cold climate is divided as cold & sunny and cold & cloudy. It covers regions like the central Himalayan region, Kashmir, the district of Kullu etc.: The region enjoys pleasant summers with heavy rainfall and moderate to heavy snowfall during winters. The region is prone to earthquakes.

Kath Kuni construction (refer Figure 1).

Figure 1. *Climate Zones of India*



Source: NBC and ECBC.

Warm and Humid Climate Zone

This region covers the coastal region of India. Kerala and coastal cities Mumbai, Chennai, and Kolkata all comes under this region. The region has abundant vegetation.

Kerala – vernacular houses, courtyard houses (Pukka structure)
Warli house-(kucha structure)

Cold Climate Zone

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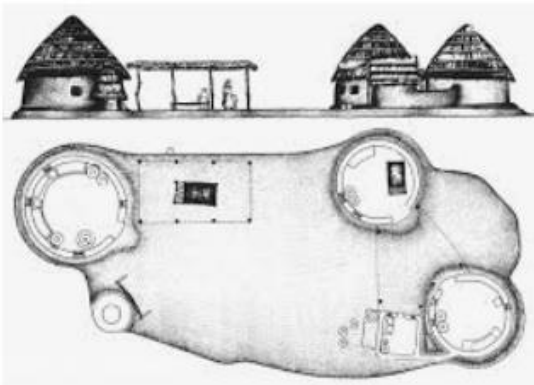
Temperate Climate Zone

Pune, Bangalore are examples of regions in this zone.
Wada- (pukka structure)

Composite

Delhi, Lucknow are examples of regions in the Composite Zone.
Havelis of Delhi. (Pukka structure)

Figure 2. *Bhunga Compound, Gujarat*



Source: architexturez.net.

Figure 3. *Bhunga*



Source: dsource.com.

Bhungas, Kutch, Gujarat-Rural

Bhungas (refer Figure 3) are traditional houses from Kutch in Gujarat. They are circular in shape and built to withstand sandstorms and earthquakes through their circular form and by the provision of two structural wooden posts placed across their walls. They comprise of one to three single volume structures placed on a raised platform called an *otla* (refer Figure 2). Their mud walls are lime plastered and are sufficiently thick to be scooped out internally to give niches for storage. Low windows aid in cross ventilation. The walls are decorated with paintings. Thick walls with limited recessed openings increase the presence of the exterior wall and form. Identity is conveyed through their artwork with the wall as an agent. The *otla* or raised platform marks territory and gives it an ‘existential foothold’ as a strong base which connects to the surroundings.

Bhungas are made of locally available materials non -permanent materials like mud, bamboo, timber, etc. Low windows aid in cross ventilation.

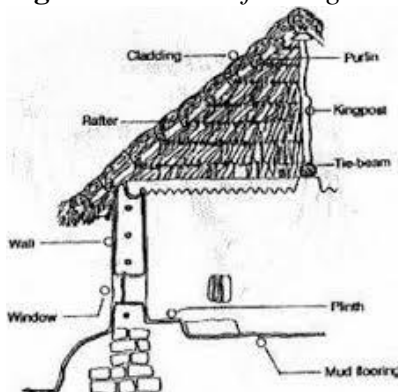
“The traditional bhunga requires periodic maintenance, a regular application of *lipai* or lime plastering to the walls and floor, and the replacement of the dried grass on the roof. The exterior walls are adorned with colourful paintings while the interiors are decorated with exquisite mud and mirror work.”²²

Figure 4. *Interior of a Bhunga*



Source: dsource.in.

Figure 5. *Section of Bhunga Wall*



Source: grdjournals.com.

Meaning is established through shape, form and detail. The external wall of the bhunga serves as a canvas for creative pursuit in the form of paintings based on local traditional art forms and establishes the identity of each dwelling (Figure 3). Collective art forms are represented in the exterior wall paintings and their common language and further opportunity for individual expression is available in the distribution and decoration of utilitarian niches in the interior, (refer Figure 4) in the same vein as Simon Unwin's concept of the 'inhabited wall.' Mirrors ornament the interior. Contrast as a tool for cues for meaning are visible in the brightly coloured paintings in the exterior walls and interior ornamentation which are in stark contrast to the arid desert environment. They are cultural statements that inform us of cues of territory. The wall is a marker, evolving from a response to human need and a response to environment making it culturally specific to the region. Thresholds are accentuated by the provision of decorative artwork around the door signifying its value, and symmetrically placed niches for lamps which accentuate identity and reveal a sense of hierarchy and symbolize the transition from public to private.

Hawa Mahal-Urban

Hawa mahal or Palace of winds as it is also referred to, is part of the women's residential quarters of the Jaipur Palace in Rajasthan (refer Figure 6 and 7).

The structure has a tapering, pyramidal form, five storeys in height. It is made of locally available red sandstone. A section through the façade wall will show its non-linear delineation comprising of several bay window like protrusions which alternate in size and are strategically pierced with openings that let in breeze and light but afford privacy to the interior. Cool air permeates through the shaded openings to create a comfortable environment. These windows numbering 953 are called Jharokas and are enclosed in jallis made of delicate fretwork in sandstone. The sole function of the wall is to create these niches for taking the 'air'. The inhabited wall is a realm for social interaction amidst the ladies i.e., zenana of the royal household. They can view the outside and street for entertainment, but are screened by the jallis from being viewed. The wall projects a dualism in engagement, being at one instance a barrier but then at the other end allows controlled engagement with the street. A composition of different visual elements, stained glass, stone jallis, cusped arches and roofs and brackets create an elaborate architectural vocabulary that responds to climate and social needs in an individual way. Part is represented in the whole and vice versa. The wall becomes an object of pleasure, whimsical and playful, to be engaged with and enjoyed.

Figure 6. *Hawa Mahal*



Source: Times of India.

Figure 7. *Detail of Jharoka*



Source: Shutterstock.

Bohra Houses of Siddpur, Gujarat - Urban Settlement

“The house of a Bohra is a shelter for security, collective living and human hierarchy.”

- Protection against the harsh climate of the environment
- Protection against intruders
- Protection of privacy for women”²³

Bohra Muslims live in narrow deep houses with common walls. In terms of spatial organisation, the need for seclusion and privacy is visible in the layering of

spaces both in plan and by the vertical stacking of rooms. In their facades an ‘otla’ or threshold space is provided but rarely used, enforcing the significance on privacy and security. The facades of the Bohra houses are ‘objects’ of aesthetic value relying on conveying status.

Bohra Muslims are merchants that travel abroad and their homes are a representation of external influences and fused with the local vernacular traditions in an individualistic manner specific to the Bohra to form a collective aesthetic created by an eclectic mix arriving from a fusion of both styles. This is seen in their interior planning of homes and in the architectural language of their homes in their facades which are a mix of western classical details. In the interior, Bohra homes have Belgian glass and European ornamentation visible in furniture etc. En Masse this surmounts to give an exclusive Bohra identity. Pastel colours, ornate plasterwork, motifs such as crests in plasterwork, are elements of an architectural vocabulary which expresses their individuality. The jharoka (refer Figure 8) remains a singular feature which facilitates engagement with the outside for their womenfolk. Bohra houses are deep (refer Figure 9) and consist of layered spaces. A glass and timber screen in the interior screens the private spaces (refer Figure 10) and a reception room is placed on the first floor ensuring that all public spaces and “male” dominated spaces face the street. The Bohra street façade (refer Figure 11) has a definitive sense of identity and sense of place, a ‘genius loci’ created by ‘the walls’ created by the street facades of the houses which combine to give enclosure and create identity (refer Figure 9).

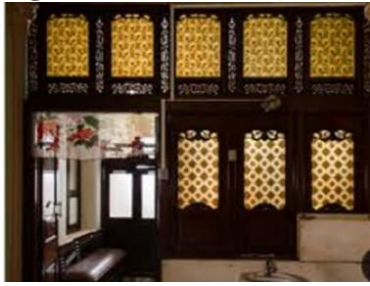
Figure 8. *Inside of Jharoka*



Figure 9. *Façade of Bohra House*

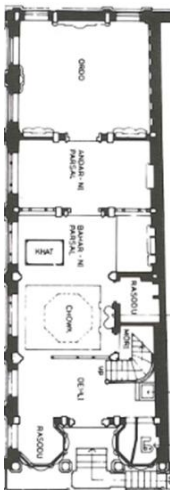


Figure 10. *Interior Screen*



Source: Yusuf Chiniwala, Triple'o' studio.

Figure 11. *The Bohra Street Façade*



Composite Climate Zone

Haveli in Old Delhi -urban settlement

Chunnamal was a rich merchant /trader who built a large house for his family in Chandini chowk, old Delhi. The house typology is a haveli which translates as a 'palace' modelled on the Rajsthani or Mughal palaces and European derivatives. Courtyards and the layering of space, cusped arches jallis and jharokas reference Indian buildings while visual elements such as fluted columns, mouldings, etc. reference European buildings. There is no definitive architectural style followed and the havelis reflect in the aesthetics of their physical appearance, selection based on the time period and personal choice. The Delhi haveli is located in a dense urban settlement and to maintain security and privacy is answered by the provision an impermeable boundary (refer Figure 12). The threshold in a Delhi haveli, is imposing, It is set in with a transition space acting as threshold and access is through a recessed doorway (refer Figure 13). Security was a prime issue. In some havelis as in the Chunnamal haveli the lower floor has a commercial facility as in shops accessed from the outside. The original haveli was a self - sufficient a safe world within a world. The Chunnamal Haveli has 128 rooms in a

site measuring an acre. Courtyards created a sense of hierarchy distancing more public areas from the private areas. The exterior wall was a barrier on the ground floor and opened up on the top floors as a balcony (refer Figure 14) shielding the rooms beyond from noise and heat. The haveli was well knit into the urban fabric of the city and commercial shops occupied the ground floor, accessible from the outside (refer Figure 15). The haveli was designed to be inward looking. Interiors were ornate resplendent in a mix of decorative languages (refer Figure 16). Status and power represented in its fort like exterior un-permeable to the outside world and reinforced in its materiality and proportion represented the image of the Delhi haveli, unlike its counterpart in Rajasthan. The external wall did not represent the architectural identity of the interior and was construed as a barrier.

Figure 12. *Chunnamal Haveli*



Figure 13. *Threshold Space and Entry to a Haveli*



Source: Tesi delhi haveli.pdf.

Figure 14. *Balcony*



Source: Navinaja,worldpress,com.

Figure 15. *Exterior View of Chunnamal Haveli*



Source: www.chunnamalhaveli.com.

Figure 16. *Interior of Chunnamal Haveli*



Hot Humid Climate

The Warlis are an indigenous tribal people of Maharashtra. The Warli house is considered a Kacha structure as it uses for its construction weeds which give the house a short lifespan. “It is a frame structure, and has a core around with a curtain wall of ‘Karvi’ to enclose the house. Within this framework of structural system, a Warli exercises this freedom in planning the interior and exterior spaces with innumerable variations, which is spontaneous.”²⁴ The houses are approximately 400 sqft in size and are organised around a central column with nine columns in total. Columns are made in timber. The Warli house has curtain walls in panels made by karvi plastered with cow dung. Karvi is a plant with medicinal qualities with a lifespan of approximately ten years if suitably protected from moisture. Walls in warli house are decorated by warli art. Art was a medium used to communicate their folklore. “Their art also expresses an interesting aspect of their inherent philosophy, that of austerity. All their stories, with its various moods & nuances are expressed with just two basic colours – the brown of the earth & the white of the rice paste. Warli paintings are traditionally the domain of Warli women (savasini). These paintings were made on the walls of the houses at the time of marriage by suvasinis or married women whose husband are living and as considered to be a good omen. Tradituionally warli art was painted during celebrations and on special occasions. Themes ranged from flora and fauna and daily routine activities.”²⁵

Walls wrap around the house like fabric and are not part of the structure. They offer instead spaces where the inagible is converted to the tangible as an object and agent of cultural heritage.

Figure 20. *Syrian Christian Theravad*



Source: mathrabui.

The facade features a long enclosed verandah asymmetrically placed, with sloped timber slats that act as a seat. Gaps in the slats provide ventilation as well as shade and protect the verandah. Locally available laterite stone is used as a building material. The theravad composition as a physical form is based on an architectural programme based on simple mass and volume. The only significance in articulation is given to the verandah (refer Figure 21 and 22). The wooden slats of the verandah are characteristic to a universal architectural language of Kerala houses and rooted in a tradition of timber workmanship and craft of the region. The inside forms a seat and the slats effectively improve ventilation and the micro climate in the interior. They symbolize cultural identity through their shape and detail and manifest a tradition. The rest of the façade is plain with no decorative features.

Figure 21. *Verandah from the Interior*



Figure 22. *Seat in Verandah*

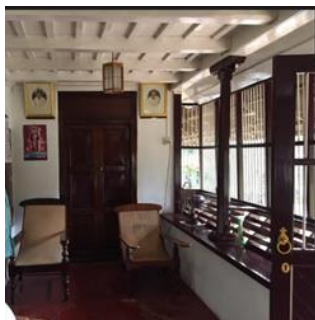


Figure 23. *Timber Panel Wall in Illam*



Figure 24. *Illam*



Figure 25. *Visitor's Reception Area*



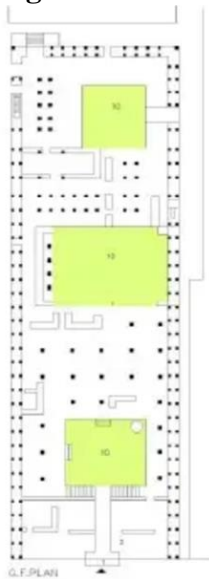
The 'Illam' is the name given for a house for a Nambudri or person belonging to the Brahmin caste from Kerala. The Illam like the Syrian Christian counterpart consists of a simple mass with a sloping roof but the verandah here extends three approximately quarters the length of the front and is an ante-space for interaction within the same caste. Columns supporting the roof form a metaphorical permeable wall that shields the verandah. The wall of the Illam is made of timber and has thin apertures that ensure cross ventilation to maintain air movement and a comfortable environment. The timber detailing is different and responds to caste and community, to be read as text. The independent building of the guest house is for, as per the original use a place to receive people who are not Nambudri's and considered a more profane space. Western influence seen in plasterwork ornamentation replace timber craftsmanship establishing the importance given to timber and its craft in the context of tradition.

Temperate Climate Zone

Visrambaug Wada of Pune-Urban Settlement

“The concept of wada came into existence during the Peshwas, in 1730. It was only the Royals and the riches who could afford such large mansions.”²⁶ The wadas were designed in a grid that ranged from 5 feet to ten feet. “Structural grid was called as Khan and the bay formed by number of khan was called Ghacee.”²⁷ Space was organised around a courtyard called a chowk. The plan of Vishrambaug wada shows a series of columns in grids. Columnar row defined space and metaphorically manifested themselves as walls. Internal planning showed a layering of space facilitated by the use of columns. The reception hall or Diwankhana was an example of space defined by rows of circular fluted columns with decorative cusped arches wrought in timber. The facades of the wadas had ornamented openings between structural bays. Available materials and construction techniques and period of history dictated the design and elaboration of ornamentation. “the strong relationship between the Marathas and the Rajputs of Gujarat influenced the art and religion that also influenced the architecture in Maharastra that emerged in the later stages of the reign.”²⁸

Figure 26. *Plan of Vishrambaug Wada*



Source: <https://www.ijera.com>.

Figure 27. *Elevation of Vishrambaug Wada*



Source: punecityinformation.com.

Figure 28. *Cloud Balcony Detail*



Source: alamy.com.

Figure 29. *Bracket Detail*



Source: yogoyo.com.

Figure 30. *Diwanakhana*



Source: <https://www.ijera.>

Rajput and influence of the Delhi style are seen in the predominant use of non-structural decoartive arches and fluted columns. Typical elements of façade design are seen in the Style adopted for window design and in the manner of

placing covered platforms and guard rooms (devadis) to flank the entrance door which in Visrambaug Wada takes the form of a cusped arch. There are seven bays in the façade at Vishrambaug. Façade of Visrambaug wada's has a wooden balcony which is called meghadambari or "cloud capped balcony". The threshold in Visrambaug wada's is located between two devadis which was used as a guard room. Decorated and fluted timber columns with intricately carved brackets support the balcony. The wooden brackets are supported by four ornate winged yalis or a combination of lion, eagle and crocodile considered as good omen."²⁹ Vishrambaug Palace had full height windows set within cusped decorated arches in stucco. Glass had to be imported from Europe and hence resulted of the window to be divided into small panes depending on available size of glass and a Peshawi feature. was the small glass square window opening placed at the top. Panel walls in brickwork between structural timber columns were ifinished in lime mortar and painted.

Cold Climate Zone

The Toda are a tribe of buffalo herdsman found in the Nilgiris mountain range of South India. "Dwelling unit or hut is called arsh. The arsh have a curvilinear roof starting from the ground to top and a rectangular plan. This resembles the top of an elephant in shape. These are east facing structures. The total width of a huts which the author visited is having a width of around 4.2 m., height 3.3 m. and depth ranging from 4.5 m to 6.3m. The arch shape is maintained by the two opposite walls on either end of the hut with wooden planks erected in ground, fixed with mud mortar."³⁰ Toda arsh have a life span of approximately 15 years.

The hut is accessed through a small opening measuring approximately three feet by three feet, which protects the interior from animals and winds. Raised platforms on either side of the door act as seating areas used by men and women. Windows are located on either side of the door and above it, and feature as circular or square openings with internal wooden shutters of two circular or rectangular openings on either side of the door, closed by wooden shutters. "The front and rear side walls of the house are constructed with stones and it is 0.45m thick. Thicker stone walls or walls with high thermal mass stores heat during the day and it is radiated in to the night."³¹ The longer walls face south and north and are a continuation of the roof. "At either end of an arsh the walls support strong poles, often eleven in number, running the length of the building. Over these the roof and walls are completed as a continuous curved structure."³² Bamboo and cane form the framework on which dried grass acts as thatch for covering." The grass used in thatching is said to last up to twenty years." without renewal whilst the building itself is often good for eighty years."³³ They are constructed with bamboo and grass. The front façade of the arsh is made of locally available stone slabs. The Toda mund presents the wall as a continuation of roof. The construction technique of grass, cane and bamboo comprise the fibrous architecture that Nold Egenter references which single out the roof/wall as a cultural object identifiable as Toda and constitute a part of their heritage.

Kath Kuni Houses of the Himalayas

“A natural extension to the knowledge of forbidding landscape, harsh climate, availability of local materials and tools, the resultant building practice is deeply rooted to the environment and the cultural practices and traditions of the region.”

<https://www.sahapedia.org/the-himalayan-vernacular-kath-khuni-architecture>.

Kath-khuni is a type of cator-and-cribbage building which employs locally available wood and stone as prime materials for construction. The origin of the term is explained by O.C. Handa (2008) as ‘...combination of two local terms: *kath* and *kuni*. The word *kath* is a dialectal variation of the Sanskrit word *kashth*, which means wood, and *kuni* is again a dialectical variation of the Sanskrit word *kona*, that is, an angle or a corner.’³⁴ An average Kath Kuni structure is typically 4 to 8 metres long and 4 to 5 metres wide. But size can vary and larger structures are built by people of better economic status. Timber is a sign of status.

Kath kuni houses stack vertically with a single room in each floor, the lower floor accommodates animals and livestock while the upper floors form the living quarters with kitchen included. A verandah or balcony runs on one side or around the periphery in some cases on all sides. The balcony acts as a buffer for weather and as a place to view the territory around and ensure safety from intruders and animals.

Entry is through a small door at the base. The ground footprint is considerably smaller than the top floors as the top floors extend beyond and an overhang on all sides is created. The top structure is of wood panels. A small door at the base was the entry which leads to a narrow steep staircase. The main materials are timber, (deodar) natural stone and slate. Openings are small because of the climate.

Building Kath-Kuni houses was done by use of local knowledge transferred from father to son and it has provided a livelihood and established a strong Cultural identity.

Material Culture as craft “Oversized ornately carved window and door trim is the hallmark of ancient vernacular architecture in the Himalayan region”³⁶ “A *kath-khuni* wall is constructed by laying two wooden wall beams longitudinally parallel to each other. This defines the width of the wall. The edge members are lap jointed and secured by a *kadil* (wooden nail). This arrangement of alternating stone and wood add flexibility and has proved to be a good safeguard against frequent seismic tremors.”

Internal walls lined in timber or mud plastered or lined with timber cupboards to provide added insulation.

On the upper level living-space, ancient homes show profuse use of wood through panel or plank-based wall construction. Windows are concentrated on the verandah wall, which provides the bulk of light and ventilation for the house. The other three walls are often completely void of opening.”³⁷ Internal walls lined in timber or mud plastered or lined with timber cupboards to provide added insulation.

“Carving of motifs integrated with building construction. The carvings add beauty and their use and design is at the discretion of the homeowner and carpenter.”³⁸

Motifs based on folk tradition and religious references. Themes are based on natural shapes, geometric and carving is two dimensional.

Figure 31. *Kath-kini House in Uttarkashi District in Uttarakhand*



Source: Rautela & Joshi.

Figure 32. *Kath kuni Construction, Corner Detail of Timber and Stone*



Figure 33. *Balcony Detail*



Results

The vernacular wall offers multiple meanings and narratives. Common elements are found in different regions but handled in different materials with their own specific language. Key issues like transition from public to private are handled in the provision of threshold spaces but each handled differently in the specific manner conducive to the respective cultures and value systems and within their own respective architectural language. The facades incorporating traditional construction and design details become codes for communication. The wall itself takes on multiple roles. The wall is canvas and surface, as fabric in the case for the Warli tribe and for Bhungas in Kutch. For the Todas it is also a roof and surface as

part of an envelope where space is not Euclidean and delineated by a series of a geometry of planes, challenged by the vault like volume of their arsh. The wall is a “toy” which creates places for encounters and enjoyment within jallis in the Hawa Mahal. The wall is text for the Bohras and an ornamental ‘object’ in the case of Vishrambaug wada. In all cases through its response to climate and its realization within a locally available vocabulary of material and technique, the wall retains its position as a repository and symbol of cultural content. Material and craft denote identity and place. Change in the vernacular however is altering the balance between environment and habitat. Vernacular architecture responds to the environment and is in this sense regional specific.

With new materials concrete jallis replace wooden windows and Galvanised metal sheet and motor bikes replace an earlier open shaded space. In the house in figure, the façade is a canvas for political advertisement. Economics, opening markets of globalization have introduced new products that signify “progress” but are not local and are not responsive solutions to the environment but in essence have overruled the needs of the region. Commodity has replaced craft. Value is in trend and economics. However some traditions are retained and the changing façade today represents a fusion of old and new. The façade retains its position as a codifier of culture, ever changing and volatile and subject to changing equations between market forces and tradition.

Vernacular forms become symbols of a region and object becomes subject and vice versa.

Charles Correa amongst many Indian architects has fused into his contemporary architecture elements of planning, and aesthetics into his architecture. The Jawahar kala Kendra features mural painting using the wall as a canvas as in vernacular architecture. Laurie Baker used the curved timber verandah elements in his house ‘The Hamlet’ in Trivandrum. Raj Rewal re-interprets the ubiquitous jharoka into the Institute of Immunology. These are only a few examples which show that certain forms are lasting and create an architectural imagery synonymous to a specific area.

Figure 34. *Front Space Covered by Metal Roof*



Figure 35. *Hut with Thatch Roof, Front Threshold Space and RCC Jalli as Window*



Figure 36. *Wall as Space for Political Advertisement*



Figure 37. *Jaahar kal Kendra Mural*



Figure 38. *Insitute of Immunology, Jharoka*

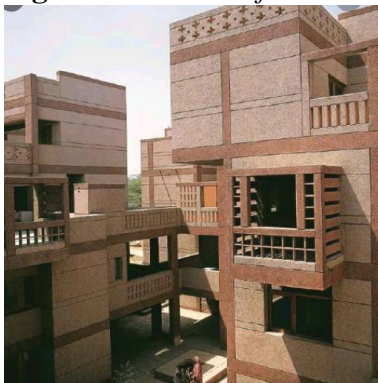


Figure 39. *Hamlet*



Conclusion

The vernacular wall offers many directions to contemporary sustainable architecture. It offers an aesthetic vocabulary inherently Indian which gives scope to be interpreted to manifest a degree of Indianess in contemporary architecture and as has been explored by some contemporary architects. In this sense it is resilient and can be adopted and transformed in today's architectural language.

Adopting these techniques would also help in continuing a tradition of building craft which is part of our heritage.

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