

Acknowledging the Essence of Vernacular Architecture (A Case of Architecture in Malwa)

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Abstract—This paper presents the acknowledging the essence of vernacular architecture by considering a case of architecture in Malwa.

Index Terms—vernacular architecture

I. INTRODUCTION

Vernacular Architecture is the art of developing structures and shelter, which are unconstrained, environment-oriented, and network-based; it recognizes no architect or settlement and mirrors the innovation and culture of the indigenous society and condition. This style has developed through centuries of experimentation and applies basic science to beat most complex spatial issues. It gives us knowledge of planning, construction techniques, and building materials while exemplifying the essence of our underlying foundations.

In spite of having a rich vernacular legacy the customs, social and also manageable components it includes are presently wiped out in our current structural practices. Be that as it may, if carefully examined consolidating present day innovative progressions with vernacular architecture, it could lead design towards a radical new measurement of sustainability. This neo-vernacular style will incorporate all the key components of its forerunner while at the same time amend its disadvantages by acquainting contemporary materials and techniques with it.

II. LOCATION

Madhya Pradesh can be isolated in four social zones such as Bundelkhand, Baghelkhand, Malwa, and Nimar. Each zone has its very own social personality, for example, dialect, language, traditions, cultures, and rituals. The state is well known for its innate expressions in tribal arts and crafts of bamboo, wood, metal, metal casting, earthenware, terracotta, and textiles.

The Malwa region comprises territory from 21 to 25 degrees North latitude from 73 to 80 degrees east longitude, or from Chittore to Mewar in the north of Tapti River in the south, and from Bundelkhand in the east to Gujarat in the west (Malcom, 1970). It comprises largely of plateau yet it additionally has low ranges of hills and rivers running generally west to southeast. Malwa is a conventional social territory comprising today of the districts of Ujjain, Ratlam, Indore, Dewas, Shajapur, Mandsaur,

Nimuch, Rajgarh, Sehore, Dhar, and Bhopal of MP and Jhalawar region of Rajasthan. The traditional boundaries of Malwa are attested to it in a notable verse as 'between Chambal, Betwa, and the Narmada in the south.' truth be told, the Narmada River in the south, the Betwa in the east and the Chambal in the northwest generally denoted its boundaries. Bundelkhand and Gondwana surrounded Malwa on the eastern and south-eastern side. The region within the province was mainly plateau, with alluvial tracts scattered all over the land. The jungle was dense in many places (Singh, 1936).

III. HISTORY

Malwa was one of the most notable provinces of India during the Hindu and early Muslim periods of Indian history. Malvi is the speech of the people who trace their heritage to the times of Chandragupta Maurya, the founder of the Maurya Empire (323 BC). It is said that the 'Malwas' came from the western part of Rajaputana near the delta of the Sindhu River, now in Pakistan, and they gradually spread over this part of this country, which was once known as 'Malawi Ganatantra.' This part of the country became known as 'Malwa' (Sharma, 1957).

Oojein (now Ujjain), which may still, from its superior magnitude, be deemed the capital of this province, has perhaps more undoubted claims to remote antiquity than any inhabited city in India; it is not only mentioned in the sacred volumes of the Hindus, but in the Periplus of the Erythrean sea, and by Ptolemy. We find, in Indian manuscripts, Malwa noticed as a separate province eight hundred and fifty years before the Christian era. (Malcom, 1970).

The great king Vikramaditya's capital was in Ujjain; the famous nine scholars (nine jewels) were from his kingdom. There were many famous people in Malwa, such as the great poet Kalidas, Bhavbhuthi, Banabhatt, Bhoj, Swami Haridas, the great musician Tansen, Rupamati, Devi Ahilyabai, and King Bakhawarsing.

The number of art centers is much more than in any other part of the country.

Despite the fact that religiously Malwa was ruled by Muslim Mughal rulers, Hinduism is presently the prevailing religion in this area.

IV. PEOPLE AND CULTURE

In this age of nuclear families, the joint family system is continuing here, generally speaking, however, in urban regions, there is a pattern toward the family unit framework. Customarily, the majority of the people in Malwa are Hindus, however, the Scheduled Tribes in Malwa still pursue animistic practices. The general population of Malwa commends all the real Hindu celebrations.

The communities of potters, materials, printer, weavers and bamboo specialists are very much set in their local spots like textile printers in Bagh; weavers in Maheshwar, they have their very own settlement design according to their trade exchange.

V. LANGUAGE

Malvi is a regional language spoken in the northwestern part of MP and in Jhalawar district of Rajasthan. It is functioning as a language for intra-group and inter-group communication. The language name is Malvi because it is spoken in the region of Malwa. It has alternative names such as Malwada, Mallow, and Ujjaini, and alternate spellings such as Malawi and Malavi. Malvi is a language of the Indo-European, Indo-Iranian, Indo-Aryan subfamily, Central group (Raymond G. Jordan, 2005).

VI. CASE STUDIES

- Private Residence, Chawani, Indore (Vyas, 2017)
- Rajwada Palace, Indore

A. Private Residence, Chawani Main Road, Indore

Chaawni is a common place where many of the buildings still exist from the pre-independence era and the private residential units still effectively portray the original vernacular architecture of Indore.

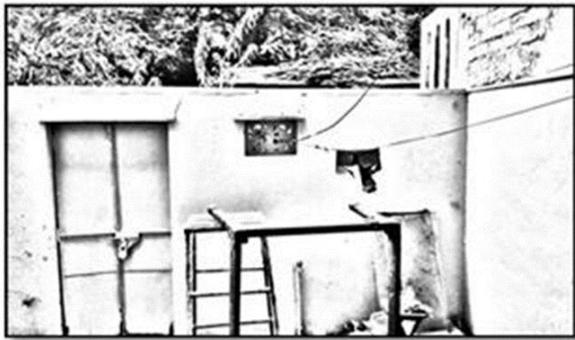


Fig. 1. View of back entrance through courtyard

1) Discussion on planning

- Segregation of private and public areas
- Planning is compact
- Un-clear separation of public and private areas.
- Washrooms and washing spaces are designed on the external walls for the easy dispatch of foul smell.
- The courtyard is surrounded by bedrooms and all of them open towards it.
- The kitchen is placed on the southwestern side of the house

which is completely shelled by the adjacent house but windows are provided for ventilation.

- Long Asoka trees are planted in the garden on the western side of the house to block direct sunlight. The circulation inside the house is continuous and well planned. Comfortable temperature in the core of the house is maintained by regular air flow through the courtyard.

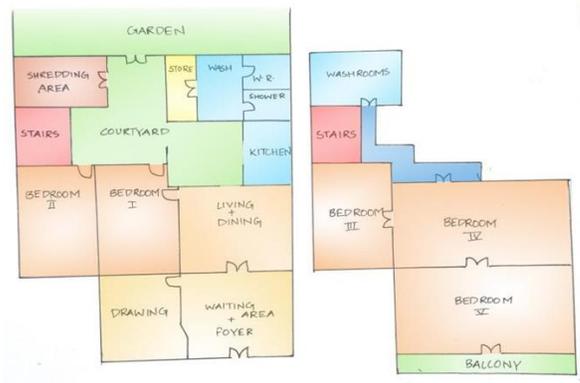


Fig. 2. Plan of the house

B. Rajwada Palace, Indore

Rajwada Palace is said to be the center of Indore city. It is the main focal point and is an important part of Indore’s vernacular built forms. The palace is a marvelous example of Maratha Architecture and displays an important Wada of the Marathas.

Architectural Details:

This is a seven-storied structure and is located near the Chhatris and serves as a fine example of royal grandeur and architectural skills. Wada is a type of Maratha housing that revolves around the ancient courtyard culture of India. It has a huge entrance with a giant wooden door with iron studs. The lower three floors are made of stone and the rest made of wood. The back portion of the Wada has a temple of Malharimartand, the kuldevta of the Holkars. The temple has a huge courtyard surrounded by a high plinth verandah with beautiful wooden pillars and cusped arches. The ceiling of the hall is of stone supported by wooden girders and some parts also have a wooden ceiling. The Palace also has an open backyard that has a small water body in the center.

The Rajwada is presently state property under the Archeology who conceded unique consent for reconstructing the old Wada (living arrangement) which was the primary Rajwada which was completely burnt during the 1984 uproars, in particular, the working around the Tulsi Kund alongside the sanctuary that already existed there, between the two back patios. This building was to be modified by H.H Usha Raje Holkar and composed by designers Himanshu Dudwadkar and Shreya Bhargava on the 200-year-old blueprint utilizing a similar material and finishes while holding fast to the seismic auxiliary necessities, obligatory today. The reconstructing was to be indistinguishable to what existed before – built with thin

TABLE I
OVERALL ANALYSIS

S. No.	Particulars	Observations	Analysis
1.	Climate	Composite climate, moderate annual rainfall	Residence needs to be protected from high temperature as well as low temperatures during the night.
2.	Site Surroundings	Approach by a narrow lane. Similar houses in close proximity. Shared walls with nearby houses.	Overshadowing through compact planning and lesser exposure to the sun
3.	Volumetric Analysis	Volume of house was 72% of the whole site. Remaining 28% was used in courtyard, semi open spaces and balconies.	Emphasis on open spaces
4.	Topography	Flat land, no natural or developed contour was observed.	N.A.
5.	User Requirements	No influence of occupation on spaces of the house	Standard templates Designs are effective
6.	Form	The form of the house was a typical cuboidal in shape with considerable sized voids created as subtractions from the overall form.	Open spaces are encouraged as they allow wind flow, daylight and ventilation

TABLE II
MATERIAL ANALYSIS

S. No.	Particulars	Observations	Analysis
1.	Walls	Composite climate, moderate annual rainfall	Allows the house to breathe by use of perforated mud bricks
2.	Fenestrations	Iron, wood, glass panels	Deep-set windows for the provision of diffused daylight
3.	Plaster	Sand, lime plaster	Lime plaster to provide a smooth finish
4.	Roof	Clay tiles, Timber strutting	Haystack and bamboo is used to maintain
5.	Floor and Tiles	Wood, stone, lime, rocks	These materials remain cool even when subjected to direct sunlight.

TABLE III
STRUCTURAL DETAILS

S. No.	Particulars	Observations
1.	Walls	Thickness- 0.5 meters (narrow towards the top). Wooden struts (dia. 7cm) placed at regular intervals inside the walls.
2.	Columns	Dimensions- 0.5mX0.7m (narrow towards top) Continuous Iron sections penetrating through columns
3.	Roof	2 side sloping roof which was earlier covered with a roof tiles.
4.	Floor	Timber strutting was done, perforated rocks were laid under the framing and wooden boards/stone slabs were used to flatten the surface.

blocks in lime mortar with lime plaster, with wooden sections with stone bases, rough black basalt flooring and a brick paved courtyard in tandem with the age-old building techniques.

VII. ANALYSIS

TABLE IV
PARAMETERS OF CHANGES IN CULTURE AND ARCHITECTURE

Parameter of changes	Details	Vernacular Architecture
Culture	Characteristics	Different cultures of tribal and folk are well defined.
	Aesthetics	Murals, painting, sculpture are an integral part of Architecture.
	Planning	Settlement planning as per their lifestyle like circular, squatter and linear.
	Community living	Choupal, ota, chowk, courtyard for social interaction. Strong social binding.
	Site planning	Planning as done as per topography and landscape.
	Response to climate	Platform and built form are evolved as per the climatic conditions of the region.
	Materials	Locally available material like stone, mud, bamboo, timber and lime are used.



Fig. 3. Interior views of Rajwada Palace

Architecture	Stone	It is used in masonry, roof, flooring, in-built furniture,
	Mud	Chajjas and Jharakhos are provided for shading. Rammed earth, adobe, mud mortar used in random rubble masonry, helps in acoustics and heat resistant.
	Bamboo	Because of strength and flexibility widely used as structural skeleton, roofing structure, composite construction and utility items like jaalis, baskets etc.
	Timber	Used as a structural component, in the construction of beams, rafter, trusses, doors, windows, and furniture.
	Lime	Used in brick masonry as a binding material, for Plastering and fresco painting.
	Brick and Terracotta	Brick is used for masonry walls, piers, jaalis, etc. Terracotta is used in roofing tiles, roof gutters, and pottery.
	New materials	Adaptability to new material.
	Cost-effective	Because of locally available material, saves the cost of transportation
Parameters of changes	Details	Modern Architecture
Culture	Characteristics	Universal characteristics, no reflection of local culture
	Aesthetics	Contemporary art is depicted.
	Planning	People live in isolation, less interaction with others, no place for local arts and crafts.
	Community living	Cultural hubs, sports complex are interaction spaces, Intimate relationship and social binding are less.
Architecture	Site planning	Planning is as per the economic status of the user like HIG, MIG, LIG, and EWS.
	Response to climate	Eco-friendly materials are in the market but are expensive.
	Materials	The market ones are given priority than local ones.
	Stone	With modern techniques, it's used in a better way.
	Mud	Rammed earth, Adobe is used in modern design.
	Bamboo	It is used as a new material in modern construction.
	Timber	Used for doors, windows and not a structural member
	Lime	It is rarely used, limited to conservation
	Brick	Brick is used for masonry walls, piers, jaalis, etc.

	Terracotta	Terracotta is used in roofing tiles, roof gutters, and pottery.
	New materials	Adaptability to new materials is more
	Cost-effective	Material and transportation cost are high.

Source: (Shikha Patidar, 2014)

VIII. INTERVENTIONS

In light of the issues recognized and case studies played out specific explications/interventions could be proposed to amend the issues with the present design practices on an exact level. These interventions would be an amalgamation of customary vernacular architecture with present-day procedures.

The entire method of fabrication of a building could be extensively divided into two stages of design and construction. Design alludes to the planning of each space, element, and highlight of a structure while construction implies its implementation and commission. Adjusting both these stages is required for a truly sustainable approach.

Energy conservation ought to be remembered all through the design procedure as all the design decisions colossally influence energy requirement of a building. Certain aspects of design which could be incredibly enhanced by the introduction of vernacular interventions are:

- A. Orientation and Form
- B. Internal Planning
- C. Daylight and Ventilation

A. Orientation and Form

One of the foremost crucial stages of design is deciding the best orientation of the block. Within the composite climate of Indore providing shade in summers and adequate daylight in winters to the building is very important. Ideal orientation will solely be set by surveying the micro-climate of the location (a usual ancient vernacular practice) but, typically north-eastern areas of the structures expertise less heat gain in summers. Southern orientation is recommended for winter solar gain whereas landscaping should be planned to counter winter winds from getting into the structure. It's ascertained that slight deviations in orientation might amend the energy consumption of a house by 5%-10%, therefore, it ought to be set carefully.

According to the case study, 60% to 75% of the overall site volume ought to only be constructed and rest ought to be left to provide open areas and provisions for ventilation. This kind of form additionally enhances the aesthetic appearance of a structure. In ancient vernacular practices planning was stressed because it minimizes solar gain by keeping the plan aspect ratio around 1:1. Generally, orientation and form of a structure are influenced by planning laws and site constraints.

B. Internal Planning

It is arguably the foremost vital facet of design and contains a vast potential for energy conservation.

- Air movement for cross ventilation and summer cooling ought to be provided.

- Careful placement of fenestrations and walls for heat transfer.
- Areas ought to be distinguished in step with their functions. For eg. Heat generating spaces ought to be placed within the northern area of the building.

Courtyard planning that could be a major feature of the vernacular design of Indore is taken into account glorious for passive cooling and improving ventilation. Provisions for small courtyard areas ought to be enclosed invariably in contemporary design style also.

C. Daylight and Ventilation

Heating and cooling of a structure account for regarding 50% of the total energy consumption and adequate daylighting might alone cut back electricity consumption up to 15%. It conjointly provides an alimending and soothing surrounding within a building. The fenestrations ought to be designed considering the specified daylight factor. The light admitted by windows should not cause glare in the eyes of users neither should it be unable to light a space effectively in day hours. In a composite climate of Indore, diffused light is nearly perpetually favored over direct light and deep-set windows; a salient feature of vernacular design could be a viable possibility. Ventilation will increase the comfort level of the users whereas lowering the general energy demand of the building. Openings when learning micro-climatic wind pattern ought to be meticulously placed to supply smart ventilation within a building.

IX. CONCLUSION

The changes in culture and architecture are reciprocal. The impact of one is reflected on the other. India's rich cultural heritage is vanishing due to the influence of urbanization and globalization. In order to protect and conserve our rich cultural and architectural heritage the elements of vernacular should be incorporated in the contemporary planning and architecture. The provision should be made to incorporate vernacular architecture and traditional knowledge in the policies. The policy makers, planners, and architects should consider this in their work for the betterment of society. The paper concludes by learning and appreciating the principles of vernacular architecture and integrating them with contemporary knowledge and technology.

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