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Rediscovering the Architectural Heritage through Vernacular Architecture in Chhattisgarh

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Abstract

Vernacular architecture, characterized by its indigenous materials, traditional construction techniques, and cultural symbolism, serves as a tangible expression of local identity and heritage. The vernacular architecture of Chhattisgarh reflects a synthesis of climate, geography, and locally available materials, resulting in a diverse range of layouts, forms, building techniques, and structural systems. This study aims to explore the materials, construction methods, and architectural styles of traditional dwellings in Chhattisgarh villages, integrating principles from Passive Solar Architecture and Vastu Shastra. By examining case studies and conducting a literature review, the research seeks to identify common parameters and concepts in dwelling unit planning. The findings suggest that certain elements of Passive Solar Architecture and Vastu Shastra are indeed incorporated into vernacular architecture, and their integration with modern practices can offer innovative and holistic design solutions for sustainable living environments. Through a multidisciplinary approach, incorporating historical analysis, architectural principles, and cultural anthropology, this review elucidates the adaptive strategies employed by local communities to address climatic, cultural, and socioeconomic challenges. Furthermore, it underscores the urgent need for preservation efforts and sustainable development initiatives to safeguard this invaluable cultural heritage for future generations.

Keywords: Vernacular architecture, cultural heritage, sustainable development, site planning, building materials.

INTRODUCTION

Chhattisgarh, a state nestled in the heart of India, boasts a rich architectural tradition deeply rooted in its cultural and environmental context. Chhattisgarh, situated in eastern India, is renowned as the country's "rice bowl" due to its cultivation of diverse rice varieties. Spanning from 17°46’ north to 24°5’ north latitude and from 80°15’ east to 80°20’ east longitude, it covers a total area of 135,194 square kilometres. [1]. The state shares its borders with Uttar Pradesh and Jharkhand to the north, Orissa to the east, Andhra Pradesh to the south, and Maharashtra and Madhya Pradesh to the west. Although formally established on November 1, 2000, Chhattisgarh boasts a cultural heritage dating back to the Stone Age, known in ancient times as Dakshin Koshal. References in epics like the Ramayana and the Mahabharata offer geographical evidence of the region. The state's rich heritage is evident through various artifacts, including documents, copper plaques, coins, and archaeological findings, shedding light on its cultural and political history. The population of Chhattisgarh is a mosaic of diverse ethnic, social, religious, and linguistic backgrounds, with three-quarters residing in rural areas. However, there exists a notable disparity in population distribution, with fewer individuals inhabiting the extreme southern region compared to the northern half. Topographically, Chhattisgarh presents a varied

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structural plain shaped by extensive denudation, with a range of soil types prevalent across the state. Predominantly, dark clayey soils and red-to-yellow soils are found, with the latter being less fertile and containing a higher sand content. [2] From the rugged terrain of Bastar to the lush plains of Raipur, the built environment of Chhattisgarh reflects the ingenuity and resilience of its inhabitants. Vernacular architecture, characterized by its indigenous materials, traditional construction techniques, and cultural symbolism, serves as a tangible expression of local identity and heritage. This review endeavours to explore the diverse typologies of vernacular architecture prevalent in Chhattisgarh, unravelling the narratives woven into the walls of its ancient structures.

HISTORICAL OVERVIEW OF CHHATTISGARH

Chhattisgarh, located in central India, has a rich and diverse history that has significantly influenced its architectural landscape. Here's a chronological overview highlighting key periods and influences on its architecture:

Ancient Period

- Chhattisgarh has a rich archaeological heritage dating back to ancient times, with evidence of human habitation found in various sites such as Sirpur, Malhar, and Ratanpur.
- During this period, the region was ruled by various dynasties, including the Mauryas, Satavahanas, and Kalachuris, who left their imprint on the architectural style through the construction of temples, monasteries, and forts.
- The Buddhist influence is particularly notable, as evidenced by the Buddhist monastic complex at Sirpur, which flourished as an important center of learning and trade during the Gupta period.

Medieval Period

- The medieval period saw the emergence of several powerful kingdoms in Chhattisgarh, including the Nagavanshi, Somvanshi, and Kalachuri dynasties.
- The Nagavanshi rulers, in particular, made significant contributions to the region's architecture, constructing elaborate temples and forts, such as the Bhoramdeo Temple dedicated to Lord Shiva.
- Islamic influences also began to permeate the region during this period, as evidenced by the construction of mosques and tombs in areas like Raipur and Durg.

Maratha Rule

- In the 18th century, Chhattisgarh came under Maratha rule, with the Bhonsle dynasty establishing their dominance over the region.
- Maratha architecture, characterized by its fortifications and palaces, left a lasting impact on the built environment of Chhattisgarh, with examples such as the Raipur Fort and Ratanpur Palace showcasing their architectural prowess.

British Colonial Period

- The British East India Company gradually extended its control over Chhattisgarh during the 19th century, leading to significant changes in governance and administration. [3]
- The colonial period witnessed the introduction of Western architectural styles and construction techniques, particularly in urban centers like Raipur and Bilaspur, where colonial-era buildings, churches, and government structures were erected.

Post-Independence Period

- Following India's independence in 1947, Chhattisgarh remained a part of Madhya Pradesh until it was granted statehood in 2000.
- The post-independence period has been marked by rapid urbanization, industrialization, and infrastructural development, leading to a blend of traditional and modern architectural styles across the state.
- However, efforts to preserve and promote Chhattisgarh's vernacular architecture have gained

momentum in recent years, with initiatives aimed at conserving heritage sites, promoting eco-friendly construction techniques, and fostering cultural tourism.

Emergence of vernacular architecture in Chhattisgarh

The emergence and evolution of vernacular architecture in Chhattisgarh are deeply intertwined with the region's geographical, climatic, cultural, and socioeconomic factors as mentioned below-

Indigenous Building Materials and Techniques

The use of locally available materials such as mud, bamboo, wood, and thatch has been a hallmark of vernacular architecture in Chhattisgarh. These materials not only reflect the abundance of natural resources in the region but also provide thermal insulation and protection against the region's tropical climate. Traditional building techniques, passed down through generations, involve simple methods such as mud plastering, bamboo framing, and thatching. [4] These techniques are well-suited to the local environment and are often adapted to address specific climatic challenges such as heavy rainfall, high humidity, and extreme temperatures.

Cultural Influences and Symbolism

Chhattisgarh's vernacular architecture is imbued with cultural symbolism and religious significance, reflecting the beliefs, rituals, and social practices of its inhabitants.Temples, shrines, and sacred sites dot the landscape, serving as focal points for communal worship and spiritual devotion. These structures often feature intricate carvings, sculptures, and murals depicting mythological narratives and religious motifs.The layout and design of traditional dwellings are also influenced by cultural norms and social hierarchies, with features such as courtyard layouts, verandas, and multi-tiered roofs reflecting the importance of family ties and community interaction.

Adaptation to Environmental Conditions

The architectural typologies in Chhattisgarh have evolved in response to the region’s diverse topography and climatic variations. For instance, the hilly terrain of Bastar necessitated the construction of hill forts and fortified settlements, while the plains of Raipur favored the development of agrarian villages and courtyard houses. Vernacular architecture in Chhattisgarh demonstrates a keen understanding of environmental sustainability, with features such as raised platforms, sloping roofs, and latticed windows designed to promote natural ventilation, rainwater harvesting, and passive cooling. [5]

Socioeconomic Factors and Community Practices

Traditional building practices in Chhattisgarh are deeply rooted in community-based knowledge systems and cooperative labor practices. Villagers often come together to construct or repair homes, temples, and public infrastructure, fostering a sense of collective ownership and social cohesion. Economic considerations also play a role in shaping vernacular architecture, with affordability, accessibility, and durability influencing material choices and construction methods. Mud houses, for example, are cost-effective and readily available, making them the preferred choice for rural dwellings.[6]

Contemporary Challenges and Preservation Efforts

Despite its intrinsic value, Chhattisgarh's vernacular architecture faces numerous threats, including urbanization, globalization, and climate change. Rapid urban development, in particular, has led to the displacement of traditional settlements and the erosion of cultural heritage.

Characteristics Of Vernacular Architecture in Chhattisgarh

Some case studies highlighting specific examples and their characteristic features:

Mud Houses of Bastar

1. *Location:* Bastar region, southern Chhattisgarh.
2. *Characteristics:*

- *Mud and bamboo construction:* Houses are typically built using locally available materials such as mud for walls and bamboo for framework (Figure 1).
- *Thatched roofs:* Roofs are often thatched with grass or leaves, providing insulation against heat and rain.
- *Courtyard design:* Houses are organized around a central courtyard, serving as a multi-functional space for social gatherings and household activities. [7]
- *Decorative motifs:* Intricate patterns and motifs are often seen on the walls, showcasing the artistic traditions of the region.

Tribal Huts of Surguja

1. *Location:* Surguja district, northern Chhattisgarh.
2. *Characteristics:*
   - *Bamboo and thatch construction:* Houses are constructed using bamboo poles for the framework and thatched roofs made of grass or palm leaves.
   - *Raised platforms:* Many houses are built on raised platforms to protect against flooding during the monsoon season.
   - *Compact layout:* Houses are compactly arranged within the village, reflecting the communal lifestyle of the tribal communities. (Figure 2)
   - *Vernacular techniques:* Traditional building techniques such as wattle and daub are used for wall construction, providing both strength and insulation. [8]

Figure 1. Mud and bamboo construction: Bastar Region.

Pilgrimage Architecture in Sirpur

1. *Location:* Sirpur, Mahasamund district, central Chhattisgarh.
2. *Characteristics:*
   - *Temple complexes:* Sirpur is known for its ancient temple complexes, including the Laxman Temple and Gandheshwar Temple, built during the rule of the Kalachuri dynasty.
   - *Stone masonry:* Temples are constructed using finely carved stone blocks, showcasing exquisite craftsmanship (Figure 3).
   - *Architectural elements:* Elaborate entrance gateways (toranas), intricately carved pillars, and sculptures depicting mythological themes are prominent features of Sirpur's temple architecture. [9]
   - *Influence of regional styles:* The architecture exhibits a blend of Nagara and Dravidian styles, reflecting the cultural exchanges and artistic influences prevalent in medieval Chhattisgarh.

Dhokra Artisan Villages

1. *Location:* Various villages across Chhattisgarh.
2. *Characteristics:*
   - *Dhokra art:* These villages are known for their traditional Dhokra metal casting, an ancient form of metalworking practiced by tribal communities (Figure 4).
   - *Workshop-houses:* Artisans often live and work in the same space, with workshops integrated into their homes.

- *Eco-friendly practices:* Dhokra artisans use sustainable methods such as clay casting and bio-fuels for the casting process, aligning with principles of vernacular architecture.
- *Cultural significance:* Dhokra art is not only an artistic expression but also a cultural symbol, reflecting the identity and heritage of Chhattisgarh's tribal communities. (Figure 5)

Chhattisgarh, located in central India, is rich in cultural heritage and boasts a variety of iconic structures, temples, and traditional dwellings. [10]. Here are some examples:

Bastar Palace

Bastar Palace, located in Jagdalpur, is a significant historical monument in Chhattisgarh. It was built by the rulers of the Bastar State and reflects a blend of indigenous Bastar and colonial architectural styles. (Figure 6).

Chitrakoot Falls Caves

Chitrakoot Falls, often referred to as the (Figure 7) "Niagara Falls of India," is not only known for its stunning natural beauty but also for the ancient caves surrounding it. These caves hold historical and cultural significance, with some containing ancient rock paintings.[11].

Raajmahal in Raipur

The Raajmahal in Raipur is a magnificent palace built by the rulers of the Kalchuri dynasty. It showcases the architectural grandeur of the region and serves as a reminder of its royal heritage (Figure 8).

Sirpur Group of Monuments

Sirpur, an archaeological site in Chhattisgarh, (Figure 9) is home to a group of ancient monuments dating back to the 5th-12th centuries. These include Hindu temples, Buddhist viharas (monasteries), and monolithic pillars, reflecting the region's rich cultural and religious history. [12].

Figure 2. Tribal Huts of Surguja.

Figure 3. Pilgrimage Architecture in Sirpur.

Figure 4. Dhokra Artisan Villages.

Figure 5. Dhokra artisans use sustainable methods.

Figure 6. Bastar Palace.

Figure 7. Chitrakoot Falls Caves.

Figure 8. Rajmahal in Raipur.

Figure 9. Sirpur Group of Monuments.

Bhoramdeo Temple

The Bhoramdeo Temple complex, located near Kawardha in Chhattisgarh, is dedicated to Lord Shiva. It is renowned for its exquisite architectural carvings, which display a fusion of Nagara and Dravidian architectural styles (Figure 10).

Madku Dweep

Madku Dweep, situated near Dantewada, (Figure 11) is an island known for its ancient rock paintings, which provide insights into the prehistoric cultures that once thrived in the region. The paintings depict scenes of daily life, rituals, and hunting expeditions. [13].

Ghotul System

The Ghotul System (Figure 12) is a traditional social institution practiced by the Gond tribes of Chhattisgarh. Ghotuls are communal living spaces where young boys and girls undergo education, cultural training, and socialization under the guidance of elders.

Tribal Villages

Chhattisgarh is home to numerous tribal villages, (Figure 13) each with its own unique architectural styles and cultural traditions. [14]. These traditional dwellings often feature materials such as mud, bamboo, and thatch, reflecting the close relationship between the tribal communities and their natural environment.

Figure 10. The Bhoramdeo Temple complex.

Figure 11. Madku Dweep.

Figure 12. Ghotuls Tribal and traditional social institution.

Studying these iconic structures, temples, and traditional dwellings in Chhattisgarh provides valuable insights into the region's rich cultural heritage, architectural diversity, and the way of life of its people throughout history.

CASE STUDY

i. *Location:* Kodia, Chhattisgarh

ii. *Access:* Approached by a 40’ wide road
iii. Orientation: Faces east
iv. Entrance:
- Shaded raised platform at the entrance, 2’0” high from road level (Figure 14)
- Double-leaf traditionally designed entrance door at center of dwelling unit
- Courtyard: Located at the center, with rooms arranged around it

v. Layout:
- Two shops on the right-hand side of entrance
- One room with two double-leaf doors on the left-hand side of entrance
- Shaded corridor surrounds courtyard, connecting all rooms (Figure 15)
- Two-storied unit on North and South sides of courtyard; single-storied on East and West sides.

vi. Rooms:
- *Ground floor*:
  - Four rooms with staircase on Southern side
  - One room, kitchen, washing space on Northern side

vii. *Age:* Approximately 100 years old
viii.*Renovation:* Renovated periodically to meet residents' requirements [15].

Figure 13. Tribal House architectural diversity.

Figure 14. Shaded raised platform at the entrance, 2’0” high from road level.

Figure 15. Shaded corridor surrounds courtyard, connecting all rooms and decorative square columns

Western Part of Building

1. Consists of five rooms
2. Roof height: 6’0”; Door height: 4’0”
3. Small doors and windows facing corridor and courtyard
4. Floor of corridor made of slate tiles (Figure 16)
5. Oldest structure with roof replaced by GI Sheets
6. Wall thickness: 2’0”; Constructed with mud and bricks
7. Mud flooring in Western side rooms; replaced with tiles in other rooms
8. Toilets located at Northwest corner
9. Courtyard covered with clay tiles; Tulsi plant shifted to southern part
10. Projection of 2’6” on all four sides of corridor at roof level
11. Decorative round and square columns (1’0” diameter and 1’6”x1’6”)
12. Small horizontal projection at lintel level towards courtyard

Figure 16. View of Courtyard, Slate Flooring, Multi panel door

Eastern, Southern, and Northern Part of Building

1. Renovated
2. Western part remains unchanged with minor alterations in roofing sheets
3. Southern part: Wall thickness of 1’4”; Constructed of mud and bricks
4. Mud flooring replaced by tile flooring; RCC roof constructed
5. Small staircase at southwest corner with 12 steps; 2’0” wide
6. New rooms constructed on first floor of South and North sides
7. First Floor:
8. Doors: 6’0” high; Double leaf with traditional design
9. Hollow portion above frame at top serves as windows or for air circulation inside room [16].

Preservation Challenges and Strategies

Preservation challenges facing Chhattisgarh's architectural heritage include both natural and human-induced threats. Here are some key threats:

1. *Urbanization and Development Pressure:* Rapid urbanization and unchecked development pose significant threats to historical sites and traditional dwellings in Chhattisgarh. Expansion of cities and infrastructure projects may encroach upon heritage sites, leading to their destruction or alteration. [17].
2. *Neglect and Lack of Maintenance:* Many historical structures and traditional dwellings in Chhattisgarh suffer from neglect and lack of regular maintenance. Without proper care, these structures deteriorate over time, leading to irreversible damage.
3. *Natural Disasters:* Chhattisgarh is prone to natural disasters such as floods, earthquakes, and cyclones. These events can cause severe damage to architectural heritage, particularly if structures are not adequately reinforced or protected.
4. *Vandalism and Theft:* Historical sites are vulnerable to vandalism, theft of artifacts, and illegal excavation. Such activities not only cause damage to the physical fabric of the site but also result in loss of cultural artifacts and historical significance.
5. *Climate Change:* Climate change poses long-term threats to architectural heritage through phenomena such as increased rainfall, temperature fluctuations, and rising sea levels. These changes can accelerate decay, erosion, and structural instability.
6. *Tourism Pressure:* While tourism can provide economic benefits, it also brings challenges such as overcrowding, littering, and inappropriate behavior at heritage sites. Over-tourism can put excessive strain on fragile structures and disrupt local communities.
7. *Inadequate Conservation Policies and Enforcement:* Weak conservation policies, lack of proper planning, and ineffective enforcement of heritage protection laws contribute to the degradation of architectural heritage in Chhattisgarh. Without strong regulatory frameworks and enforcement mechanisms, heritage sites remain vulnerable to exploitation and destruction.

To address these threats, several preservation strategies can be implemented:

1. *Heritage Awareness and Education:* Increasing public awareness about the importance of architectural heritage through education, outreach programs, and cultural events can foster a sense of pride and ownership among local communities.
2. *Conservation and Restoration:* Implementing conservation and restoration projects to repair and stabilize historical structures, using appropriate materials and techniques to preserve their authenticity and integrity.
3. *Community Involvement:* Engaging local communities in the preservation process by involving them in decision-making, capacity-building, and heritage management initiatives.
4. *Sustainable Tourism Practices:* Promoting responsible tourism practices, including visitor management, site interpretation, and revenue-sharing schemes, to minimize the negative impacts of tourism on heritage sites.
5. *Partnerships and Collaboration:* Forming partnerships between government agencies, NGOs, academic institutions, and local communities to pool resources, expertise, and funding for heritage conservation projects.
6. *Legislative Protection:* Strengthening heritage protection laws, enforcement mechanisms, and regulatory frameworks to safeguard architectural heritage from threats such as encroachment, vandalism, and illegal excavation.

By implementing these strategies and addressing the identified threats, Chhattisgarh can effectively preserve its architectural heritage for future generations to appreciate and enjoy. [18].

Promoting awareness and appreciation of Chhattisgarh's architectural heritage requires a multi-faceted approach that engages various stakeholders and utilizes both traditional and contemporary methods. Here are some recommendations:

1. *Educational Initiatives:* Implement educational programs in schools, colleges, and communities to raise awareness about the importance of architectural heritage, its cultural significance, and the need for preservation. This can include workshops, lectures, heritage walks, and interactive exhibits.
2. *Digital Documentation and Virtual Tours:* Utilize technology to create digital documentation, virtual tours, and online platforms that allow people to explore Chhattisgarh's architectural heritage remotely. This can help reach a wider audience and encourage interest and appreciation for heritage sites.
3. *Cultural Festivals and Events:* Organize cultural festivals, heritage fairs, and events that showcase Chhattisgarh's architectural heritage through music, dance, art, and traditional craftsmanship. These events can provide opportunities for local communities to celebrate their heritage and for visitors to learn and engage with the culture.
4. *Heritage Trails and Signage:* Develop heritage trails and signage systems that guide visitors through key heritage sites, providing information about their history, significance, and architectural features. This can enhance visitor experiences and promote understanding and appreciation of the heritage.
5. *Community Engagement and Participation:* Involve local communities in heritage conservation efforts by consulting them in decision-making processes, encouraging their active participation in preservation activities, and recognizing their role as stewards of the heritage.
6. *Integration of Traditional Knowledge:* Incorporate traditional knowledge and craftsmanship into contemporary design and construction practices. This can involve training programs for architects, engineers, and craftsmen to learn traditional building techniques, materials, and design principles.
7. *Adaptive Reuse and Sustainable Development:* Encourage adaptive reuse of historic buildings for contemporary purposes such as cultural centers, museums, galleries, and community spaces. This not only revitalizes historic sites but also promotes sustainable development and ensures their continued relevance in modern society.
8. *Heritage Tourism Development:* Develop heritage tourism initiatives that promote responsible and sustainable tourism practices while showcasing Chhattisgarh's architectural heritage. This can include guided tours, homestays, cultural exchanges, and heritage-based activities that benefit local communities economically and socially.

CONCLUSION

The research on Rediscovering the Architectural Heritage through Vernacular Architecture in Chhattisgarh has unearthed valuable insights into the rich tapestry of architectural heritage in the region. Through an exploration of traditional building techniques, materials, and design principles, it has become evident that Chhattisgarh's vernacular architecture embodies a deep connection to its cultural roots, environment, and community.

Key Findings and Insights

Cultural Identity: Vernacular architecture in Chhattisgarh serves as a tangible expression of the region's cultural identity, reflecting the traditions, beliefs, and values of its people across generations.

Sustainability: Traditional building methods and materials utilized in vernacular architecture demonstrate a sustainable approach to construction, harmonizing with the natural environment and minimizing environmental impact.

Community Engagement: The preservation of Chhattisgarh's architectural heritage relies heavily on the active involvement of local communities as custodians and advocates for their cultural legacy.

Adaptive Reuse: The adaptive reuse of historic structures for contemporary purposes presents an opportunity to revitalize heritage sites, ensuring their continued relevance and integration into modern life.

Significance of Preservation: Preserving Chhattisgarh's architectural heritage is paramount not only for safeguarding the tangible remnants of its past but also for fostering a sense of pride, identity, and continuity within the community. It is a testament to the region's rich history, craftsmanship, and cultural diversity, serving as a source of inspiration and learning for future generations.To ensure the preservation and promotion of vernacular architecture in Chhattisgarh, it is imperative for stakeholders across sectors to collaborate in a concerted effort. This includes government agencies, local communities, conservation organizations, educational institutions, and the private sector. By pooling resources, expertise, and passion for heritage conservation, we can collectively safeguard Chhattisgarh's architectural legacy for posterity.

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