

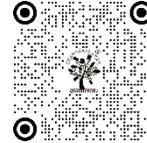


Original Article

EARTHEN ARCHITECTURE IN INDIA: REVIVAL, RELEVANCE AND CONTEMPORARY PRACTICE

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ABSTRACT

This research paper scrutinises the evolution of architectural trends in India, transitioning from the post-colonial embracement of concrete skyscrapers to a reinvigorated focus on traditional mud houses. It explores the socio-cultural, economic, political, and environmental motivations driving this shift and underscores the significance of indigenous practices in contemporary architectural discourse. The aim is to contextualise the architectural developments of modern India within the broader historical continuum that informs its current reversion to vernacular methodologies.

Keywords: Vernacular Architecture, Sustainable Design, Cultural Heritage, Eco-Friendly Construction, Modernism, Le Corbusier, Louis Kahn, Auroville, Traditional Building Techniques

INTRODUCTION

Indian architecture has undergone a dramatic transformation over the past century, reflecting the nation's rapid urbanisation and subsequent socio-economic changes. Initially dominated by concrete skyscrapers, a symbol of modernity and progress, there has been a discernible shift towards ecological and culturally resonant building practices, notably mud houses. This paper examines the drivers behind this revival and the implications for sustainable urban planning.

LITERATURE REVIEW

The trajectory of Indian architecture has been significantly influenced by global and local forces. From the ancient rock-cut caves to modern skyscrapers, the architectural landscape in India is a testament to a rich historical legacy and dynamic cultural exchange (Mitter (2001), Danielewski (2009)). The reintroduction of mud houses in contemporary settings, despite the prevalence of modernist architecture, points towards a critical evaluation of sustainability and cultural identity in architectural practices (Ching (2007), Joseph (2018)).

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Received: 05 January 2026; Accepted: 08 February 2026; Published 21 March 2026

DOI: [10.29121/ShodhShreejan.v3.i1.2026.60](https://doi.org/10.29121/ShodhShreejan.v3.i1.2026.60)

Page Number: 18-24

Journal Title: ShodhShreejan: Journal of Creative Research Insights

Journal Abbreviation: ShodhShreejan J. Creat. Res. Insights

Online ISSN: 3049-074X, Print ISSN: 3108-3072

Publisher: Granthaalayah Publications and Printers, India

Conflict of Interests: The authors declare that they have no competing interests.

Funding: This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

Authors' Contributions: Each author made an equal contribution to the conception and design of the study. All authors have reviewed and approved the final version of the manuscript for publication.

Transparency: The authors affirm that this manuscript presents an honest, accurate, and transparent account of the study. All essential aspects have been included, and any deviations from the original study plan have been clearly explained. The writing process strictly adhered to established ethical standards.

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METHODOLOGY

The study employs a qualitative approach, analysing architectural trends through a combination of historical document reviews and contemporary case studies. Observations from significant projects and practices, such as those by Le Corbusier in Chandigarh and the vernacular architecture in Auroville, provide empirical insights into the ongoing architectural transformations.

MAIN BODY

Indian architecture has witnessed remarkable developments over the years, reflecting cultural, technological and economic changes within the society. The dominance of concrete skyscrapers in recent decades has been a testament to India's rapid urbanisation and modernisation. However, alongside environmental problems, there is also a shift in people's aesthetic sensibilities, with a desire to live closer to nature; this is also a reason for turning to Vaastu based on natural principles. India has been a place from an architectural perspective, where one can see everything from rock-cut caves to temples, arches, domes, dargahs, baolis, and skyscrapers, all on one land. But this is just one side of the coin; the other side is even bigger and more ancient, that is, the local mud houses here.

These are as diverse as the climate here. If we start from the north, then from the Buddhist monasteries built in Leh to the use of glazed slabs of wood and slate for the roof, along with mud-mortared stone walls in the region of Himachal, it is worth seeing. In North India, Central India, and Rajasthan, thick mud walls with thatched roofs later became terracotta roofs, which, by the time they reached South India, were transformed into thick wooden pillars used in courtyards and verandahs. gets to. On the other hand, the abundance of bamboo in Assam, Meghalaya, Bengal, and Orissa seems to add a new colour to the architecture there.

We find that we have had such a huge collection of local architecture for centuries, but after colonialism, independence and the industrial revolution, the biggest change that came in the whole world, from which even India was not untouched, was steel, cement and glass. These three discoveries and their production changed the entire world of architecture. It left behind all the ancient media because, in some ways, it proved better than them: multi-storey buildings could be built with it, and it would take less time to build. These new modern media were easier to transport from one place to another, and fewer artisans were required. But these were its immediate benefits; in the long run, it proved a curse for the environment and for humans. Because carbon emissions increased in the production of cement, steel, and glass, these materials are not suitable for every environment. Before the Industrial Revolution, the materials and media used in architecture were sourced from the surrounding environment. Which proved to be effective for the climate there in every respect. The second major problem with these media is that, once used, they are not reusable and do not mix easily with the environment, becoming a major source of pollution. Now, you take cement itself, it is made in the form of a combination of fine powder by breaking different rocks, and when it comes in contact with water, it undergoes chemical reactions

and takes a shape and form, but once it completes its process completes. After that, it cannot revert to the same rock or mountain. You can understand that destroying the mountains of any other place for the construction of another country or city is equivalent to destroying both the climate and culture of that place. We call this phenomenon development. Want to forget something. The whole world was going through this period of development, so India was part of it, and it was a period of modernity and industrialisation.

One of the prominent figures in giving Indian architecture a new direction and condition was Le Corbusier. Jawaharlal Nehru was an important figure among the leaders who brought India to independence. This was the period when, before liberating India, the British divided India into two parts in the form of Pakistan, and the result was. became very serious in the form of Hindu, Muslim, Sikh riots and the whole world saw it and India's sovereignty and identity was deeply hurt.

Amidst all this, India became independent, and to introduce the new identity of this independent India on the world stage, the concept of establishing Chandigarh was a boon for both politicians and planners. Its foundation stone was laid on 2 April 1952 by the then Prime Minister, Pt. Nehru did this in a crowd of millions of fans. The news was published and discussed in politics, newspapers, and among common people across India. On one hand, there were praises; on the other hand, the press ridiculed such long roads of the city, because when the construction work started in 1956, there were not so many vehicles in the city." On the other hand, India had just become free from slavery at that time and basic needs like unemployment, health and food were yet to be met in the country and under these circumstances, people were also reluctant to spend so much money on such a big and expensive project.

The construction material used in the building, i.e., the use of cement concrete, was not appreciated because, among the Indian people, it looked dull, and the architecture appeared to be a monument. Just as art is an expression of society, any hope or tool used is not merely an object of use for a few people but a researcher of the entire social scenario; in the same way, architecture is not just a place to live but an expression of the entire culture. Because everyone would be associated with it, people from every section of society. Despite all these being connected, people would have different roles with Vaastu, like for its architect it would work in a different way, as if it was the embodiment of the expression of his thoughts, while for the workers who built it it would be a Employment opportunity would have provided a different perspective for the socialists and thinkers and all these things together would have made the architecture a cultural identity rather than just an architecture. For that civilisation and society.

But the architecture being created in Chandigarh did not have its origins in India and was entirely derived from the West, because its planners did not grow up in an Indian environment, nor were they familiar with the ancient architecture here.

Therefore, their craft language was strongly rooted in cubes, solid shapes, and geometric shapes, which were, to some extent, unnatural. It was his belief that buildings should stand out from nature, not merge with it. Their inclination has always been towards abstract painting and sculpture; hence, he seems to be greatly influenced by the avant-garde art born in Europe. This is clearly visible in the architecture of the Herm Capital Complex and the colourful, massive doors and tapestries of the Legislative Assembly. Although these experiments were very important for the modern world and the industrial age, but in its initial phase it seemed a completely new phenomenon to the Indian people. The construction material used in building construction, i.e., cement, was not appreciated; perhaps its colour was the main reason. Le Corbusier's own understanding of architecture can be understood from his statement. In his definition of "home" he calls home a machine in which we can live. Secondly, he avoids building that kind of architecture that is stuck to the ground; he lifts the entire architectural structure from ground level into the air with the help of pillars, making it appear to float. Amidst all this, in the era of modernity, we should not forget another important architect. Despite not being of Indian origin, he understood the environment of India very well; his name was 'Louis Kahn'. He was admitted to IIM by Vikram Sarabhai in 1961.

He was called to build the Ahmedabad project. designing IIM., he toured India for six months which included visiting Vijayanagar, Fatehpur Sikri and used these architectural elements in his architectural plan. His architecture is known not only in the Indian landscape but also all over the world for its use of shadow and light inside and outside. And the medium he chose for his architectural craft was brick and he did not cover the surface of the brick with cement plaster but used it neatly in such a way that it gives a distinct identity and aesthetic sense to his architecture. He made extensive use of big arches and geometry in his architecture, but this is different from Lee's geometric experiments. Since its medium is irregular, it appears more organic. Another special thing about his Vaastu is that he gives great importance to open space along with Vaastu, he believes that openness of ideas for teacher- student communication along with physical form is also an important point for any Vaastu. Conclusion: By keeping these two architects as examples, we can know that this was the beginning of the construction of multi-storey buildings in India.

Here, we explore a selection of notable institutions and organisations that are at the forefront of this movement:

1) Auroville Earth Institute (AEI)

Located in Auroville, Tamil Nadu, AEI stands as a pillar in the field of earth-based construction. Renowned for its development and promotion of Compressed Stabilised Earth Block (CSEB) technology, AEI conducts a range of workshops and training sessions to disseminate knowledge and skills in sustainable building practices. Its efforts are instrumental in blending traditional methods with modern technologies to achieve ecological and economical construction solutions.

2) Hunarshala Foundation

Based in Bhuj, Gujarat, Hunarshala Foundation integrates traditional knowledge and contemporary engineering to rebuild and empower communities affected by natural disasters. The foundation's work encompasses training artisans and masons in sustainable building practices, focusing on technologies such as adobe, rammed earth, and bamboo construction. Hunarshala's community-driven approach ensures that the skills needed for sustainable building are rooted in the cultural fabric of the regions they serve.

3) Development Alternatives (DA)

This Delhi-based research and action organisation is dedicated to sustainable development through innovative economic, social, and environmental strategies. Development Alternatives has pioneered the development of technologies and solutions, such as compressed earth blocks and other low-energy building materials, that are both environmentally friendly and culturally appropriate. The organisation conducts workshops and training programs to promote sustainable development practices among rural communities.

4) Thannal Hand Sculpted Homes

Located in Tiruvannamalai, Tamil Nadu, Thannal is a grassroots movement dedicated to natural building techniques. Founded by architect Biju Bhaskar, Thannal promotes the use of indigenous materials and techniques through workshops and awareness programs. The organisation's focus is on mud architecture, lime plaster, and other traditional Indian building methods, serving as a repository of knowledge and a catalyst for the revival of heritage building practices.

5) Nirmiti Kendra

Founded in Kerala, Nirmiti Kendra has been instrumental in promoting cost-effective and environmentally sustainable building technologies. The organisation specialises in training programs and the development of innovative construction materials and techniques, including mud-based construction. It seeks to transform Kerala's building landscape through community-centred educational initiatives.

6) The Centre for Green Building Materials & Technology (CGBMT)

Is a non-profit organisation located in Bengaluru, India, established in 2004 with the aim of advancing environmentally responsible construction practices. The institution focuses on reducing the ecological impact of the built environment by promoting low-energy building systems and sustainable alternatives to conventional, resource-intensive materials. CGBMT operates through

multiple interconnected domains, including public education and advocacy on sustainable lifestyles, equitable resource use, waste management, and environmentally sensitive materials [Figure 1](#). A significant component of its work involves capacity building through specialised training programmes in Bamboo Application Technology, designed to equip students and professionals with technical and entrepreneurial skills related to bamboo-based construction. The organisation also undertakes research and experimentation in eco-materials and sustainable construction methods, provides consultancy services for the design and implementation of ecological habitats, and collaborates with governmental and policy institutions to support the inclusion of bamboo and green building technologies within formal regulatory frameworks. In addition, CGBMT organises community-focused workshops, exhibitions, and experiential learning events, such as Bamboo Habba, to disseminate practical knowledge. Among its demonstrative initiatives, the House of Five Elements [Figure 2](#) serves as a prototype of sustainable residential architecture, integrating the principles of earth, water, air, fire, and space through the use of materials such as mud, bamboo, stone, and green roofing systems, with bamboo employed as a structural and architectural element to demonstrate its applicability in energy-efficient housing.

Figure 1



Figure 1 CGBMT, Bangalore

Figure 2



Figure 2 House of Five Elements, Bangalore

Among these, the most effective and regularly functioning one is the Auroville Earth Institute located in Tamil Nadu. The Auroville Earth Institute (AEI), nestled within the experimental township of Auroville in Tamil Nadu, India, stands as a beacon of sustainable building practices and earth-based architectural innovation. Established in 1989, the institute draws inspiration from the visionary principles of Auroville's founder, Mirra Alfassa, famously known as "The Mother," and is dedicated to the research, development, promotion, and transfer of earth-based technologies, which are cost-effective and environmentally sustainable.

AEI is renowned for its pioneering work in the field of Compressed Stabilized Earth Block (CSEB) technology. This method enhances traditional earth construction techniques by stabilizing the soil with a small amount of cement, thereby improving durability while maintaining ecological benefits. The institute's approach encapsulates a blend of ancient wisdom and modern scientific practices, aiming to address contemporary construction needs without forfeiting environmental integrity.

Under the stewardship of Satprem Maïni, a disciple of renowned architect Roger Anger, AEI has flourished as a center of excellence. The institute offers a broad spectrum of training programs, workshops, and seminars that disseminate knowledge about sustainable building techniques to a global audience. These educational endeavors are crafted to empower individuals, ranging from architects and engineers to builders and students, equipping them with the skills necessary to implement sustainable building practices in their own communities.

Figure 3



Figure 3 Student Working in Auroville Earth Institute

AEI's work has garnered recognition and accolades from numerous entities, reflecting its profound impact on the field of sustainable architecture. The institute not only exemplifies innovative approaches to earth architecture but also embodies the ideals of Auroville, promoting harmony between human habitats and the natural world. As such, AEI continues to be a pivotal element in the evolution of sustainable building, advocating for a future where architectural practices are aligned with the principles of ecological stewardship and sustainability.

Different types of courses are conducted here throughout the year, the main ones being (CSEB) Compressed stabilized Earth Block. Under this, the soil is compressed and molded into the shape of irons. goes. But this brick is completely different from baked bricks in terms of environmental harm because the possibility of carbon emissions in this process is greatly reduced. They organize AVD (Arch, Vault & Domes) workshops as another important course. Under this, it teaches how to make arches and domes with a combination of traditional and scientific methods. These are just a few examples of such efforts being made all over India which confirm that in the coming times, mud houses will be popular among the common people but its form will be changed.

CASE STUDY ANALYSIS

Examining projects like the construction of Auroville, which integrates traditional architectural elements within a modernist framework, illustrates the practical applications of merging old and new building methodologies. The analysis extends to the works of Sculptor Deepak Anand, who completed both his Bachelor's and Master's degrees in Sculpture from Banaras Hindu University, currently works as an independent practitioner engaged in site-specific and material-based projects across various regions of India, including Tamil Nadu and Ladakh. His practice reflects a sustained engagement with earth-based construction and vernacular building techniques. One notable example of his work in sustainable habitat design is Shujata Cottage [Figure 5](#), a mud house located in Kodaikanal, Tamil Nadu, which demonstrates the application of traditional earthen construction methods adapted to local climatic and environmental conditions. The project exemplifies the integration of sculptural sensibility with ecological architecture, highlighting the potential of mud as a viable material for sustainable residential structures.

Figure 4



Figure 4 Compressed Earth Block (CSEB) by Auram Press, Earth Institute Auroville

Figure 5



Figure 5 Shujata Cottage, Kodaikanal, Tamil Nadu

1) Ecological and Economic Considerations

India is confronted with critical challenges like swift urbanization, environmental deterioration, and a shortage of housing. Mud houses and other sustainable housing forms present effective solutions to these issues. They use locally-sourced materials that are not only economically viable but also environmentally friendly due to their minimal carbon emissions. With growing concerns about climate change and resource scarcity, the transition to sustainable construction practices is becoming increasingly necessary.

2) Technological Developments

Technological progress is improving the practicality and attractiveness of mud houses. Contemporary methods like stabilized mud blocks, enhanced rammed earth, and various hybrid techniques are boosting the durability and structural integrity of constructions based on earth. These advancements are making mud houses more resistant to climatic conditions and seismic events, thus mitigating one of the traditional limitations of earth construction.

3) Cultural Affinity and Social Acceptance

In many regions of India, there is a profound cultural appreciation for mud houses, tied to their aesthetic and climatic benefits. As urban populations become more eco-conscious, there is an increasing valuation of homes that not only minimize environmental

impact but also offer health advantages like natural humidity control and the use of non-toxic materials. This cultural and social shift is aiding the broader acceptance and resurgence of mud houses.

4) Educational and Cooperative Initiatives

Educational entities and NGOs are vital to the sustainable housing movement through their research and educational workshops on sustainable building techniques. Collaborative efforts among architects, academic institutions, and local communities are driving innovation and spreading knowledge about sustainable practices. These educational initiatives are crucial for preparing the next generation of builders and homeowners to embrace sustainable living.

5) Challenges and Prospects

Despite the positive outlook, there are obstacles to overcome, such as the stigma that mud houses are primitive or inferior. It is vital to dispel this notion and showcase the modern capabilities and comfort of mud houses. Additionally, logistical challenges like standardizing construction practices and ensuring quality control in remote locations require meticulous management. The trajectory of mud houses and sustainable housing in India is closely linked with the nation's commitment to sustainable development. As environmental consciousness and technological progress advance, mud houses are increasingly becoming a preferred option in both rural and urban areas. Their transition from traditional to modern sustainable architecture signals a greener, more resilient future for India's housing sector.

CONCLUSION

After this, cement, steel and mirrors were used so much in government and private sectors all over India that today Wherever you look, this is what you will see and it took almost a hundred years for this spread to happen, but now people seem to be getting more attracted towards other mediums. People are getting attracted towards mud, stone and natural mediums but such houses are not commonly seen in cities, they are being used by people as resorts, hotels and out houses. People now enjoy spending time with this type of Vaastu. To give shape to this type of Vaastu, architects are making traditional artisans a part of their plans. Due to which their employment opportunities are increasing. Some private groups are training and making people aware through workshops, small projects and dialogues. Most of the participation in this is done by youth, most of them are working in self- sustaining groups. Some of their names are Dharti, Earth Building, Thanal Mud Home, Dharti Hands and Auroville Earth Institute.

ACKNOWLEDGMENTS

None.

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