JOURNAL OF THE INDIAN INSTITUTE OF ARCHITECTS
PEER REVIEWED JOURNAL OF IIA ● ISSN-0019-4913
APRIL 2026 ● VOLUME 91 ISSUE 04 ● RS. 100

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23rd ARCASIA FORUM

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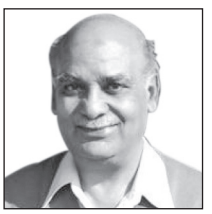
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Printed & Published/Editor by Ar Lalichan Zacharias on behalf of The Indian Institute of Architects.

Designed by **India Printing Works**
Printed by **Arihant Digiprint**
Shed No.1, Ground Floor, CTS No.15, 16, 20, 21 & 37, Italian Compound, Dindoshi Village, Ittbhatti, Goregaon East, Mumbai-400063

Published at The Indian Institute of Architects, Prospect Chambers Annexe, 5th Floor, Dr. D.N. Road, Fort, Mumbai-400001.

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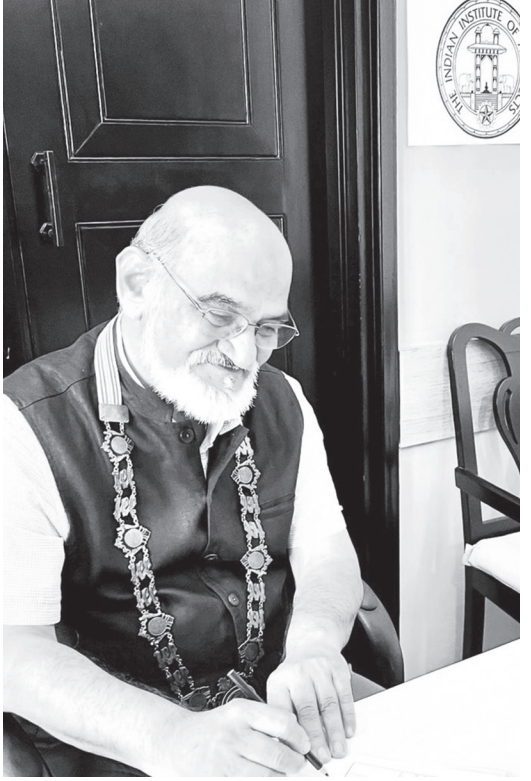
JIIA IS A REFEREED JOURNAL
ISSN 0019-4913

REGISTERED UNDER SOCIETIES REGISTRATION ACT XXI OF 1860.

JOURNAL OF THE INDIAN INSTITUTE OF ARCHITECTS
VOL. 91 - ISSUE 04 - APRIL 2026

www.indianinstituteofarchitects.com

PRESIDENT'S MESSAGE



Dear Members,

Greetings!

The Indian Institute of Architects continues to make steady progress through important national and international initiatives. Preparations for the 23rd ARCASIA Forum 2026 and the UIA International Forum 2027 in Mumbai are moving ahead successfully, strengthening India's presence on the global architectural platform.

I am pleased to share that, based on requests from members, the deadline for the IIA National Architectural Design Competition for the redevelopment of the IIA Belapur Building has been extended. I urge more young architects and members to participate and contribute innovative design ideas.

I am also pleased to note that many members of The Indian Institute of Architects have registered for the UIA World Congress of Architects 2026 scheduled to be held in Barcelona, marking the presence of our Institute on a global platform. I encourage more members to participate and be part of this significant international event.

Further, I would like to inform members that the election portal is currently under certification by STQC. The Institute has been consistently following up with STQC for certification of the IIA Election Portal for nearly a year, fulfilling all required compliances and requirements as prescribed. We are hopeful that the certification will be completed soon, following which the election process will be formally announced.

Let us continue working together to advance our profession with creativity, responsibility, and commitment.

Ar. Vilas Avachat
President
The Indian Institute of Architects

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EDITOR'S NOTE

Greetings to all IIA Members,

The April issue of The Journal of the Indian Institute of Architects arrives at a time when India's developmental trajectory continues to redefine the possibilities and responsibilities of the architectural profession. Across the country, rapid advancements in infrastructure, transportation, housing, education, healthcare, tourism, technology and public spaces are reshaping the physical and cultural landscape of our cities and settlements. Within this transformation, architects remain integral participants in envisioning and guiding the future of the built environment.

The contemporary architect today operates within a rapidly evolving professional ecosystem. Emerging paradigms of practice increasingly demand interdisciplinary engagement, technological adaptability, environmental responsibility and socially-responsive design thinking. The profession is expanding beyond conventional boundaries, requiring architects to engage with issues of climate resilience, urban liveability, cultural continuity and sustainable development with greater depth and sensitivity. India's exponential growth presents immense opportunities for architects to contribute meaningfully at multiple scales, from regional planning and public infrastructure to community-focused interventions and research-driven innovation. At the same time, this moment also calls for reflection on how architecture can remain rooted in context while embracing global advancements and contemporary methodologies.

In this regard, the role of the Indian Institute of Architects continues to gain greater relevance. Through its initiatives, forums, publications, and professional networks, the IIA remains committed to creating platforms that support dialogue, collaboration and international outreach for the architectural fraternity. The forthcoming ARCASIA Forum in 2026 and the UIA Forum in 2027, both hosted in India, mark significant milestones in this journey. These events will provide Indian architects with an unprecedented opportunity to engage with global discourse, exchange ideas with international peers, and showcase the richness, diversity and innovation of architectural practice in India.

Such forums are not merely events of professional significance; they are opportunities to strengthen India's position within the global architectural community while fostering meaningful conversations on the future of cities, sustainability, heritage, education and inclusive growth. They also reaffirm the importance of collective participation and institutional collaboration in shaping the next phase of the profession.

The Journal of the Indian Institute of Architects remains dedicated to documenting this evolving journey and providing a platform for critical discourse, research and professional exchange.

Let us continue to build with vision, collaborate with purpose, and contribute meaningfully to a future that is progressive, inclusive and globally connected.

Ar. Vinit Mirkar
Editor, JIIA

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SPATIAL ECHOES

By Ar. Tanmayee Wagle

A Walk through Native Spaces

A space to pause within,

A niche to dwell in,

A window to set oneself free,

A step towards a new adventure,

A doorway of illusion,

A wall of memories.

Through abstraction, the composition reflects the layered essence of Indian architecture and the subtle relationship between people and place. Arches, corridors, thresholds, alcoves, windows and stairways appear as fragments of familiar environments shaped by movement, silence, light and time.

Inspired by native settlements and transitional spaces, the artwork draws from entranceways, shaded arcades, interconnected passages and changing levels that define the experience of inhabitation in Indian contexts. The interplay of geometry and depth creates moments of enclosure and release, guiding the eye through spaces that feel both intimate and expansive.

Rather than representing a singular structure, the composition evokes a collective memory of built environments, where every opening suggests possibility, every passage carries continuity, and every surface holds traces of lived experience.

The work becomes an abstract architectural narrative rooted in memory, rhythm and human connection.

Ar. Tanmayee Wagle is a multidisciplinary creative professional with an M.Arch in Design + History, Theory & Criticism from CEPT University, Ahmedabad. Her work explores spatial narratives through art, architecture, research and writing. She is currently Core Faculty at IES's College of Architecture, Mumbai (IIA-Affiliated Institute) while also pursuing art through independent creative practice.
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JIIA Call
for Papers, Articles, Projects

The Journal of the Indian Institute of Architects invites original and unpublished contributions from members **ONLY** (academicians, practitioners and students) under the following FOUR categories. Submission in each category is strictly only through the respective google forms.

In order to be accepted for publication, all material sent in these categories should have the following components:

1. MS Word document file with text only. Please do not format it in anyway. The numbered captions for all the images will also be in this document.
2. Folder with all images (minimum 300 dpi), numbered according to the captions given in your text file
3. Photograph of the author/s (minimum 300 dpi).
4. Author biodata – Maximum 50 words.
5. PDF (optional)– showing the intended layout. This pdf should include text and all images, with numbered captions.

Category 1 : Articles

google form link: https://forms.gle/pJ2d4MVYqyPzWiVc9

Essays, interviews, articles (1500- 2500 words), book reviews (600 and 750 words), travelogues, sketches and photo-essays in the areas of architecture, planning, urbanism, pedagogy, heritage, technology, ecology, theory and criticism, visual design, practice or any other relevant subject pertaining to the built environment. (Details of the format will be available on the JIIA website).

- For a design project, please include the 'Fact File' with the following details : Project Name, Location, Plot area, Total built up, Structural consultants, Project completion. Also please give the photo captions and credits. Please ensure that the image is referred to within the text. For eg, "As seen in Figure 1…". This is essential for the layout.
- For design projects, plans and sections of the project are desirable along with the photographs.
- Book reviews should be only of books by Indian authors. please include the "Fact File" with the following details: book title, author name, publisher, year of publication, ISBN, language the book is written in, genre (technical/ fiction/ etc.), no of pages, dimensions (in cm), type (Kindle / paperback/ hardback), available at (amazon.in/ flipkart.com/ others).
- Please send a write-up of about 200-300 words along with sketches and photo-essays.

Category 2 : Student Work

google form link: https://forms.gle/8wDCYFusLb7hWcpa6

Summaries of dissertations (2000-3000 words) at the level of B.Arch. & M.Arch., and theses at the Ph.D. level. The Guide for that work will be mentioned as the Co-author. (Format will be available on the JIIA website).

Category 3 : Contributions from Chapter Correspondents

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(a) Chapter News: This includes various interesting activities from the Centres of your Chapters (maxm. 500 words for the news from the entire Chapter).

(b) News of conferences by the academic institutes in your respective Chapters.

(c) Obituaries : Obituaries of IIA members should consist of the photograph of the departed soul, the dates of birth and death and a short 50-word note.

Category 4 : Research Papers

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Research papers (2000-5000 words) in the prescribed format. The research may be based on their ongoing or completed research. (Format is available on the JIIA website). All contributions in this category will be double blind peer-reviewed before being accepted for publication by academic experts of repute.

Category 5 : JIIA Cover + Theme Note

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Students from affiliated colleges are invited to design the cover page theme. This should be a graphic based on some aspect of Indian Knowledge Systems. The submission will include the graphic file (jpeg or corel draw); a theme note (with a title) of about 500 words explaining the concept of the graphic. Please note that the image you send should be within a SQUARE of 15 x 15 cm. It will be adjusted as per the layout requirements of the JIIA Cover. It should NOT contain any text / slogan/ etc.

Please note:

1. All submissions will be accepted only through google forms.
2. Submissions will **NOT** be accepted through email.
3. Any queries to be addressed to : jiiaeditorial@gmail.com.
4. When you correspond with us, please give your email id (that you regularly use) and your cell no. (preferably with WhatsApp).
5. It is compulsory to mention your IIA regn. No. Submissions will **NOT** be accepted from non-members.
6. The review process takes anywhere between 4-6 weeks. Since it may not be possible to respond to all authors who send in their work, we will definitely revert if and when your work is accepted.
7. JIIA does not charge any fees for publication of any professional or academic work.
8. It is understood that submission from an author is an original work, unpublished anywhere else, and that IIA and JIIA are in no way responsible for any matter or dispute arising out of the publication of the same.
9. All authors are requested to refer to further detailed information available on the JIIA website.

RESEARCH PAPER

Investigating Elements Impacting the Incremental Progress of

Organic Waste Composting and Waste Segregation in Gated Residential Area

By Pallavi Keswani and Dr. Purva Mujumdar

Abstract

The role of gated communities in addressing the escalating challenge of organic waste is becoming increasingly crucial, because of the substantial volume of waste generated. Hence, it becomes imperative to prevent the perpetuation of a growing garbage legacy, particularly in Indian states that are still struggling with waste management issues. Despite the Swachch Bharat Mission emphasising waste segregation, the effectiveness of on-site composting within the building boundaries remains questionable. This study delves into the factors contributing to the sluggish progress of waste segregation and organic waste composting in gated communities across major Indian cities. The research aims to identify obstacles hindering waste management initiatives where there is negligible processing of the legacy waste in the city of Jaipur. While waste segregation is a primary concern, the study explores additional factors to comprehensively analyse the challenges and propose viable solutions for the on-site composting of organic waste which is a pivotal step in achieving a zero wastage goal within gated communities.

Keywords: Legacy waste, Organic Waste, Composting, Gated Communities, Waste Segregation.

1. Introduction

In developing countries, urbanisation and rapid population growth has resulted in a substantial increase in generation of Municipal Solid Waste (MSW). Taking into consideration the municipal solid waste generated in India is approximately 143,449 MT out of which 111,000 MT is collected and only 35,602 is treated. The per capita waste generation in India is in between (0.5-0.9) kg per person per day (Akhilesh Kumar, 2020). India will be generating 145 million tons which is expected to reach between 260 and 300 million tons in 2047, which is rather alarming (Akhilesh Kumar, 2020). India had a target of completely remediating its legacy waste by 2024. With one-year remaining, 71% of the country's legacy waste is still unattended (NITI Aayog , 2023).

To accommodate this quantity of garbage by 2031, approximately 23.5 107 cubic meters of landfill space will be required, equating to 1,175 hectares of land per year. From 2031 to 2050, 43,000 hectares would be required for landfills piled at a 20-meter height. These forecasts are based on a waste generation rate of 0.45 kg per inhabitant per day. As a result, determining the land required and selecting appropriate treatment/disposal techniques is problematic (Ahmed, 2016).

1.1 Swachh Bharat Mission

The mission was inaugurated in the year 2014, 2nd October with an idea to clean Indian cities by October 2nd, 2019. The mission also focussed on regular monitoring of the cities to assess the performance through different criteria. The government issues guidelines as Swachh Survekshan. Year by the parameters of the toolkits is revised so as to achieve the aim of cleaner cities in India. Figure 1 shows how the parameter being the measuring physical approach in 2016 has changed over the period, to integrated approach in 2021, 2022 is based on the theory of people first.

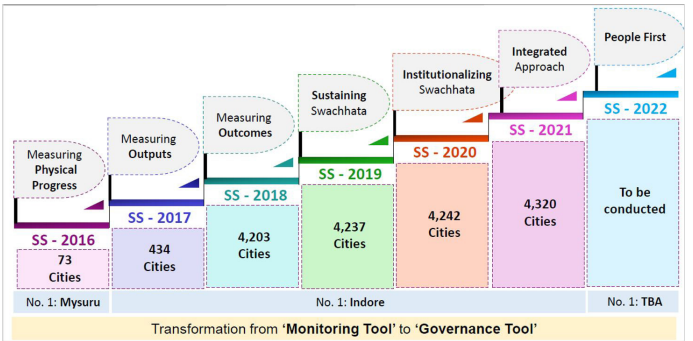

Figure 1: Change in the Swachhta Toolkit since 2017-2022
Source: Ministry of Housing and Urban Affairs, 2022

An equal distribution and importance is given to citizen's voice and certification (30% each), whereas the major 40% component is given to the service level progress.

Different cities in India have adopted different strategies to deal with solid wastes, while some are simply trying to brush their trash under the carpet, other have achieved various levels of segregation, recycling, reduction and reuse. Few best cases discussed where it showed potential strategic opportunities and vision for future India (Parvez, 2019) (See Figure 2).

1.2 Literature Review

When developing national policy, one of the top priorities should be the management of solid waste generated in a country. Economic expansion, migration from cities, unplanned land use and, most crucially, a lack of effective solid waste management regulations are the key culprits, particularly in urban areas. The institutional framework for solid waste management is still in the development process. As a national campaign, local municipal bodies (ULBs) have to make cities open defecation and focus on the SWM system with social priorities. Some of the considerable landmarks in the history of solid waste management (SWM) Techniques to process Organic waste (Akhilesh Kumar, 2020). Methods such as composting, vermi-composting, Anaerobic digestion and Methanation and Pyrolysis/Gasification, Plasma Pyrolysis Vitrification (PPV) / Plasm arc process are a few initiatives which can prove to be a milestone in reducing the amount of waste been sent to the landfill sites. See Figure 3.

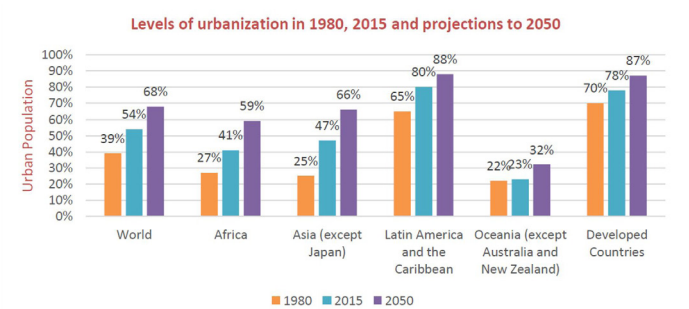

Figure 2: Levels of Urbanisation in 1980, 2015 and projections to 2050
Source: Balwan, 2021

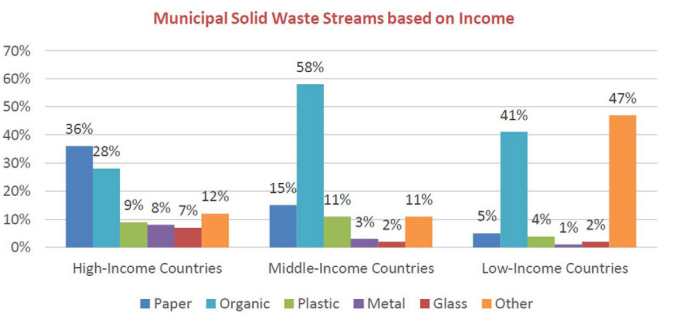

Figure 3: Municipal Solid Waste streams based on income
Source: Wahied Khawar Balwan, 2020

Numerous initiatives are working on various waste management strategies, however instead of addressing garbage at its source, these strategies all focus on how waste can be collected and delivered to landfills (Sarkar, 2017). Rajasthan has a 96% legacy waste deposit, underscoring the importance of addressing this issue. Figure 4 and 5 shows the state of Rajasthan's solid waste management scenario.

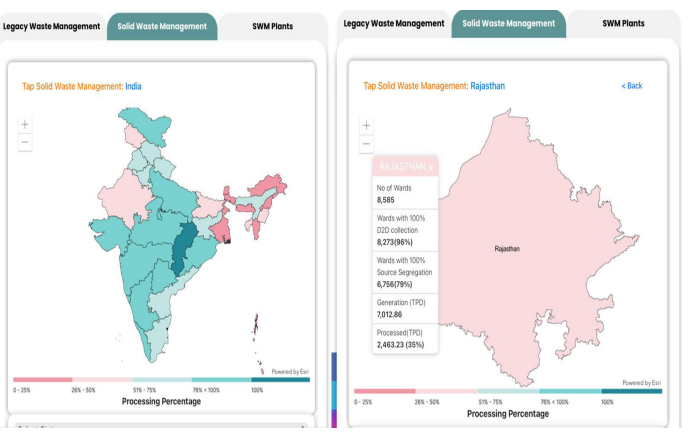

Figure 4: Solid waste Management Status: Rajasthan
Source: Ministry of Housing and Urban Affairs , n.d.

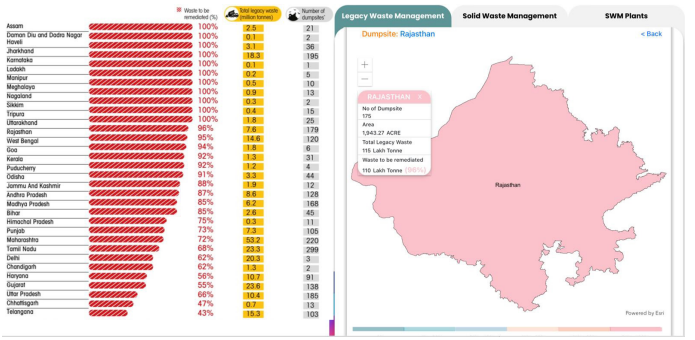

Figure 5: Legacy Waste management: Rajasthan
Source: NITI Aayog , 2023

1.3 Population, Intervention, Comparison and Outcome (PICO) study

1.3.1 Problem: According to First report on garbage problem in Doda region of Jammu and Kashmir, India , 377 million people live in urban areas, which currently generate 62 million tonnes of MSW per year (Balwan, 2021). By 2031, these urban centres are expected to generate 165 million tonnes of garbage annually and by 2050, it might reach 436 million tonnes. To accommodate this quantity of garbage by 2031, approximately 23.5 107 cubic metres of landfill space will be required, equating to 1,175 hectares of land per year. From 2031 to 2050, 43,000 hectares would be required for landfills piled at a 20-meter height. These forecasts are based on a waste generation rate of 0.45 kg per inhabitant per day. Varying reports in India give different estimates and projections due to a lack of primary data on per capita waste creation, insufficient data on trash types and the influence of the informal sector. As a result, determining the land required and selecting appropriate treatment/disposal techniques is problematic (Rajkumar Joshi, 2016).

1.3.2 Intervention: The Ministry of the Environment, Forests and Climate Change (MoEF), the Ministry of Urban Development (MoUD), the National Environmental Engineering Research Institute (NEERI), the CPCB and State Pollution Control Boards (SPCBs), as well as ULBs, are responsible for ground-level implementation. During the last two and a half decades, the Government of India has taken the following key initiatives to improve India's solid waste management:

1.3.3 Comparison: Recycling of recyclable materials from areas near their homes has become a typical element in the neighbourhoods of many Swedes who live in apartment blocks. The property owner constructs and manages these collecting facilities, which are governed by the Swedish building code, which requires recycling rooms to be created with "excellent forms, colours and materials. (Glad, 2018). Different cities in India have adopted different strategies to deal with solid wastes, while some are simply trying to brush their trash under the carpet, other have achieved various levels of segregation, recycling, reduction and reuse. Few best cases discussed where it showed potential strategic opportunities and vision for future India (Nikhat Parvez, 2019).

1.3.4 Outcomes: After thoroughly reviewing multiple research articles, it's evident that the most effective method for reducing waste involves initial segregating, followed by composting on-site. Unfortunately, current efforts primarily focus on collecting and transporting waste to landfills instead of addressing the problem at its source. Notably, buildings play a significant role in waste generation, highlighting the need for infrastructure with treatment facilities to minimise landfill-bound waste. In the quest for sustainability, waste segregation stands out as the fundamental solution in all aspects.

2. Materials and Methods

For a thorough and organised approach, the research technique entails a number of essential procedures. The PRISMA framework is used to direct the systematic review and meta-analysis process and the PICO model is then used to specify the study's population, intervention, comparison and outcome. The basic ideas and theories that support the research are established through a theoretical framework. After that, a comprehensive examination of the literature is done to comprehend the current state of the field and pinpoint any gaps in knowledge. Research objectives are established with clarity based on this gap. In order to identify the best place for data collecting, a site selection process is used. Next, appropriate information is gathered through the use of data collection techniques and data analysis and measurement are facilitated by the definition of precise parameters.

The process of understanding the system of the city involves interviews with various stakeholders and field visits to study the know-how on ground reality. The field visits include the visits to all the sites selected, as mentioned in table 1, visits to the zonal dumping yard and visit to the city dumpsites.

Further, extensive interviews were conducted with the administrative people involved in the process at various levels, such as; District Commissioner: Cleanliness from the Jaipur Municipal Corporation, Personnel from Eco Wrap responsible for the Door to Door Collection system in the ward, the General secretary/ Chairman's of the RWA's of the societies,

the Drivers of the vehicles responsible for the Door to Door Collection and the personnel responsible on the dumping sites at zonal and city level.

How do Solid Waste Management Rules apply to housing societies?

Waste generators have to segregate waste into three streams, 'Biodegradable' (wet), 'Dry' (plastic, paper, metal, wood, etc) and 'Hazardous' (diapers, napkins, cleaning agents, mosquito repellent, etc.). The Solid Waste Management Rules, 2016 identify any entity producing more than 100 kg of waste per day as a bulk generator including housing societies with more than 100 units or communities with an area greater than 5,000 square meters. These entities must process, treat and dispose of their biodegradable waste within their own premises through composting or bio-methanation within the premises as far as possible. The residual waste shall be given to the waste collectors or the agencies as directed by the agency (Jaipur Municipal Corporation- SWM Rules , 2018).

The societies selected for the study are identified on the basis of two conditions. Firstly, if the society has more than 100 dwelling units or the area is more than 5000sq.m. The societies selected for the study are NRI Colony (Raj Aangan), Jagatpura, Unique Emporia, Jagatpura, Unique Towers, Jagatpura, Vrinda Gardens, Jewel of India, Malviya Nagar, Mahima City Ville, Jagatpura, Mahima Spring Villa, Mahima Panorama, Jagatpura , Mahima Panache, Jagatpura and Mahima Studio Panache, Jagatpura respectively.

The waste management process of Jaipur city is managed by the solid waste department in the municipal corporation, headed by the DC Cleanliness. The city of Jaipur is divided into two parts namely Greater and Heritage. Jaipur greater has 4 zones and Heritage has 3 zones with 150 and 100 wards each respectively.

Figure 6 (Bottom) shows the entire process comprises four steps: collection, transportation, processing and disposal. Initially, waste is collected door-to-door using specialised vehicles with separate

Table 1: Gated communities selected for the study
Source: Author

S.No	Gated Community name	Typology	Area	No. of Towers/ Blocks	No. of Dwelling units	Mode of waste collection	Waste Segregation	Availability of Compost Plant
1	NRI Colony	Villas	5,90,789	NA	303	Manual Collection	**No**	**No**
2	Unique Emporia	Apartments	7,184	2	216	Garbage Chhute	**No**	**No**
3	Unique Towers	Apartments	19,257	12	432	Manual Collection	**No**	**No**
4	Vrinda Gardens	Apartments	58,210	22	704	Garbage Chhute	**No**	**No**
5	Jewel of India	Apartments	85,327	8	224	Garbage Chhute	**No**	**No**
6	Mahima City Ville	Villas	17,454	NA	79	Manual Collection	**No**	**No**
7	Mahima Spring Villa	Villas	1,00,902	NA	204	Manual Collection	**No**	**No**
8	Mahima Panorama	Apartments	32,765	17	816	Garbage Chhute	**No**	**No**
9	Mahima Panache	Apartments	18,100	8	300	Garbage Chhute	**No**	**No**
10	Mahima Studio Panache	Apartments	5,282	3	288	Manual Collection	**No**	**No**

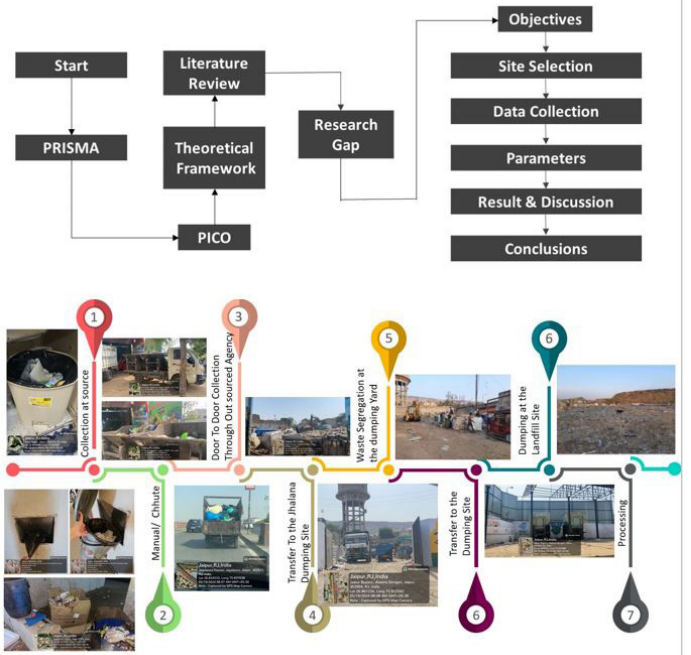

Figure 6: Research Methodology (Top); Waste Collection Process: Jaipur (Bottom)
Source: Author

compartments for dry and wet waste. However, in some buildings, mixed waste is collected despite these compartments. The collection process is managed by different outsourced agencies across various zones, such as Nature Green, We Care, Finiloop, Waste to Wonder and Eco Wrap. Then this waste collected is transferred to the zonal refuse transfer station, where dry and wet waste is separated out with the help of rag pickers. This segregated waste is then

Figure 7: Composition of Waste- Jaipur City
Source: Urban Local Body

sent to various processing plants i.e, for paper waste, e-waste and food waste. The remaining is sent to the landfill site.

Figure 7 shows the composition of wet waste in the city tested through various means as 76%, 60% and 56% respectively.

The societies selected for the study are identifies on the basis of two conditions. Firstly, if the society has more than 100 dwelling units or the area is more than 5000sq.m. Table 1 shows the list of societies selected for the study.

The above table clearly shows, that there is a serious lack of awareness amongst the; furthermore, there is no involvement / activities from the ULB's / RWA's to enhance the process of waste segregation.

3. Analysis and Results

To analyse the entire process and system, RACI Matrix is used to define and document the roles and responsibilities of different stakeholders involved in

Table 2 : Status of waste segregation, Involvement of RWA, IEC activities and fines associated with the societies
Source (Primary)

S.No	Gated Community name	Percentage of People aware about waste segregation	Involvement of RWA's in the process of SWM	Number of IEC Activities from the ULB's in last Year	No of fines on the society in the last year
1	NRI Colony	5%	No Involvement	**0**	**0**
2	Unique Emporia	2%	No Involvement	**0**	**0**
3	Unique Towers	4%	No Involvement	**0**	**0**
4	Vrinda Gardens	11%	No Involvement	**0**	**0**
5	Jewel of India	2%	No Involvement	**0**	**0**
6	Mahima City Ville	1%	No Involvement	**0**	**0**
7	Mahima Spring Villa	2%	No Involvement	**0**	**0**
8	Mahima Panorama	6%	No Involvement	**0**	**0**
9	Mahima Panache	8%	No Involvement	**0**	**0**
10	Mahima Studio Panache	2%	No Involvement	**0**	**0**

Table 3: Composition of Waste in the selected Gated Communities
Source: Primary

S.no	Society Name	Population	Total Waste Generation (kg)	Wet Waste (kg)	Dry Waste (kg)
1	NRI Colony	1515	406.02	243.612	162.408
2	Unique Emporia	1080	289.44	173.664	115.776
3	Unique Towers	2160	578.88	347.328	231.552
4	Vrinda Gardens	3520	943.36	566.016	377.344
5	Jewel of India	1120	300.16	180.096	120.064
6	Mahima City Ville	395	105.86	63.516	42.344
7	Mahima Spring Villa	1020	273.36	164.016	109.344
8	Mahima Panorama	4080	1093.44	656.064	437.376
9	Mahima Panache	1500	402	241.2	160.8
10	Mahima Studio Panache	1440	385.92	231.552	154.368

Figure 8: Waste collection and Transfer process – Unique Tower (Top), Unique Emporia (Middle) and Jewel of India (Bottom) respectively
Source: Author

the waste management process. This ensures clarity, accountability and efficient execution of waste management tasks.

The RACI matrix for waste management offers a structured approach to defining and understanding the roles and responsibilities of various stakeholders involved in waste handling processes. By clearly assigning responsibilities and accountabilities, it ensures that each task is carried out efficiently and effectively. Citizens play a crucial role in the initial stages, particularly in ensuring waste is ready for collection, reflecting their accountability in the waste management system. ULB workers, as the primary executors, are responsible for numerous tasks, from manual waste collection to segregation, emphasising their pivotal role in maintaining cleanliness and order.

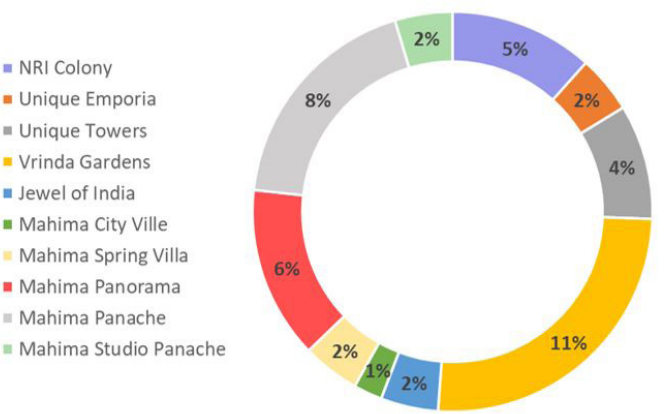

Figure 9: Percentage of people aware about waste segregation
Source: Author

Drivers, responsible for the transfer of waste to landfill sites and final dumping, ensure the physical movement of waste, while ward officers, accountable for overseeing these processes, ensure regulatory compliance and operational efficiency. Rag pickers contribute significantly to waste segregation and processing, highlighting the collaborative effort required for effective waste management. The involvement of sub-inspectors, ward officers, outsourced agencies and NGOs/SHGs at various stages ensures thorough oversight, consultation and adherence to standards.

4. Discussions

The waste management system faces several critical challenges across various parameters, leading to its inefficiency and failure. The key areas of concern are:

1. Waste Collection Process: Inefficiencies in the collection process cause delays and missed pickups, leading to unsanitary conditions.
2. Waste Segregation: Inadequate segregation practices hinder recycling and proper disposal, contributing to environmental hazards.
3. Waste Composting: Limited composting initiatives result in a lack of organic waste management, adding to landfill burdens.
4. Design: Poorly designed systems and infrastructure fail to support effective waste management, causing operational bottlenecks.
5. Involvement of ULBs: Urban Local Bodies (ULBs) often lack sufficient involvement, leading to gaps in oversight and coordination.
6. Benefits/Penalties: The absence of a robust system of incentives and penalties fails to encourage compliance and accountability.
7. RWA Engagement: Residents' Welfare Associations (RWAs) are not adequately engaged, reducing community participation in waste management.
8. Citizen Engagement: Limited citizen engagement results in poor awareness and participation in waste management initiatives.
9. Extent of Outsourcing: Over-reliance on outsourcing can lead to inconsistencies in service quality and accountability.
10. Involvement of Rag Pickers: Rag pickers are crucial to waste segregation but often lack formal recognition and support, impacting their efficiency.
11. Development Sector Participation: Insufficient involvement from the development sector limits innovation and resource mobilisation for waste management.

5. Conclusion

Addressing these highlighted parameters is essential for building a robust and effective waste management system. Enhanced engagement, better design and clear accountability can drive improvements and ensure sustainability.

Overall, the RACI matrix not only clarifies the distribution of tasks but also fosters accountability, collaboration and transparency among stakeholders. This structured approach is essential for creating an efficient waste management system that is both environmentally responsible and sustainable, benefiting the entire community.

Figure 10 clearly highlights waste management and outlines clear roles but highlights several critical issues. There is a lack of accountability in the Door to Door Waste Collection through the Garbage Chute System, with no designated accountable party. The matrix also reveals a systemic gap in processes where consultation and information dissemination are concerned, particularly involving NGOs/SHGs. Enhancing accountability and communication will be crucial for improving the efficiency and effectiveness of the waste management system. Addressing these gaps can ensure better coordination among stakeholders and lead to more sustainable waste management practices.

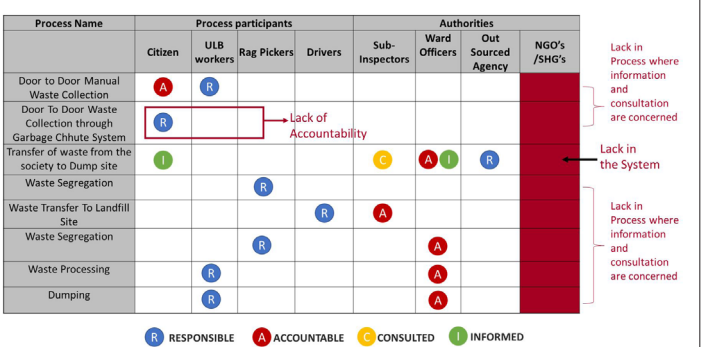

Figure 10: RACI Matrix
Source: Author

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RESEARCH PAPER

Urban Mobility Transformation

A Comparative Analysis of Travel Behaviour in Urban India

By Ar. Neha Mittal and Dr. Tejwant Singh Brar

ABSTRACT

The COVID-19 pandemic badly affected urban mobility in India and caused a considerable change in the travel behavior, preferences towards modalities, and the work patterns. This paper examines the decision-making processes of urban working citizens on travel at three different stages- Before, During, and After COVID-19 to determine behavioral changes and their potential long-term effects on sustainable mobility planning. The results show significant changes to commuting. Work From Home (WFH) rose dramatically during the pandemic. The study indicates that Hybrid work models are here to stay. Travelling to work every day went to 87.8% before COVID-19 and still at 63.4% after the pandemic, however, not reaching pre-pandemic levels. The use of cars stayed pre-eminent throughout all phases, but public transportation ridership dropped considerably during lockdown compared to preCOVID-19, and stayed low during the post-pandemic. Structural changes also affected non-work travel as the proportion of people visiting daily decreased considerably due to lockdown. Whereas walking had a low positive growth, cycling did not reflect significant growth. The long-term travel preferences also show that there will be still the dominance of the use of the car in a long-distance and walking a short distance up. The research notes the ongoing issue of the reliance of the city of India on the use of personal vehicles and outlines the necessity of enhancing the systems of the public transportation, improving the connectivity on the last-mile, and advocating the use of non-motorised methods as the ways to ensure the sustainability and resilience of the urban mobility in the postpandemic context.

KEYWORDS: Urban Mobility, Covid-19, Public Transportation, Non-Motorised Transportation, Long Term Travel preferences.

1. INTRODUCTION:

1.1 Urbanisation and Problems in Transportation in India:

India is rapidly urbanising and the current population living in urban areas is in excess of 340 million. This rapid development has brought about a high growth in travel demands and mobility stress in cities. The foremost problems of transportation in India are inadequate number and poor quality of Public transportation, Road congestion, Parking problems, road safety, women safety and poor infrastructure quality. Public services and agencies are under greater inspection than ever before because of the scarceness of the resources and capacities of the societies to afford the services and willing to invest in them (Saif et al., 2019). An analysis of Ahmedabad Municipal Transport Service (AMTS) service levels shows that bus supply is as low as 0.02 buses per thousand population (2015) whereas desired level is 0.6 as per Government of India's Service Level Benchmark indicators(Sinha et al., 2020). According to a survey done by the World Bank, the transport demand in India has increased 8 times since 1980, but in the absence of an adequate public transport system, the ownership of Motorised vehicles has increased. As city size increases, trip length increases as well and public transport services become more available. Higher incomes in larger cities make public transport more affordable and also enable purchase of private motorised vehicles(Pucher et al., 2007). These urban transport systemic problems formed a delicate mobility ecosystem, which was badly shaken during the COVID-19 pandemic, which is why it needed a systematic study of how changes in travel behaviour vary under the influence of different stages of the crisis.

1.2 Covid-19 timeline and changes in mobility during pandemic

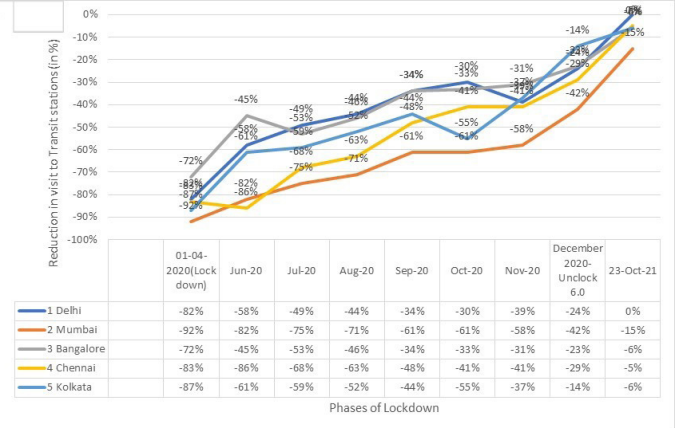
A. Travel pattern Pre- Covid-19

Prior to the COVID-19 pandemic, road-based public transport took up much of the urban mobility in India. The Census 2011 data showed that 11.4 percent of the commuters used buses, 3.5 percent used trains, 13.1 percent used bicycles and a very large and increasing portion of the daily travel was carried out by the use of private motorised vehicles, especially the two-wheelers and cars. Commuting in metropolitan cities and suburban rail systems were supported by buses, but motorisation became more and more clear, signaling a shift to individual means.

B. Travel pattern during Covid-19

When the COVID-19 was declared a global pandemic in March 2020, there was a strict emergency lockdown in the country, which severely restricted the mobility of citizens as well as the temporary paralysis of the services of public transports in India. The number of people using public transport decreased significantly (immediately up to 90% in the first phase of the lockdown) (Gkiotsalitis & Cats, 2021). Google Mobility Reports showed a 64% decrease in the visits to transit stations in May 2020 relative to the pre-pandemic situation. Other than institutional reasons, behaviour was an important factor. Fears of infection risk and the necessity of own travel space determined a markedly lower use of the public transport as well as a large share of people moved towards owning vehicles or limiting their travel. Work-at-home and online consumption habits minimised traveling and unnecessary visits still more. In the case with transport services, the services slowly returned, but the number of passengers was not restored completely to its pre-pandemic situation, which points to the possibility of a long-term behavioural shift preference in the choice of transport in the city. The pandemic therefore, served as a structural shock to the already tense urban mobility system in India that altered commuting behaviour, mode choices and sentiments towards safety in transport.

According to Google Mobility Reports data (please refer to Figure 1, Mittal and Brar, 2021), transit stations in five Indian megacities started showing a significant drop in the number of visits in the early stages of the first wave of lockdown (March 2020-June 2020). Passenger transportation declined drastically as of this time and, even though recovery was slow in later months, still, the levels were below the pre-pandemic levels. The pace of recovery was different in cities with Delhi and Bengaluru showing relatively better improvement. Nevertheless, in the



	01-04-2020(Lock down)	Jun-20	Jul-20	Aug-20	Sep-20	Oct-20	Nov-20	December 2020-Unclock 6.0	23-Oct-21
1 Delhi	-82%	-58%	-49%	-44%	-34%	-30%	-39%	-24%	0%
2 Mumbai	-92%	-82%	-75%	-71%	-61%	-61%	-58%	-42%	-15%
3 Bangalore	-72%	-45%	-53%	-46%	-34%	-33%	-31%	-23%	-6%
4 Chennai	-83%	-86%	-68%	-63%	-48%	-41%	-41%	-29%	-5%
5 Kolkata	-87%	-61%	-59%	-52%	-44%	-55%	-37%	-14%	-6%

Fig 1: Transit Station visit during Covid 19
Source: Mittal & Brar, 2021

second wave (April-May 2021), the use of public transport was very low, pointing to the continued cautious behaviour and the structural upheaval of the patterns in the movements of city transport.

COVID-19 has greatly interfered with the urban mobility system and especially with public transportation in India. Within the first phase of the lockdown, the number of people using the public transport had reduced by up to 50 to 90 percent, with some cities halting the services altogether (Gkiotsalitis and Cats, 2021). According to the Google Mobility Reports, the percentage change in transit stations visits in May 2020 was down by 64 percent over the same period in pre-pandemic times and even during the unlocking process in November 2020, the ridership registered 17 percent below the base. Despite observed gradual recovery, albeit sluggish, it indicated potential long-term behavioural advent of the travel pattern of urban population. The perceived threat of COVID-19 infection and safety concerns had caused many shared mobility users to transition to vehicles that were not shared, like cars and two-wheelers (Ghosh, 2021). At the same time, the work-from-home and minimised non-essential travel considerably decreased the aggregate mobile demand. Pandemic also focused on the significance of personal space during travels, promoting walking and little cycling to serve short routes (Hastak, 2022) and thus changed modal assignments in Indian cities.

1.3 Research Gap and Study Contribution

Although some research has focused on the immediate effects of the COVID-19 on the use of the transport, mobility restrictions and their short-term behavioral responses, limited research has taken a longitudinal comparative analysis of the travel behavior of three phases, such as pre-pandemic, during the pandemic and post-pandemic and in the urban Indian setting. Moreover, the working-from-home adoption, the

altered non-work travel frequency, the altered lifestyle and long-distance modal choices have not been combined to be studied in detail. This paper fills such gaps by undertaking an organised three-step examination of urban transportation modes among the working population and in assessing an emergence of preferred mobility minds over time. The results can increase the insight into the post-pandemic travel behavior and bring sustainable and resilient urban transportation planning in India.

2. AIM AND OBJECTIVES OF THE STUDY

The research aims to examine the changes in travel behaviour of the urban working population in India across pre-pandemic, pandemic and post-pandemic periods and to assess whether these changes may have long-lasting impacts on sustainable urban transportation planning.

2.1. To study the travel choices of the Working population of Urban India, to comprehend the mobility-shift.

2.2. To assess the extent to which pandemic-induced behavioural changes have resulted in lasting transformations in travel demand and mode choice.

2.3 To understand the Long-Term mobility preferences to propose sustainable solutions to urban mobility.

3. DESIGN / METHOD:

The proposed research methodology shown in Fig. 2. uses cross-sectional survey mixed method as a quantitative study involving a retrospective comparative design to compare the prevalence

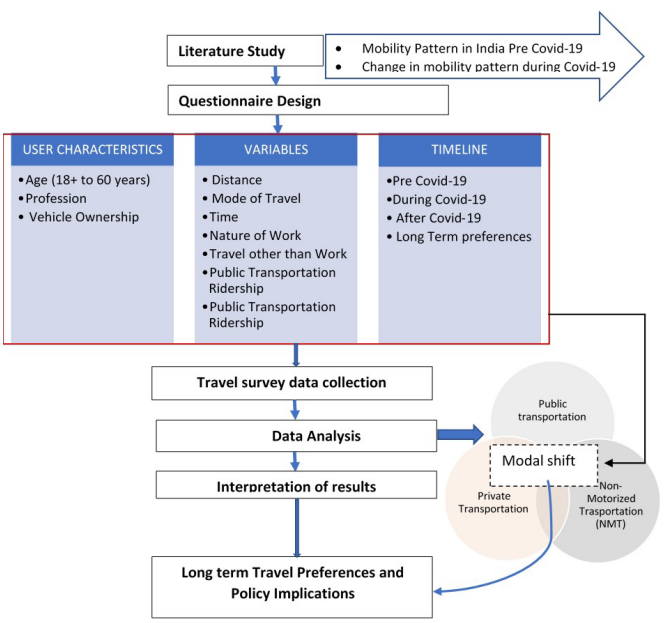


Fig 2: Methodology
Source: Author

of travel behaviour at three periods of time pre-COVID-19, during the COVID-19 period and in the post-COVID-19 period. A questionnaire was prepared in a structured form to capture socio-demographic in which questionnaire owns vehicle, commutes distance and time, travel mode preference, non-work travel frequency (daily, weekly, monthly) and lifestyles change and long-term mobility preference. There were 41 urban working respondents whose data were taken through a convenience sample technique. The sample size is small, but it offers discovery information regarding behavioural changes in different periods of the pandemic. Data analysis was performed with the application of the descriptive statistics tools such as percentage distribution and comparative trend analysis. The research concentrates on conducting behavioural patterns and not on causal relationships. Anonymity was applied in terms of encouraging participation and gathering of responses.

Questionnaire (A-1.) was divided into below timeline to understand the modal shift among people-

Part 1- Background Information of respondent

Part 2- Travel Pattern PRE COVID-19 (Before March 2020)

Part 2- Travel Pattern DURING COVID-19 (March 2020-June 2021)

Part 3- Travel Pattern POST COVID- 19 (Post June 2021)

Part 4- Long term Travel Preferences and other travel preferences

4. FINDINGS:

A previous literature study in this research revealed that there is a considerable change in mobility pattern especially of urban working-class population due to Pandemic Covid-19. With the behavioural change, mobility pattern, increase in private vehicle ownership and reduction in public transportation ridership, Indian cities in future are going to face various challenges like Traffic management, Traffic congestion, Parking problems and infrastructure collapse. Hence, this survey aims to investigate the change in Travel pattern During and After Covid-19 and analyses the dynamic shifts in travel pattern exhibited by individuals before, during the pandemic and subsequent period after the containment. The travel data supporting the bar graphs in this section, comparing the three timelines are shown in Table-01.

Table. 01. Travel data during three timelines
Source: Survey by Author

Nature of Work	**Pre- Covid-19**	**During Covid- 19**	**Post Covid-19**
Work From Home (WFH)	4.90%	51.20%	17.10%
Travel to Work (5-6 days a week)	87.80%	41.50%	63.40%
Hybrid Mode (1-4 days WFH)	0	7.30%	19.50%
Distance to Work			
0 km	2.40%	43.90%	7.30%
Up to 5 km	29.20%	19.50%	36.30%
6-10 km	17.10%	4.80%	9.80%
11-20 km	19.50%	7.30%	12.10%
21- 30 km	14.60%	12.20%	19.40%
31-40 km	12.20%	9.80%	9.80%
More than 40 km	4.80%	2.40%	4.90%
Travel Time			
0 Min	2.40%	48.80%	7.30%
1-15 min	9.80%	7.30%	12.20%
16-30 min	14.60%	12.20%	19.50%
31-45 min	29.30%	12.20%	19.50%
46- 60 min	17.10%	2.40%	12.20%
1- 1.5 hr	7.30%	7.30%	4.90%
1.6- 2 hr	9.80%	2.40%	14.60%
More than 2 hr	9.80%	7.30%	9.80%
Vehicle Ownership			
None	22%	17.10%	22%
Bicycle	9.80%	12.20%	12.20%
Bike/Scooter	31.70%	26.80%	26.80%
Car	68.30%	78%	73.20%
Mode of Travel	**Pre- Covid-19**	**During Covid- 19**	**Post Covid-19**
No Travel	2.40%	39%	7.30%
Walk	7.30%	7.30%	7.30%
Bicycle	2.40%	0	2.40%
Motorized 2- wheeler	14.60%	7.30%	14.60%
Car	51.20%	51.20%	51.20%
Uber/Ola	9.80%	2.40%	14.60%
Auto Rickshaw	14.60%	4.90%	19.50%
Public Transportation	29.30%	9.70%	26.80%
Company Transportation/ Car Pooling	9.80%	2.40%	2.40%
Everyday Travel (Other than Work)			
None	9.80%	70.70%	29.30%
Local Grocery shopping/ Mandi	51.20%	22.20%	36.60%
Essential Services/ Repair	31.70%	2.40%	9.80%
Shopping centre/Informal shopping	22%	0%	2.40%
Club House/Recreational Club/ Sports centre	7.30%	2.40%	7.30%
School/ Educational institute	24.40%	2.40%	14.60%
Meditation or Spiritual centre	0%	0%	2.40%
Park/Garden/Playground	13%	4.90%	29.30%
Cinema	12.20%	0%	2.40%

Hotel/Restaurant	14.60%	0%	0%
Bank/ATM	12.20%	2.40%	4.90%
Petrol pump	14.60%	0%	4.90%
Leisure/ Visit Friends	17.10%	2.40%	2.40%
Mall	14.60%	0%	0%
Airport	7.30%	0%	0%
Health facility	9.80%	2.40%	2.40%
Railway Station/ Metro station	26.80%	2.40%	9.80%
Bus station	4.90%	0%	2.40%
Weekly Travel (Other than Work)			
None	0.00%	26.80%	2.40%
Local Grocery shopping/ Mandi	56.10%	48.80%	68.30%
Essential Services/ Repair	17.10%	19.50%	26.80%
Shopping centre/Informal shopping	34%	9.80%	29.80%
Club House/Recreational Club/Sports centre	12.20%	2.40%	14.60%
School/ Educational institute	4.90%	2.40%	9.80%
Meditation or Spiritual centre	0%	2.40%	2.40%
Park/Garden/Playground	46%	12.20%	29.30%
Cinema	14.60%	0%	14.60%
Hotel/Restaurant	48.80%	4.90%	29.30%
	Pre- Covid-19	**During Covid- 19**	**Post Covid-19**
Bank/ATM	19.50%	9.80%	12.20%
Petrol pump	46%	14.60%	36.60%
Leisure/ Visit Friends	34.10%	0.00%	26.80%
Mall	22.00%	0%	7%
Airport	2.40%	2.40%	4.90%
Health facility	0.00%	2.40%	2.40%
Railway Station/ Metro station	9.80%	0.00%	9.80%
Bus station	2.40%	0%	2.40%
Monthly Travel (Other than Work)			
None	4.90%	29.30%	2.40%
Local Grocery shopping/ Mandi	17.10%	26.80%	24.40%
Essential Services/ Repair	14.60%	17.10%	24.40%
Shopping centre/Informal shopping	34%	2.40%	31.70%
Club House/Recreational Club/Sports centre	4.90%	0.00%	17.10%
School/ Educational institute	14.60%	7%	12.20%
Meditation or Spiritual centre	4.90%	0.00%	0.00%
Park/Garden/Playground	24.40%	7.30%	19.50%
Cinema	34.10%	7%	22.00%
Hotel/Restaurant	39.00%	4.90%	43.90%
Bank/ATM	24.40%	14.60%	34.10%
Petrol pump	17.10%	14.60%	22.00%
Leisure/ Visit Friends	31.70%	4.90%	26.80%
Mall	39.00%	12.20%	37%
Airport	9.80%	2.40%	7.30%
Health facility	14.60%	14.60%	19.50%
Railway Station/ Metro station	19.50%	2.40%	17.10%
Bus station	7.30%	0%	9.80%

Travel to Work: Employees commute to the workplace five to six days per week.

Hybrid Mode: Employees commute to the workplace two to three days per week.

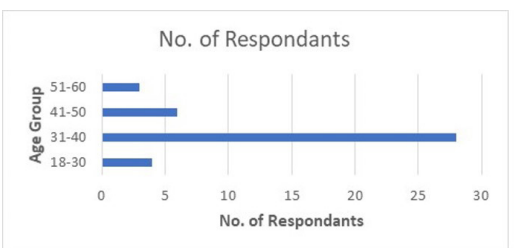
Work from Home (WFH): Employees do not commute to the workplace (zero days per week).

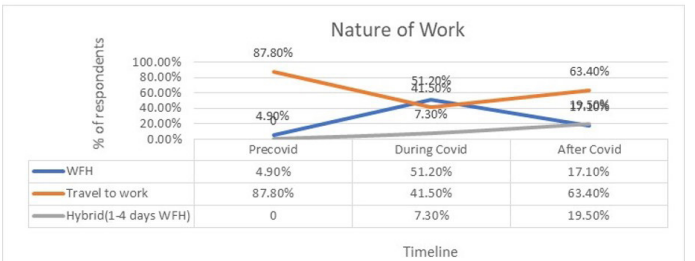
4.1 Age of Respondents:

The survey was done in Urban areas of India and respondents are the working population i.e. 18-60 years of age and have been working atleast for a year before the Covid-19 to comprehend the change in Travel pattern to Work. The 70% respondents are between the age of 31- 40 years, as shown in Fig. 3. There are almost 50% female and 50% male respondents.

4.2 Nature of Work, Distance and Time of Travel to Work:

The nature of work of respondents, as illustrated in Fig. 3 using data from Table 1, indicates the work character of respondents. Before the COVID-19 outbreak, almost 90 percent of the respondents were at their place of work on a regular basis. This percentage dropped significantly to about 40% in the countrywide lockdown and a relatively equal number of respondents switched to full-time work-from-home (WFH) models and a minor fraction of the respondents switched to hybrid models of work. During the post-pandemic period, there was a partial recovery in the commuting levels but not to the level observed before the pandemic. WFH became almost 20 percent after the pandemic, as compared to approximately 5 percent prior to the pandemic and hybrid work also became almost 20 percent.





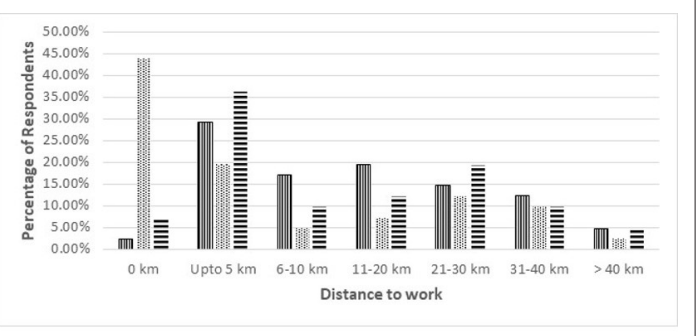
	Precovid	During Covid	After Covid
WFH	4.90%	51.20%	17.10%
Travel to work	87.80%	41.50%	63.40%
Hybrid(1-4 days WFH)	0	7.30%	19.50%

Fig 3: Respondent Profile
Source: Author

Consequently, routine commuting in the workplace became structurally decreased to approximately 90% before the pandemic and almost 65% after the pandemic, signifying a permanent change in work patterns and not a disruption. Commuting distances and travel time are some of the ways of these changes. As shown in Fig. 4, via data from Table 1., The percentage of people who commuted 0 km also increased considerably during lockdown because of remote work. The reduction in commuting distance (remained no longer than 5km) resulted in greater opportunity to live at home or change workplace after the pandemic. (Fig. 4), Prior to COVID-19 the majority of the respondents spent 16-60 minutes on commute with a substantial proportion spending 31-45 minutes. Even during lockdown, almost half of them reported their zero travel time because they were at home working. Even after the pandemic, cases of zero-commute are still more than before the pandemic, which means that a significant proportion of the population of workers is still reducing the time spent traveling regularly.

4.3 Vehicle Ownership

Car ownership and car usage in India remain major concerns, as car ownership continues to rise despite the increased adoption of work-from-home practices. Fig. 5., using data from Table. 1. showing cars remains the highest owned vehicle in urban India. Unfortunately, there is not a substantial increase in Bicycle ownership and ridership in Urban areas in India while many countries have shown a drastic



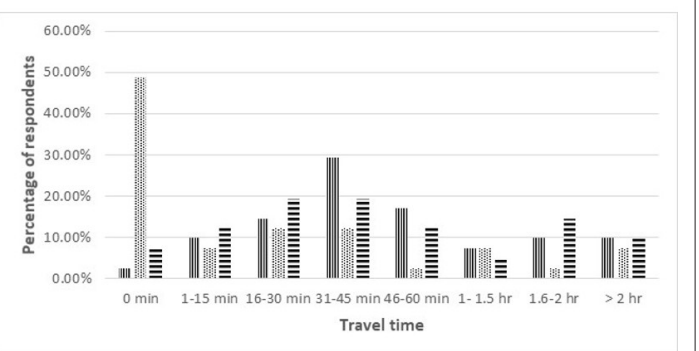


Fig 4: Distance and Travel Time
Source: Author

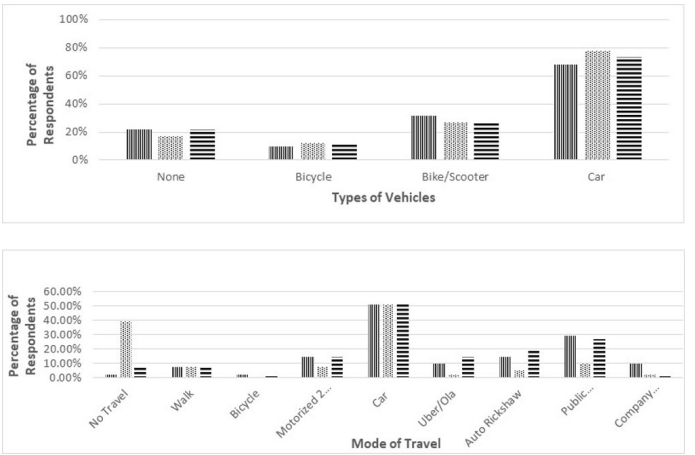


Fig 5: Vehicle Ownership and Mode of Travel
Source: Author

increase in purchase and use of Bicycle and walking during Covid-19. Using data from Table. 1., Fig. 5 illustrates the predominant mode of travel to work based on the majority of distance covered, showing that fewer than 10% of commuters rely on walking or cycling. Car ownership and usage dominated travel patterns before, during and after COVID-19, with more than 50% of the population commuting by private car. There is an increase in travelling by Shared Transportation like Uber/Ola and Auto Rickshaw but Public Transportation and Company Transportation/Carpooling has shown a decrease in ridership post Covid-19. 54% of people have not changed their mode of transportation during and after Covid-19 while 22% have mentioned that Work from Home (WFH) is the reason for overall reduction in travel or change in their mode of Travel to Work.

4.4 Travel Other than Work:

On the basis of the data collected in Table 01, Fig. 6, Fig. 7 and Fig. 8 provide the travel patterns and destinations of non-work-related activities. Such statistics give a holistic perspective of travel, which reveals how non-work travels are critical in determining urban mobility trends.

4.4.1 Everyday Travel other than Work:

Fig. 6., via data from Table. 01., showing the Change in Everyday travel other than work variation. 50% people visited Local Grocery Shopping/Mandi, 30% visited Essential services/Repair center and Railway station/Metro station, 25% visited School/ Educational Institute every day before Covid-19. The percentage of people visiting Park/Garden/ Playground has increased to 30% Post Covid-19 as compared to 12% Pre Covid-19. The visit to Transit Stations has also reduced from 28% to 10% post Covid-19.

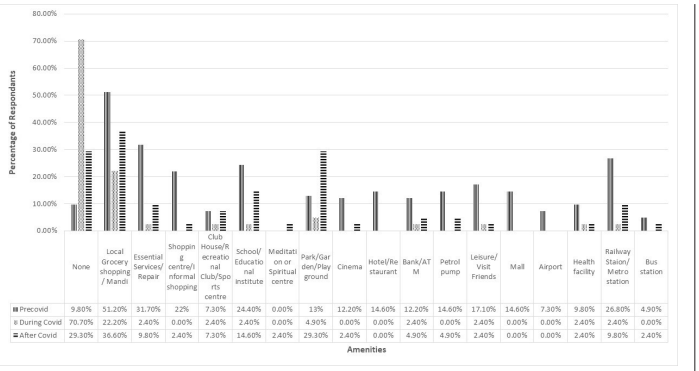


Fig 6: Everyday Travel other than Work
Source: Author

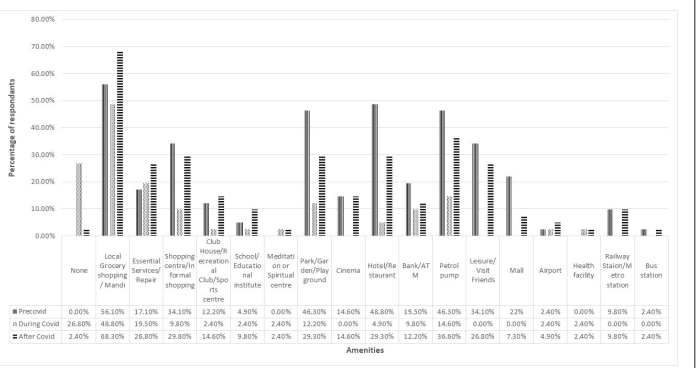


Fig 7: Weekly Travel other than work
Source: Author

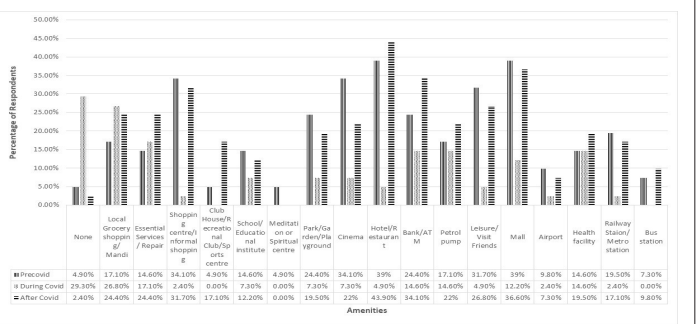


Fig 8: Monthly Travel other than Work
Source: Author

4.4.2 Weekly Travel other than Work:

As per Fig. 7., 68% respondents went for Local grocery shopping/Mandi only once a week post Covid-19 as compared to 58% Pre Covid-19. The percentage of people visiting Local Grocery shopping/Mandi and Essential services/Repair centers has increased from Pre Covid-19. Many people who used to visit Local grocery shopping/Mandi daily Pre Covid-19, has starting visiting once in a week post Covid-19. More people have started visiting the Club/ Recreational Centres on a weekly basis post Covid-19.

4.4.3 Monthly (Once-a-Month) Travel other than Work:

Fig. 8. elaborating the change in Monthly Travel other than Work. Before COVID-19, monthly travel was highest for visits to hotels and restaurants,

accounting for nearly 45%, while approximately 35% made monthly trips to cinemas and shopping centers or informal shopping areas. People visiting Local Grocery shopping centres/Mandi and Essential services and Repair daily before Covid-19 have started visiting only once a month Post Covid-19. Around 45% of people continue to visit hotels and restaurants once a month, which means that the post-pandemic leisure and consumption patterns are restored. Conversely, travel to banks records that weekly visits are decreasing, whereas monthly visits are rising.

4.5 Change in lifestyle during Covid- 19 as compared to Pre Covid-19

Lifestyle and travel behaviour were greatly changed by the COVID-19 pandemic because of the adoption of work-from-home, health factors and mobility limitations. Walking, online shopping and remote working increased significantly compared to the pre-pandemic time, which led to a significant decrease in the number of non-work-related travels. Even though many workers were coming back to working in a hybrid or full-time office after the pandemic, the level of commuting is not yet back to the pre-COVID-19 trends. The trend of walking has remained relatively positive, which suggests that active mobility can be promoted in the development of cities. Nonetheless, cycling did not show a high level of growth during and after the pandemic. On the contrary, there was a relative growth in the level of private car usage because of the ingrained preferences toward individual mobility. These are indications that even though the adoption of digital narrowed the demand of travel, long-term transitions towards sustainable transport are restrictive.

4.6 Reasons for Using and not Using Public Transportation for Travel to Work-

As discussed above, the maximum percentage of people are opting for Private vehicle ridership, specifically Car ridership was highest before Covid-19 and the trend continued after Covid-19 in Urban working-class people. Where other modes of travel like Walking has shown a positive change, Public Transportation has shown a decrease in its usage. The reasons for not using Public Transportation as a daily commute (Fig. 9.) Lack of comfort and door to door connectivity are the top reasons for not using Public transportation for daily commute to work. Correspondingly, more than 50% of people mentioned that travelling by Public Transportation takes more time to reach the destination.

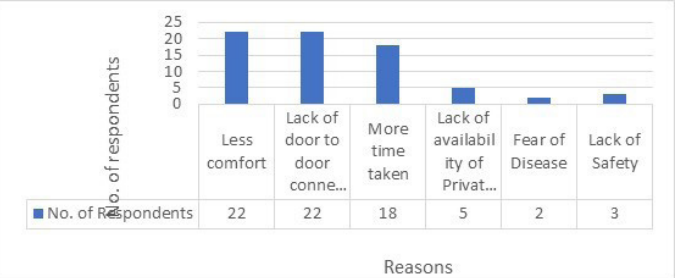


Fig 9: Reasons for not using Public Transportation for daily commute to work

Source: Author

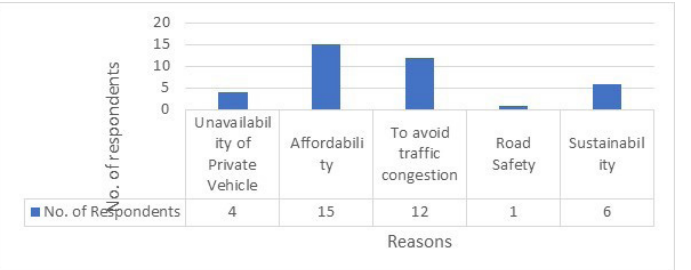


Fig 10: Reasons for Using Public Transportation as daily commute to work

Source: Author

With less than 30% of people opt for Public Transportation as their Mode of Travel to work, the reasons behind using Public Transportations are elaborated by Fig. 10., 71.4% of people using Public Transportation has mentioned that Public Transportation is more affordable than a private mode of travel. 57% of people use Public Transportation to avoid Traffic Congestion on the roads. Sustainability is still not a concern for people to use Public Transportation.

4.7 Long- Term Mobility Preferences:

Understanding the long-term travel preferences of the working-class urban population is crucial for identifying people's modal choices and mobility priorities, which in turn enables the formulation of informed and effective long-term transportation planning and policy recommendations.

According to Table. 2., Car remains the first choice, whereas Bus, Trains/Metro and Uber/Ola/Local Taxi remain the last choice of people. Very less people are choosing public transportation as their first preference to travel to work in long term. Rented bikes are still unfamiliar to people hence remains the last preference. But these preferences differ for different travel distances. People prefer to walk only up to a distance of one (1) km. whereas for distances more than two (2) km, Car remains the first preference of people.

Table. 2. Long term travel Preferences as per the distances

Source: Survey by Author

S.NO	Distance	1ST Preference	2nd Preference	3rd Preference
1.	Upto 1 Km	Walking	Bicycle	Auto Rickshaw
2.	2-5 km	Car	Auto Rickshaw	Uber/Ola/Local Taxi
3.	6-10 km	Car	Uber/Ola/Local Taxi	Auto Rickshaw
4.	11-20 km	Car	Uber/Ola/ Local Taxi Metro/Local Train	Auto Rickshaw
5.	21- 30 km	Car	Uber/Ola/ Local Taxi Metro/Local Train	Metro/Local Train
6.	31-50 km	Car	Uber/Ola/ Local Taxi Metro/Local Train	Bus Metro/Local Train
7.	More than 50 km	Car	Metro/Local Train	Bus

4.8 Overall Behavioural Shift and Synthesis of Findings

The pandemic decreased the total travel demand; however, structural modal preferences toward private vehicles continued to dominate, indicating that deeper policy and infrastructural interventions are required to shift mobility patterns toward sustainable transport in the long term. First of all, the commute to the workplace has been decreased structurally due to the long term employment of the work-from-home and hybrid format of work. Even though the commuting rates have partially rebounded since the pandemic, they are still lower than they were before the COVID crisis, suggesting that the shift in the demand of work-related travel has become permanent. Second, when lockdowns reduced mobility, the control of private vehicles was maintained at all phases. The usage rates of cars pursuing commuting activities were still over 50 per cent and the quantity of people who used public transport showed steep drop during lockdown and slow recovery to the same level since that time. This indicates that modal preferences remain to be influenced by safety perceptions and convenience. Third, non-work travel patterns changed to weekly or monthly visitation, which were mostly dictated by the effects of digital consumption and online shopping and behavioural adjustment. Walking had modest growth whereas there was no significant increase in cycling. Taken together, these results offer the evidence that the pandemic served as the driving force behind the decrease in the frequency of traveling but failed to implement any radical shifts in the mode preferences in the long term to sustainable transport.

5. CONCLUSIONS:

This paper has considered how urban travel behaviour in India changed during three periods pre-pandemic, pandemic and post-pandemic in terms of work-related and non-work-related mobility. The results show the three significant changes in structure. To begin with, the long-term practice of work-from-home and hybrid systems has caused the overall demand in daily commuting to be lower than it was prior to the pandemic, which is a long-term alteration in work-related travelling behaviour. Second, although mobility has decreased temporarily, private vehicles still prevail in medium- and long-distance traveling, whereas the recovery of the public transport has been partial only. Third, non-work travel has changed the frequency of one-day to weekly or monthly frequency, which has also been driven by the adoption of digital and a shifting consumption behaviour. The pandemic decreased the total travel demand, but enhancing infrastructure has a strong impact on long-term modal choices to sustainable transport. The results indicate that there is a pressing need to enhance the public transport infrastructure, the connectivity of the last-mile and the investment of safe walking/cycling infrastructure to decrease the constant reliance on the automobile industry. Research has been useful in comprehending the post-pandemic transit of mobility and making recommendations on how viable and sustainable urban transit policies in India can be formulated.

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Determinants of Usage of Traditional vis-à-vis Contemporary Libraries in Pune

By Abhir Bodhani and Dr. Jyoti Jain Tholiya

1. Introduction

Traditional libraries have been far rooted into our freedom struggle and hold a very high stake in cultural and intellectual life serving as places for knowledge exchange and social identity. Pune being hotspot to hold these *Vachan Mandir*s, typically also known as Temple of Reading, emerged as a vital educational centre during 1900s. These Vachan Mandirs were introduced by notable freedom fighters such as Lokmanya Bal Gangadhar Tilak, Gopal Krishna Gokhale, Agarkar used to utilise these spaces for social awakening, delivering their ideology of true freedom and to make education accessible to all those who were deprived of it. These Vachan Mandirs provided a monthly subscription access to various books and free access to newspaper, which fuelled the freedom movement. Notably Vishram Baug Wada used to house the first ever Vachan Mandir named as Pune Marathi Vachan Granthalay which is now shifted to Gadgill School in Shaniwar Peth. However, Vachan Mandirs now face a critical decline due to various factors such as declining footfall and reduced subscriptions, outdated infrastructure, rising preference to digital media and poor maintenance. These factors have resulted in reduced relevance of Vachan Mandirs to newer generations. Despite these issues these Vachan Mandirs have preserved their identity by bringing out minor modifications.

This research investigates the determinants of the decreasing footfall in the traditional libraries in Pune. It aims to find the reasons for the decline of traditional Vachan Mandirs thereby preparing a blueprint to analyse traditional libraries across India. The scope of study is centred around understanding the primary reasons which have resulted in decreased popularity of Vachan Mandirs and the newer generation's growing inclination towards book cafes. In the urban context of Pune city these Vachan Mandirs are now in neglected conditions and find themselves isolated from the mainstream book enthusiasts.

Considering the time and academic constraints, the scope of study is limited only to the Vachan Mandirs of Pune city and Peth area. The number of case studies and stakeholder interviews are limited to certain parts of Pune city. Also, closure of libraries like the Vishram-Baug Wada Library and relocation of many such libraries to newer places have reduced the scope of the research to very few active case studies. Although, this study does don't include in depth study of the spatial layouts of Vachan Mandirs, it still provides vital inputs. The research does not include economic feasibility or structural changes but suggests factors and changes which overall develop and enhance the user comfort.

2. Literature Review

Contemporary library studies increasingly reflect a paradigm shift from traditional, collection-centric institutions to hybrid knowledge spaces that integrate digital resources, spatial experience, cultural identity and user engagement. Rathod (2025) situates this transformation within the broader trend of digitalisation, noting that nearly

60% of academic libraries have transitioned toward digital collections, including pre-printed databases and born-digital content, as reported by International Federation of Library Associations and Institutions (IFLA). This shift has expanded user access by dissolving geographical barriers and reducing dependence on physical storage, thereby enabling libraries to repurpose space for collaborative and community-oriented activities. However, the digital transition also necessitates sustained financial investment in servers, databases, software and recurring maintenance, as outlined by the Library of Congress (2024). The integration of machine learning for personalised services and the development of Preservation Networks (DPNs) further define the emerging digital infrastructure of future libraries.

Despite the growth of digital collections, the relevance of physical library spaces remains significant. Nabi (2025) emphasises that educational institutions and reading hubs continue to play a vital role in individual intellectual and social development by offering welcoming environments, dynamic layouts, ergonomic furniture and aesthetic engagement. Libraries that successfully blend tradition with modernity and actively engage users both physically and cognitively are shown to attract greater public demand. Technologies such as Augmented Reality and Virtual Reality (AR/VR) are increasingly adopted to enhance experiential learning, while the inclusion of wellness-oriented spaces like yoga and meditation areas reflects a holistic understanding of reading and learning. Importantly, Nabi (2025) also reinforces the continued need for physical libraries, particularly in addressing concerns of misinformation inherent in editable digital documents and in catering to diverse user groups with varied spatial and informational needs.

The architectural and environmental quality of library spaces has long influenced user comfort and reading efficiency. Hana et al (2025) demonstrate this through their study of the Rogatianus Library in ancient Thamugadi, highlighting how daylight, material reflectivity and solar orientation were strategically employed to ensure visual comfort. Drawing upon Vitruvius, the authors note that morning solar exposure facilitated reading while minimising humidity. Their in-situ measurements reveal how materials such as white marble, limestone, brick and mosaic affected light distribution, with white marble exhibiting the highest reflection coefficient (0.83) and brick the lowest (0.20–0.30). Observations of shaded and non-shaded transitions, contrast values and balanced illumination levels (500–1000 lux) underscore enduring principles of visual comfort that remain relevant to contemporary library design.

Parallel to spatial and architectural considerations, access to digital resources presents persistent challenges. Pambayun (2021) examines the inefficiencies of electronic journal subscriptions in academic libraries, identifying high subscription costs as a major constraint that does not necessarily correlate with increased usage. The study highlights infrastructural deficits such as inadequate internet connectivity, insufficient search tools and limited digital content as key barriers to effective digital access. While electronic journals offer advantages of time efficiency, cost savings and location-independent use, these benefits remain unrealised without robust technological support and digital literacy frameworks.

Within the Indian urban context, the decline of traditional libraries has been examined through cultural and architectural lenses. Oliver (1997), in the Encyclopaedia of Vernacular Architecture of the World, emphasises how spatial behaviour and vernacular architectural forms shape community engagement, offering a framework to interpret libraries, particularly Vachan Mandirs, as socio-cultural spaces rather than merely utilitarian structures. These institutions historically possessed a semi-sacred character, functioning simultaneously as sites of reading, discourse and collective cultural identity. Oliver (1997) further situates Indian libraries within a broader tradition of sacred and semi-sacred architecture, underscoring their symbolic role in fostering community cohesion and preserving intangible heritage values.

Jain (2011) builds upon this perspective by examining the transformation of cultural institutions in Indian cities, arguing that libraries and reading halls must be reimagined to remain socially relevant. His work highlights the inherent tension between preserving authenticity and accommodating contemporary functional demands - a challenge directly reflected in debates surrounding the modernisation of Vachan Mandirs. This tension mirrors global discussions on integrating digital infrastructure, ergonomic design and technological amenities within historically rooted spaces.

Recent studies on urban reading culture further indicate that user engagement is increasingly influenced by comfort, ambience and accessibility. The growing popularity of book cafés and modern institutional libraries demonstrates how flexible seating arrangements, charging facilities and improved lighting enhance footfall, particularly among younger users. These trends reinforce the

argument that Vachan Mandirs must be analysed not only as heritage institutions but also as evolving urban spaces requiring spatial, technological and functional adaptation.

Collectively, the reviewed literature suggests that the future of libraries lies in a balanced synthesis of digital innovation, architectural sensitivity, cultural continuity and user-centered design. Whether through advanced digital infrastructures (Rathod, 2025; Pambayun, 2021), immersive and wellness-oriented spaces (Nabi, 2025), environmental design principles rooted in historical precedent (Hana et al., 2025), or the preservation of vernacular and intangible heritage (Oliver, 1997; Jain, 2011), libraries continue to evolve as complex socio-spatial institutions within contemporary urban contexts.

3. Methodology

To understand the evolution of reading culture and spatial relevance of public and private libraries in Pune, a comparative data collection was conducted across six representative library typologies-heritage, institutional, educational and commercial. The study recorded estimated subscriber data for three-time frames (2000s, 2010s and 2020s) to trace the pattern of user engagement and popularity among the public. Field observations and assessments followed by interviews helped to assess ambience, comfort and adequacy of seating facilities (Table 1).

The study involved a total of 108 respondents selected through random and convenience sampling. Participants include students, regular library users, professionals and occasional visitors across different age group. The sampling aimed to capture diverse user perspectives regarding reading habits, spatial comfort and library preferences (Refer Figure 1).

The analysis of subscription trends across Pune's libraries from 2000s to 2020 reveals a clear divergence between traditional libraries and modern

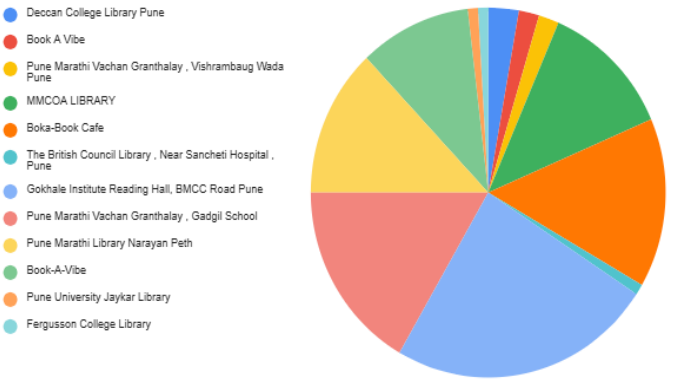

Figure 1 : Distribution of Survey and Data Collection Locations

reading spaces. Heritage Institutions such as Pune Nagar Vachan Mandir, Pune Marathi Granthalay show a decline of ~45% in registered Members. Once central to the city's intellectual life, these libraries are now facing engagement issues largely due to modernisation, insufficient ambience and lack of digital outreach. Contrary to it, Gokhale Library and Reading Hall (D. G. Library) demonstrates relatively a positive notion where a slight increase in its subscriptions can be seen primarily due to institutional backing and newly refurbished reading halls. Educational institute libraries like Marathwada Mitramandal's College of Architecture, Pune (MMCoA) follow a moderate downward trend reflecting students growing incline towards online material.

Contrast to it, Café Libraries such as Book-A-Vibe Café and Boka Book Café exhibit strong growth since 2015, attracting younger generations through comfortable seating, free Wi-Fi and a social engaging atmosphere. A mixed-method approach was adopted for data collection and analysis. Primary quantitative data were obtained through a structured Google Form survey of 108 respondents from different age groups and professions, focusing

Table 1: Library subscription details

Source: Author

Library Name	Type	2000	2010	2020	Trend
Pune Nagar Vachan Mandir	Heritage/Public	1200	900	600	Declining
Pune Nagar Granthalay	Heritage/Vernacular	800	700	500	Gradual Decline
Gokhale Reading Hall	Academic	1500	1400	1600	Slight Growth
MMCOA Library	Educational	450	400	300	Decreasing
Book-A-Vibe Café	Private	—	150	450	Increasing
Boka Book Cafe	Private	—	100	300	Increasing

on usage frequency, spatial comfort, lighting, ambience, modernisation preferences and reading habits. Complementing this, qualitative data were gathered through field observations in all selected libraries, documenting spatial zoning, ventilation, seating quality and architectural features using photographs, rating scales and user feedback. The combined dataset was analysed through percentage distribution, pie charts and descriptive comparisons to interpret user comfort, engagement and attitudes toward modernisation. Membership trends from 2000 to 2020 were tabulated to assess temporal decline in traditional libraries against the rise of café-style reading spaces. All responses were collected anonymously with prior permission from library staff, ensuring ethical and transparent research practices.

3.1 Data Description

A structured data collection template was circulated among 108 respondents representing diverse user demographics. The survey aimed to asses reading habits, library preferences and pattern of spatial usage across different libraries in Pune. As shown in the pie chart, the highest participation came from major heritage and institutional libraries highlighting their continued relevance.

The survey indicates that library usage is concentrated in academic and modern social reading spaces, suggesting that users prioritise comfort, resources and ambience over historical or cultural significance. Traditional Vachan Mandirs, while culturally valuable, attract relatively fewer visitors, highlighting a gap between heritage preservation and contemporary user needs. The demographic profile reveals that library users are predominantly young, indicating that these spaces function largely as student-centric environments (Refer Figure 2).

The survey indicates that library visitors are predominantly students, with relatively few identifying as researchers, professionals, or tourists. This underscores the strong academic orientation of contemporary library spaces. Patterns of usage reveal a mix of routine and occasional visits,

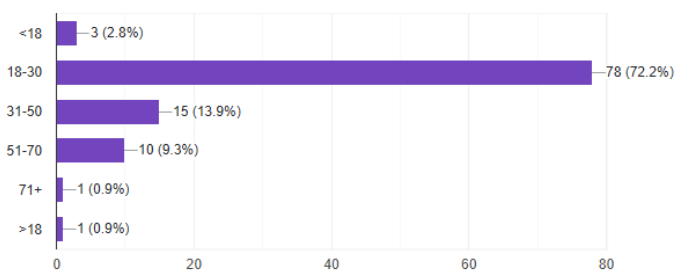

Figure 2: Age-group data

suggesting that libraries serve both as essential daily study spaces and as flexible environments for intermittent engagement. Together, these insights imply that Vachan Mandirs and similar institutions need to adapt their spatial design to balance the needs of regular student users, emphasising comfort and functionality, with those of occasional visitors, who are drawn by ambience and accessibility.

4. Data Analysis

4.1 Pune Marathi Granthalay, Gadgil School, Shaniwar Peth, Pune

The following analysis presents data collected from Pune Marathi Granthalay, situated at Gadgil School Shaniwar Peth Pune. The original library once located in the premises of Vishrambaug Wada Pune is now shifted to Gadgil School due to Heritage Norms. The library offers a vast range of Panchkatha and academic books which can be seen in the age group chart that maximum teenagers visit this library. Despite the visibly outdated condition of the space, having old furniture, old lighting fixtures and an overall aged setup, respondents rated the ambience and comfort quite positively, averaging 4.10 out of 5. This indicates that, while the physical appearance and infrastructure may have been lacking, other aspects of the environment contributed to a generally favourable experience. The high rating suggests that the space may have still felt functional, familiar, or adequately arranged to meet the users' needs. It's also possible that factors such as cleanliness, natural light, or spatial organisation compensated for the lack of modern upgrades. Overall, the feedback reflects a degree of comfort that surpasses what might be expected from an older, renovated environment.

The responses regarding the availability of seating facilities indicate a moderately positive perception, with an average score of 3.80. While a number of respondents rated the facilities quite low, suggesting inadequate seating in some areas, a significant portion gave higher ratings of 4 and 5, indicating that many did find the seating arrangements sufficient. This variation suggests that while some parts of the space may have had limited or poorly arranged seating, other areas were likely better equipped. The lack of uniformity in feedback could point to inconsistent seating availability across the location. Overall, the data implies that although seating was not optimal throughout, the existing arrangements were generally adequate for the needs of most users.

The feedback on ventilation facilities reflects a strongly positive perception, with an average score of 4.35, indicating that the majority of respondents

found the space to be well-ventilated. A consistent cluster of high ratings (4s and 5s) suggests that natural ventilation was adequate and effective across most areas. Although a few respondents rated the ventilation lower, possibly due to localised issues or areas with less airflow, these ratings are in the minority. The overall impression is that the space generally maintained good air circulation and breathable conditions, which likely contributed to the comfort and usability of the environment. This high rating stands out especially in comparison to other infrastructure factors like seating or overall ambience, showing that ventilation was one of the stronger aspects of the space.

The furniture mapping though has got a serious review to note. Unlike other libraries the furniture was seen and recorded in a very worn-out state. The use of plastic chairs can be noticed as well as the racks were oddly stacked not keeping in mind the required circulation and ease to find books. The majority of respondents strongly prefer sitting in the library to read over taking books home. The data shows a clear preference, with two-thirds of the people surveyed opting to read within the library environment, compared to only one-third who prefer the convenience of taking a book home. This dominant preference for reading *in situ* suggests that many users value the quiet atmosphere, dedicated study space and reduced distractions that a library provides, viewing it as a more conducive environment for focused reading than their home.

4.2 Pune Vachan Mandir, Narayan Peth, Pune

The data collected from Pune Vachan Mandir, located in Narayan Peth Pune reveals a predominantly older user demographic, with the majority of visitors belonging to the 51 – 70 year age group. This indicated the library's continued relevance among the long-term readers and senior patrons. The ambience and comfort level mapping suggests a generally moderate to high satisfaction, though with notable variation in responses.

The analysis of these two graphs reveals a survey population that, despite being primarily composed of older and younger adults, generally finds the surveyed space to be highly comfortable and pleasant. The first graph, showing the count of age group, illustrates that the 51-70 age group constitutes the largest segment of the population, closely followed by the 18-30 age group. The middle age bracket, 31-50 year, is the smallest at. This suggests the space appeals to or is frequented most by both students and young professionals and older adults. Critically, the second graph, which details the ambience and comfort ratings on a scale of 1 (least comfort) to 5 (most comfort), shows an overwhelmingly positive assessment. The vast majority of responses are clustered at the maximum score of 5, with only a few outliers at 4 and a small number giving a score of 3. There are no ratings of 1 or 2. This high comfort rating, regardless of the age distribution, which could imply varying needs for study or relaxation, indicates that the space successfully provides a highly satisfactory and comfortable environment for a diverse set of patrons.

The data indicates that the natural ventilation of the space is considered excellent by most respondents. The majority of ratings are clustered at the maximum score of 5 (representing considerable facilities), with only a few scores dipping to 4 and a small number giving a rating of 3. Crucially, there are no ratings of 1 or 2, suggesting a high baseline quality of air flow and natural light that satisfies almost all patrons. Conversely, the assessment of seating facilities shows a more polarised opinion. While a significant number of patrons rate the seating availability as excellent (score of 5), an equally noticeable group rates it at the minimum score of 1 (representing least facilities). This suggests a potential issue with either the total quantity of seating or the consistency of its availability. The scatter of other scores, further emphasises that seating is a less consistently positive feature compared to the ventilation.

Regarding the condition of furniture, the overall perception is one of high quality. The vast majority of responses are concentrated at the maximum score, indicating that a significant portion of patrons find the furniture facilities to be in excellent condition. While there are a few lower scores scattered, the strong cluster at the top suggests the average quality is likely very high, affirming that the furniture is generally considered durable and well-maintained.

The chart detailing the availability and quality of natural lighting shows a broader spread of opinions, suggesting that the lighting facilities are less consistently excellent than the furniture. While a large number of people give the maximum score, indicating that the lighting is considerable in certain areas, there are also noticeable clusters of lower ratings. The distribution shows both strong satisfaction and significant dissatisfaction, implying that the natural light is adequate and excellent in some spots but poor or inadequate in others. Overall, the average quality of the lighting facilities appears to be high but is not as uniformly outstanding as the furniture condition.

4.3 MMCoA, Pune

The data analysis for MMCoA Pune indicates generally positive user responses regarding spatial ambience and comfort. As seen in the comfort mapping, most ratings range between moderate and high, suggesting that the environment is perceived as adequately comfortable and well-maintained. Similarly, the seating facilities mapping shows a favourable trend, with several respondents rating the availability and quality of seating at higher levels. However, the presence of a few lower ratings points to inconsistencies in seating distribution or ergonomic comfort across the space.

The ratings for ambience and comfort are generally quite high, with responses heavily weighted toward the upper end of the scale. A significant number of people gave the maximum rating, suggesting the overall feel of the space, its look, atmosphere and general pleasantness, is highly satisfactory for many patrons. While there are some lower ratings, the average comfort level is clearly positive, indicating the environment itself is a strength.

In contrast, the feedback on seating facility quality is much more tepid and broadly scattered across the middle of the scale. The most frequent scores are found in the middle range, suggesting that users often perceive the seating as merely adequate or slightly lacking, rather than excellent. Unlike the comfort scores, there isn't a strong, dominating consensus at the highest rating. This implies that while the space feels good, the practical element of finding a suitable and sufficient seat is less reliable and is a more common source of mediocre satisfaction among its users.

For natural ventilation, ratings are distributed across the entire spectrum, with a noticeable presence at the maximum score, indicating excellent air quality for some, but also significant ratings in the middle and lower ranges. This suggests that while some areas are well-ventilated, others suffer from poor airflow.

Similarly, the ratings for lighting facilities are widely scattered, with scores appearing across the entire scale. Like the ventilation data, the highest score is well-represented, showing that the lighting is perceived as considerable in certain spots, but there are also numerous lower and mid-range ratings. This distribution implies that the lighting quality is uneven, with some areas being perfectly lit and others potentially being too dim or inadequately covered. Overall, neither the ventilation nor the lighting offers a uniformly outstanding experience, pointing to a need for more consistent facility quality throughout the entire space.

The analysis of the charts indicates that the condition of the furniture is generally good, although opinions vary slightly. Most users find the furniture to be in satisfactory condition, while some note areas that could be improved, suggesting acceptable but inconsistent quality. Meanwhile, most people prefer to take materials home rather than stay in the library. Only a smaller portion prefers to sit and study there, which may relate to the comfort or atmosphere of the space.

4.4 Gokhale Library and Reading Hall, BMCC Road, Pune

The data from Gokhale Library and Reading Hall, located on BMCC Road, Pune, reveals a predominantly young user demographic, with approximately 84% of respondents belonging to the 18 - 30 year age group. This indicates that the facility primarily caters to students and early-career readers seeking an academic or study-oriented environment. The ambience and comfort mapping reflects a largely positive perception, with most responses positioned in the mid-to-high range, signifying satisfactory environmental quality and usability. However, the minor presence of lower ratings suggests occasional inconsistencies in spatial comfort, possibly related to seating ergonomics or lighting.

The survey was largely answered by young adults, showing that most users of the space fall within an early adult range. Only a small proportion represent other age categories, indicating that the library mainly caters to students or young professionals. Feedback on the ambience and comfort is largely positive, with many respondents rating it highly. However, a few lower scores suggest that certain areas may not provide the same level of ease, pointing to inconsistent comfort across the space.

The seating quality received a generally good response, though some users expressed dissatisfaction. This implies that while adequate seating exists, improvements in comfort or quantity might enhance user satisfaction further. Opinions on ventilation show variation - some users perceive sufficient airflow and natural ventilation, while others find it lacking. This inconsistency could relate to differences in seating zones or window placement within the library.

Lighting appears to be strong overall, with most users being satisfied. Still, a few responses indicate uneven illumination, which may affect comfort and reading quality in certain sections.

Views on the furniture mirror other facility ratings — generally favourable but not uniform. Some find the

furniture to be in good condition, whereas others note wear or discomfort, hinting at the need for selective replacement or upgrades.

Most participants prefer using the library as a study environment rather than taking materials home. This suggests that the space, despite some inconsistencies, provides a generally conducive setting for reading and research. The data collectively reveal that the library is well-received in terms of comfort, lighting and usability, though aspects like ventilation and furniture quality could be refined. The predominance of young users underscores the importance of maintaining a modern, adaptable and inviting study environment.

4.5 Book-A-Vibe Book Café, F.C. Road

The data from Book-A-Vibe Book Café, located on F. C. Road, Pune, indicates a diverse visitor profile comprising primarily book enthusiasts (38.5%), followed by general visitors and tourists. The presence of students and literature readers, though smaller in proportion, suggests that the café appeals beyond academic users to a broader, experience-driven audience. The ambience and comfort mapping demonstrates consistently high ratings, reflecting strong user satisfaction with spatial design, seating comfort and overall atmosphere. This aligns with the café's hybrid character as both a social and reading space, where comfort and aesthetic ambience contribute significantly to user engagement.

The responses reveal that the library attracts a wide range of visitors with diverse purposes. A large portion identify as book enthusiasts, showing that the library continues to serve as a hub for those with a passion for reading and literature. A noticeable share of visitors is tourists and individuals categorised as others, suggesting that the library also functions as a public space of cultural or architectural interest, beyond academic use. Meanwhile, students, residents and literature learners make up smaller yet important segments of users, reinforcing the idea that while the library supports educational engagement, it also maintains broader community appeal.

The evaluation of ambience and comfort demonstrates a generally positive atmosphere. Most respondents consider the library a welcoming and calm environment suitable for concentration and study. The overall pattern suggests that users appreciate the serenity and layout of the space. Nonetheless, a few lower ratings indicate that comfort may not be completely uniform, possibly affected by noise levels, temperature, or seating arrangement in particular zones. Improving spatial comfort and maintaining consistent environmental conditions could enhance user satisfaction further.

Feedback on seating facilities shows a mostly favorable perception. Many users find that the library offers sufficient and accessible seating options. However, there are minor dips in satisfaction levels, hinting that certain areas might lack enough seats during busy hours or that the existing furniture might not always meet ergonomic standards. Ensuring a more balanced seating distribution and introducing varied furniture types, such as individual study booths and group tables, could make the space more flexible and inclusive.

The ventilation takes a noticeable hit at Boka A Vibe, where several open areas have been enclosed with acrylic sheets as part of recent interventions. This alteration restricts natural airflow, resulting in a slightly stagnant and suffocating environment that diminishes the overall comfort of the space.

The first lighting chart points to strong approval for illumination quality. Users appear to appreciate the availability of natural and artificial light that allows for comfortable reading and study activities. Some slight variations in ratings imply that brightness may differ depending on seating location, possibly due to window placement or light fixture spacing. Maintaining even light distribution and avoiding glare could further improve the study experience.

The assessment of furniture quality presents a mixed but generally positive picture. Many users are pleased with the condition and usability of the furniture, suggesting that most pieces are well-maintained and functional. However, a few responses point out discomfort or wear, indicating the need for periodic maintenance and selective replacement of older furniture. Updating some seating elements with more supportive or adjustable designs could further enhance the overall comfort and appeal of the library's interior.

Most participants prefer using the library as a study environment rather than taking materials home. This suggests that the space, despite some inconsistencies, provides a generally conducive setting for reading and research. The data collectively reveal that the library is well-received in terms of comfort, lighting and usability, though aspects like ventilation and furniture quality could be refined. The predominance of young users underscores the importance of maintaining a modern, adaptable and inviting study environment

4.6 Boka Book Café, F.C. Road

The data from Boka Book Café, situated on F.C. Road, Pune, reveals a strong concentration of visitors within the 18 - 30 year age group, accounting for approximately 73% of respondents. This indicates the café's distinct appeal to young adults, particularly students and early professionals seeking informal and comfortable reading environments. The ambience and comfort mapping demonstrates consistently high scores, suggesting that the café provides a well-designed, aesthetically engaging and ergonomically satisfactory space. Minor variations in comfort ratings may be attributed to temporal crowding or limited seating availability during peak hours.

Most respondents (75%) belong to the 18 - 30 age group, showing that the space primarily attracts young adults. Very few users are under 18 or above 50. The library serves as a popular spot for college-age visitors. The comfort ratings are mostly between 3 and 5, indicating moderate to high satisfaction. However, a few lower ratings suggest inconsistency in ambience quality. This implies some users find certain areas less comfortable.

Seating parameter scored mainly between 3 and 5, showing generally positive feedback. However, a few low ratings indicate limited seating during peak hours. Overall, facilities are adequate but could be optimised for crowding (Refer Figure 3). Ventilation responses are scattered, with several low scores (1–2) and a few high ones (4–5). This highlights uneven airflow and possible areas with poor ventilation. It suggests the need for better natural or mechanical ventilation (Refer Figure 4).

Lighting received higher ratings, mostly between 4 and 5. This shows that the space is well-lit and generally appreciated by users. A few mid-level scores indicate minor improvements could enhance uniformity (Refer Figure 5). Furniture quality is rated positively, clustering around 4 and 5. This suggests the furnishings are in good condition and well-maintained. Some average scores (3) indicate occasional wear or outdated pieces (Refer Figure 6). Half the respondents prefer sitting and reading in the library, while 31.3% take books home. A small portion uses it as a workspace or does not read regularly. This indicates a strong culture of on-site reading and study.

5. Results

The data reinforces that the decline in footfall at traditional Vachan Mandirs stems less from cultural irrelevance and more from spatial and functional shortcomings (Table 2). Libraries like Pune Marathi

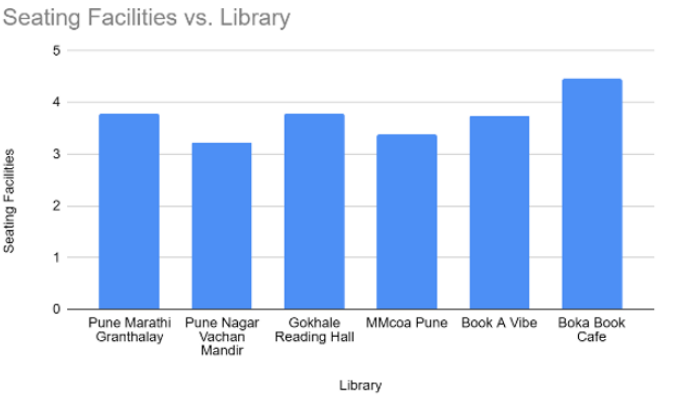

Figure 3: Seating facility report

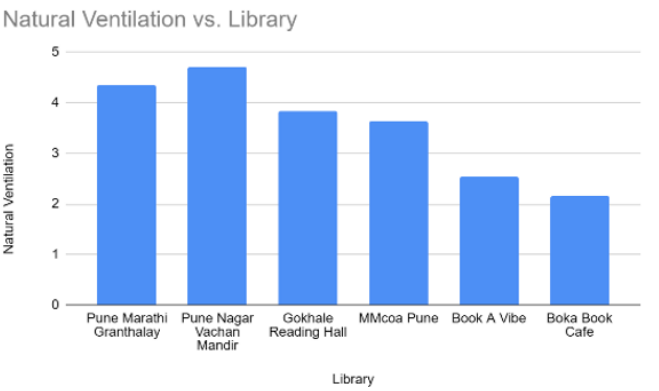

Figure 4: Natural ventialtion report

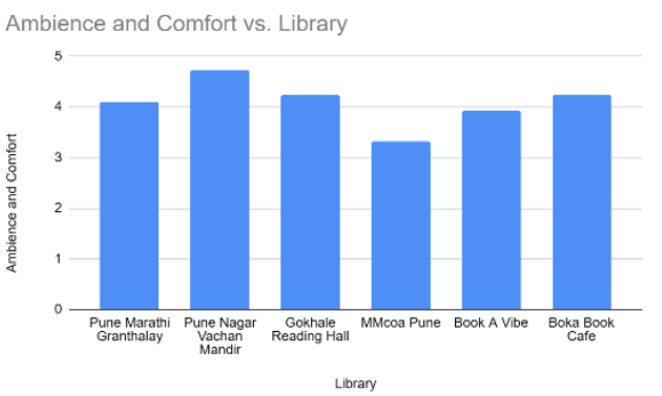

Figure 5: Ambience and comfort report

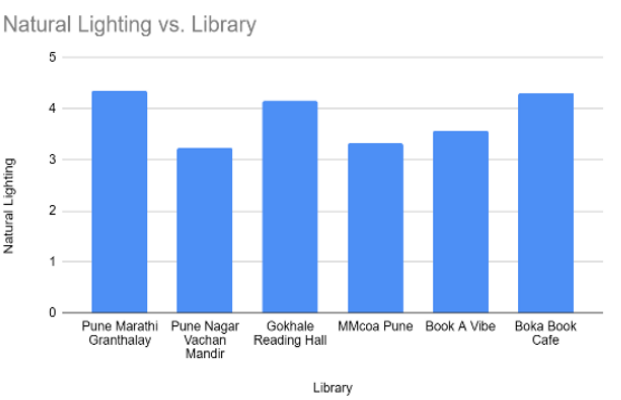

Figure 6: Natural lighting report

Table 2: Average of data recorded on each parameter
Source: Author

Sr No	Library Name	Last Recorded Subscription	Ambience and Comfort	Seating Facilities	Natural Ventilation	Natural Lighting	Furniture Condition	Average Rating
1	Pune Nagar Granthalay	~600	4.1	3.8	4.35	4.35	3.07	3.934
2	Pune Nagar Vachan Mandir	~600	4.72	3.22	4.7	3.22	4.07	3.986
3	Gokhale Reading Hall	~1500	4.23	3.8	3.84	4.15	3.6	3.924
4	MMCOA, Pune	~460	3.33	3.38	3.63	3.33	4.09	3.552
5	Book A Vibe	~450	3.92	3.75	2.53	3.56	3.53	3.458
6	Boka Book Cafe	~300	4.23	4.46	2.15	4.3	4.15	3.858

Granthalay and Pune Nagar Vachan Mandir, despite their strong heritage and natural ventilation, lag in furniture quality and seating comfort, reducing their usability. In contrast, modern spaces such as Book-A-Vibe and Boka Book Café perform better in ambience and seating, appealing more to younger audiences who prioritise comfort and adaptability. However, these newer setups face ventilation challenges, often due to enclosed designs. Overall, the findings support that enhancing comfort, seating and environmental quality, without compromising heritage, can effectively rejuvenate traditional libraries, bridging the gap between cultural legacy and contemporary user needs.

Out of 108 responses, the majority (54.6%) expressed a preference for sitting in the library and reading, highlighting the continued importance of a dedicated reading ambience. Meanwhile, 39.8% prefer to take books home, showing that flexibility and personal comfort are equally valued. Only a small percentage use libraries as workspaces or combine both approaches. This suggests that while the cultural value of reading halls remains strong, libraries also need to adapt to readers who seek convenience and privacy (Refer Figure 3 and 4).

Out of 108 responses, 51.9% believe that the spirit and authenticity of traditional Vachan Mandirs should be maintained without heavy modern alterations. In contrast, 41.3% support the inclusion of coffee kiosks, Wi-Fi and digital facilities, indicating a demand for upgraded amenities to attract youth and students. A few respondents suggested conditional or blended approaches. This clear divide emphasises the need for a balanced model - preserving cultural essence while carefully integrating modern comforts to enhance usability and increase footfall.

6. Conclusion

The study suggests that the cultural environment and calm atmosphere of older institutions still appeal to users seeking a focused reading space. Pune Marathi Granthalay and Gokhale Reading Hall benefit from strong natural lighting due to their traditional architectural design. However, enclosed modern interiors, particularly in café setups, restrict natural light, emphasising the need for improved daylight planning in contemporary reading spaces.

Seating comfort varies, with Boka Book Café performing best, reflecting modern ergonomic furniture and flexibility in design. Traditional libraries lag slightly, showing a need for upgraded seating arrangements to enhance usability and visitor satisfaction. The condition of furniture is better maintained in newer, privately managed spaces such as Book-A-Vibe and Boka Book Café. In contrast, public libraries like Pune Marathi Granthalay show signs of wear, indicating that lack of maintenance reduces their overall functionality.

The overall analysis indicates that the decline of footfall in traditional Vachan Mandirs is less about their cultural irrelevance and more about practical issues of comfort, ambience and spatial adaptability. Libraries such as Pune Marathi Granthalay and Narayan Peth Vachan Mandir still hold strong heritage value and emotional connect, but their usability suffers due to inadequate seating, poor furniture and lack of modern facilities. In contrast, modern spaces like Book-A-Vibe and Boka Book Café succeed in attracting younger audiences by offering comfortable seating, charging ports and interactive ambience, even though they may fall short on natural lighting and traditional quietude. This shows that readers, particularly students and young professionals, prioritise comfort and usability over the symbolic identity of the space (Refer Figure 7).

Figure 7: Preference for traditional vs. modern intervention such as kiosks

Therefore, the hypothesis that traditional libraries fail primarily due to cultural and digital shifts stands reversed. The findings reveal that simple design interventions like improved seating, better ventilation, flexible reading halls and upgraded lighting, can effectively revitalise these historic spaces. By merging cultural identity with contemporary user needs, Vachan Mandirs can once again become vibrant community centres. The study thus emphasises that the future of these institutions lies not in competing with digital media, but in reimagining their physical and social environments to create a balance of heritage and modernity.

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All figures courtesy author

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AQI IS MORE IMPORTANT THAN AI

Future Buildings Will Be Evaluated Through Health and Environment

By Ar. Anurag Khandelwal

Future buildings must be evaluated primarily through their impact on air quality, human health and ecological performance, rather than solely through their level of technological intelligence. While advancements in Artificial Intelligence (AI) have significantly improved building automation, predictive control and energy management, these technologies cannot compensate for unhealthy construction materials, poor indoor air quality, or high embodied carbon emissions.

This study proposes a health-first architectural framework where Air Quality Index (AQI) and Indoor Air Quality (IAQ) become the primary performance indicators of future housing. Within this context, mass timber architecture emerges as a critical material system capable of supporting healthier built environments.

Engineered timber products such as Cross-Laminated Timber (CLT), Dowel-Laminated Timber (DLT) and Glulam demonstrate lower thermal conductivity, reduced volatile organic compound emissions and superior hygroscopic behaviour compared with conventional concrete and steel construction. When combined with AI-driven environmental monitoring systems, timber buildings can function as bio-digital environments that continuously optimise thermal comfort, humidity balance and air quality. This integration of material intelligence and digital intelligence enables the development of smart homes that are not only energy-efficient but also, healthier and environmentally regenerative.

The study argues that AQI should be prioritised before AI, positioning mass timber as a foundational material for future sustainable housing.

Intersection of Technology and Timber Architecture

The future of housing lies at the intersection of material innovation and digital intelligence. Timber, as a renewable and carbon-storing material, offers a unique structural framework that can integrate seamlessly with emerging digital technologies.

Unlike conventional construction materials such as reinforced concrete and steel, engineered timber systems allow for precision prefabrication, sensor integration and adaptive environmental monitoring. This compatibility enables buildings to transition from static structures into responsive environments that interact with occupants and environmental conditions.

Within this framework, timber architecture provides the physical foundation while AI- based systems act as operational intelligence, monitoring building performance and optimising environmental conditions in real time (Fig 1).

Timber as a Smart-Compatible Structural System

Modern engineered timber systems including Cross-Laminated Timber, Dowel- Laminated Timber and Glulam offer both environmental and technological advantages. Key characteristics that make timber compatible with smart systems include low thermal conductivity, improved passive thermal stability, acoustic absorption properties that enhance sound quality within interior spaces and prefabrication compatibility that allows sensors and monitoring devices to be integrated directly into structural panels. In contrast to concrete structures, where sensors are typically installed after construction, timber panels can be manufactured with embedded monitoring systems including moisture sensors,

Figure1: Timber house exterior demonstrating contemporary mass-timber architecture.
Source: https://www.reddit.com/r/TinyHouses/comments/1swse2o/our_build_in_progress/?utm_source=share&utm_medium=mweb3x&utm_name=mweb3xcss&utm_term=1&utm_content=share_button

strain gauges, vibration monitors and temperature probes.

These systems enable continuous structural health monitoring, allowing buildings to detect stress, moisture risks or structural changes over time (Fig 2).

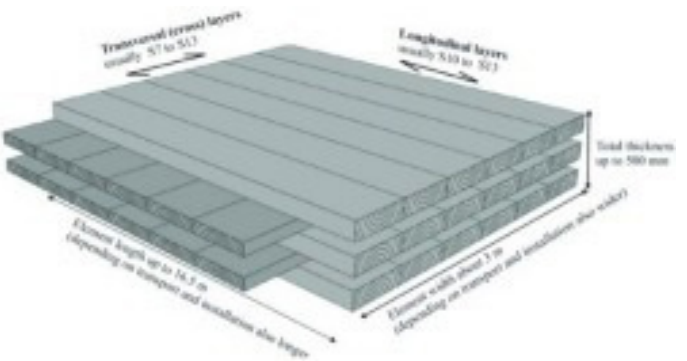

Figure2: Cross-Laminated Timber (CLT) layered structural panel diagram.
Source: https://www.researchgate.net/figure/Sketch-of-a-cross-laminated-timber-panel-In-this-paper-longitudinal-layers-and_fig9_337925537

AI and Human Interaction with Living Spaces

Historically, architecture has been designed as a static framework that dictates how occupants behave within spaces. The integration of artificial intelligence introduces a new paradigm in which buildings learn from occupants and adapt to their needs.

Through machine learning algorithms and environmental sensors, buildings can monitor indoor conditions and adjust lighting, ventilation and thermal systems automatically. In timber environments, these adaptive systems operate in combination with the biophilic qualities of wood, producing interior environments that support both physiological comfort and psychological well-being (Fig 3).

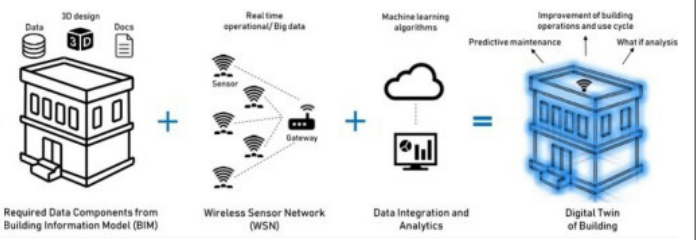

Figure3: Comparative table showing thermal conductivity, sensor integration and sustainability of timber, concrete and steel.
Source: SmartLam North America
https://share.google/Zp52b5ueWUUzabhjc

Natural materials such as timber are associated with reduced stress levels, improved perceived air quality and enhanced occupant satisfaction. AI systems strengthen these benefits by monitoring particulate matter, humidity levels and carbon dioxide concentrations, ensuring healthier indoor environments.

Carbon-Positive Housing and the Role of Timber

Mass timber construction provides significant environmental advantages compared with traditional building materials. In addition to reducing construction emissions, timber structures actively store atmospheric carbon within the building fabric (Fig 4).

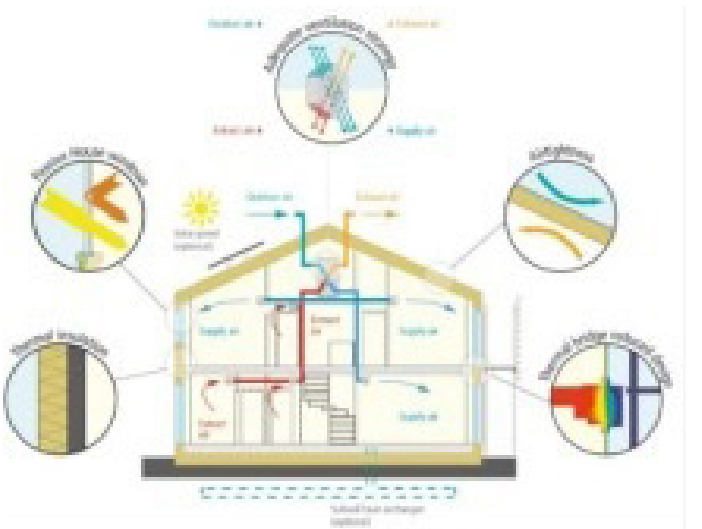

Figure 4: Digital Twin architecture workflow integrating BIM, sensors and data analytics.
Source: https://www.researchgate.net/figure/Essential-components-to-create-a-digital-twin-of-building-and-difference-with-BIM_fig5_336445007

Research indicates that buildings constructed with Cross-Laminated Timber can store approximately one ton of carbon dioxide per cubic meter of wood, effectively transforming buildings into long-term carbon reservoirs (Fig 5).

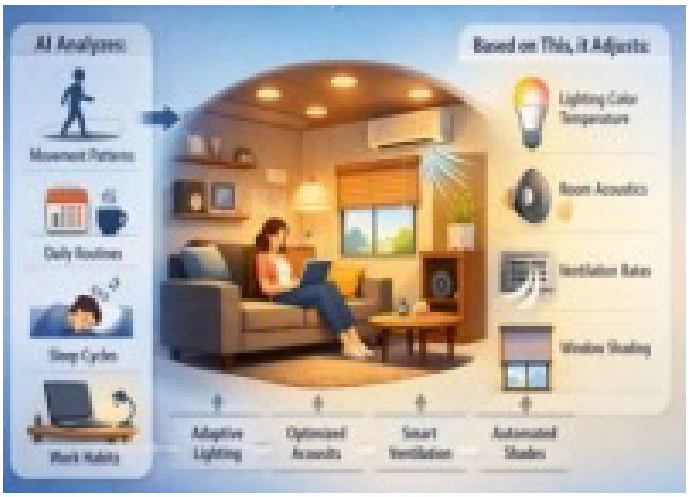

Figure5: AI-driven environmental control diagram for smart timber homes.
Source: https://www.zeohomes.cz/passive-vs-low-energy/?lang=en

When combined with AI-driven energy management systems, these buildings can evolve into carbon-positive housing systems capable of optimising solar energy generation, managing battery storage and balancing energy demand with neighbourhood grids.

Such developments support the emergence of smart eco-districts, where the buildings operate as interconnected environmental systems (Fig 6).

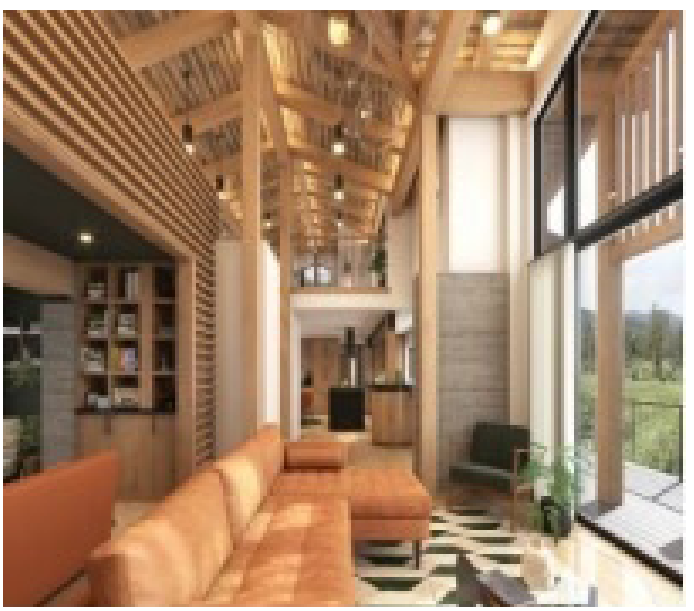

Figure6: Smart home interior showing AI-enabled adaptive living environment.
Source: https://www.made-in-china.com/video-channel/gdxien_VnTYbPfKJBWu_Movable-Sliding-Wall-Partitions-Room-Divider-Operable-Acoustic-Partition-Walls.html

Indoor Air Quality Benefits of Timber Buildings
Timber architecture contributes significantly to healthier indoor environments through several natural material properties.

Wood emits significantly lower levels of volatile organic compounds compared with many synthetic building materials, reducing chemical exposure within indoor environments (Fig 7).

Figure7: Timber interior space demonstrating biophilic design and natural materials.
Source: https://www.mountainliving.com/blending-biophilic-design-with-timber-frame-for-an-eco-friendly-home/

Timber is also a hygroscopic material, meaning it naturally absorbs and releases moisture depending on surrounding environmental conditions. This property helps maintain indoor humidity within the optimal range of approximately 40 to 60 percent, reducing the likelihood of mould growth, dust mites and excessively dry air (Fig 8).

Exposed timber interiors also reduce the need for synthetic finishes, paints and laminates, further lowering the concentration of indoor pollutants.

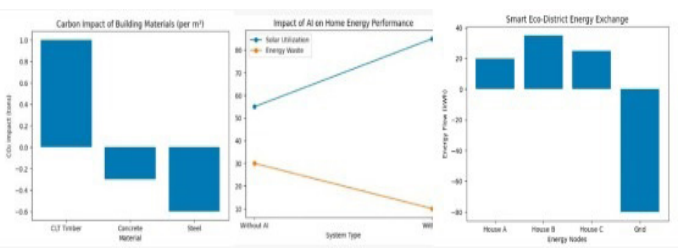

Figure8: Impact of AI on home energy performance graph.
Source: Author-generated using AI, based on conceptual data related to embodied carbon, AI-based energy optimisation and smart energy systems.

When integrated with AI-based monitoring systems, timber buildings can evolve into self-regulating environments capable of maintaining optimal indoor air quality through automated ventilation and environmental control (Fig 9).

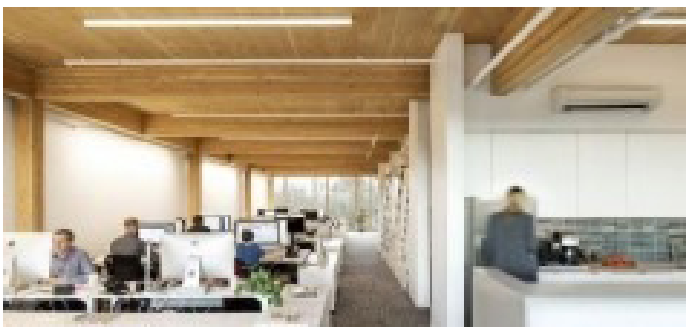

Figure9: Timber office interior illustrating healthy indoor environment. *Source: https://www.voanews.com/a/museum-cross-laminated-wood-building-material/3697202.html*

Conclusion: AQI Before AI

The future of architecture must prioritise human health and environmental performance over purely technological advancement. While artificial intelligence offers powerful tools for optimising building operations, it cannot compensate for poor material choices or unhealthy indoor environments.

Mass timber provides a unique opportunity to align architectural design with ecological responsibility, offering low-carbon construction, improved indoor air quality and compatibility with emerging digital technologies.

Rather than allowing technology to define the future of housing, architecture must adopt a health-first approach in which air quality, environmental sustainability and human well-being, form the foundation of design.

Within this framework, AQI must come before AI, positioning timber architecture as a critical pathway toward healthier and more sustainable cities.

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Living the Future Before It Arrived

Architecture Imagined Through Cinema

Ar. Gunja Goyal

Introduction

Architecture is often understood as a response to present conditions — climate, context, culture and available technology. Yet, long before many contemporary spatial ideas became part of everyday life, they had already been imagined elsewhere. Cinema, in particular, has served as a powerful medium through which future environments are not only visualised but also experienced.

Films have never been limited to storytelling alone; they construct entire worlds. Within these worlds, cities grow vertically, interiors adapt to extreme constraints, infrastructures operate seamlessly and environments are crafted with precision. What initially appears as fiction often carries a deeper spatial logic — one that resonates with emerging architectural realities.

The relationship between cinema and architecture is therefore not incidental. Cinema acts as a speculative space where architectural ideas are explored without the limitations of construction, cost or regulation. It compresses time, exaggerates conditions and presents environments that may not yet exist but feel strangely familiar.

Today, when we observe contemporary urban environments — dense skylines, compact living units, automated systems and immersive interiors — there is a growing sense that many of these ideas were encountered earlier on screen. As seen across figures 1 to 6, this article explores how cinematic visions have quietly anticipated architectural transformations across different scales, moving from the city to the room, from infrastructure to experience and ultimately to integrated systems.

From Skyline to Room

The imagination of the future in cinema often begins at the scale of the city. Vast skylines, layered infrastructures and vertical densities create environments that appear distant, even improbable. Yet, these cinematic cities are not merely visual spectacles; they are projections of spatial tendencies that are now increasingly visible in contemporary urbanism.

Many science fiction narratives depict cities as vertically stratified systems — where habitation, movement and infrastructure coexist across multiple levels, as seen in figure 1. Elevated transport networks intersect with towers and density is compressed rather than expanded. While exaggerated on screen, this vision reflects a real shift in urban development. Cities today are moving toward vertical intensification as a response to land scarcity and population growth.

Figure 1: Cinematic vision of a futuristic city juxtaposed with contemporary high-rise urban reality
Source: Author

The cinematic city anticipates challenges long before they become urgent — mobility congestion, spatial limitations and infrastructural complexity. It proposes a three-dimensional understanding of urban form, where the city operates not as a flat plan but as a layered system. This transition does not stop at the urban scale. It moves inward — into the most intimate space of architecture: the room.

As cities grow denser, interior spaces are forced to adapt. Cinema has long explored this condition through compact, multifunctional living environments. A single function no longer defines rooms; instead, they transform according to need. Furniture folds, walls shift and space becomes dynamic, as seen in figure 2.

Figure 2: Compact, multifunctional interior demonstrating spatial optimisation within limited urban living conditions
Source: Author

In contemporary architecture, similar strategies are increasingly common. Micro-apartments, modular furniture systems and flexible layouts reflect a shift toward efficiency rather than expansion. Space is no longer measured solely by area, but by its ability to perform multiple functions.

The journey from skyline to room reveals a continuity of pressures — density, adaptability and efficiency. Cinema captures this transition seamlessly, suggesting that the future of architecture is not only about how cities grow but also about how individuals inhabit them.

Systems beneath the Surface

While cities and interiors define visible architecture, much of its functionality lies beneath the surface. Systems of movement, storage and circulation quietly shape how buildings operate, often without being immediately apparent.

As urban density increases, architecture must accommodate not only people but also the mechanisms that support their daily activities. Parking, for instance, has evolved from expansive horizontal layouts to compact, vertical systems integrated within buildings, as seen in figure 3.

Figure 3: Automated multi-level parking system demonstrating the integration of mobility infrastructure within the architectural envelope
Source: Author

Automated parking systems illustrate a significant shift. Vehicles are no longer stored passively; they are actively managed within mechanical systems that optimise space and efficiency. The building becomes more than a container — it becomes a machine that organises movement.

Cinema has long imagined such conditions, in which systems are seamlessly embedded in architecture. What appears futuristic on screen often reflects a deeper understanding of how efficiency and spatial constraints intersect. These developments highlight a critical transformation: architecture is no longer defined solely by form, but by its capacity to integrate systems. The visible structure is only one part of a larger operational network.

Experience and Atmosphere

Beyond function and efficiency lies another dimension of architecture — experience. It is not only how space is organised, but how it is perceived that defines its impact. Cinema excels in crafting atmosphere. Certain cinematic spaces are remembered not for their layout, but for their mood — created through light, shadow and material. Illumination becomes a design tool, shaping perception and guiding attention, as seen in figure 4.

In such environments, boundaries blur and surfaces dissolve into gradients. Space acquires a temporal quality, changing subtly as light shifts. The experience becomes dynamic rather than static. Contemporary architecture increasingly reflects these ideas. Minimal material palettes, controlled lighting

Figure 4: Cinematic atmospheric interior compared with contemporary spatial design, highlighting the role of light, material and surface in shaping experience
Source: Author

and sensory design strategies are now central to interior environments. The emphasis is not only on function, but on perception. Cinema demonstrates that atmosphere is not an afterthought — it is a fundamental component of architectural design.

Architecture as System

As architectural layers become more complex, a shift emerges from isolated elements to integrated systems. The city, the building, the interior and the infrastructure begin to operate as interconnected components rather than separate entities.

This transformation is particularly evident in the way movement is redefined. Traditionally, mobility existed outside architecture — roads and transit networks connected buildings, but remained external to them. Today, this boundary is increasingly blurred, as seen in figure 5.

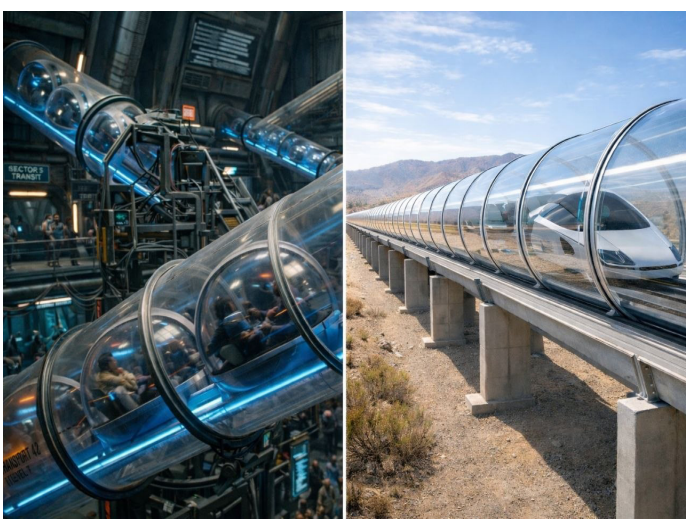

Figure 5: Cinematic representation of enclosed mobility systems compared with emerging real-world transport infrastructures, illustrating the integration of movement within architectural space.
Source: Author

Cinematic environments often depict movement as part of architecture itself. Transport occurs within enclosed systems, seamlessly integrated into built form. This idea is gradually emerging in reality through controlled mobility infrastructures and experimental transport systems. The building evolves into a network — a system of flows, functions and experiences. Architecture is no longer static; it becomes dynamic and responsive. This marks a fundamental shift in understanding architecture — from object to system.

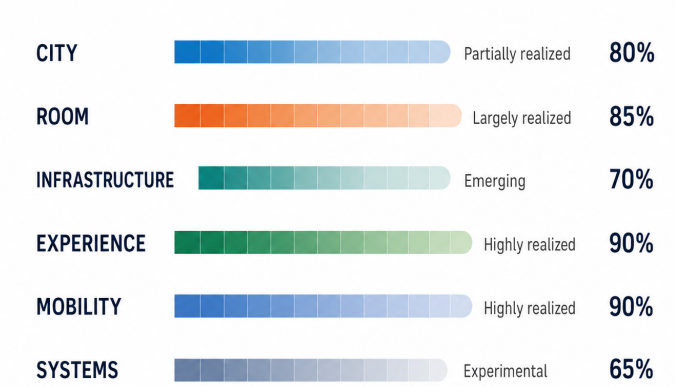

Figure 6: Analytical diagram illustrating the degree of realisation of cinematic architectural concepts in contemporary built environments
Source: Author

Reading the Pattern

When viewed collectively, a pattern emerges across these scales. Cinematic ideas are not simply replicated in architecture; they are adapted over time. As seen in figure 6, different architectural ideas have been realised to varying degrees.

Some ideas, such as compact interiors and atmospheric design, are already widely realised. Others, particularly integrated mobility systems, remain in developmental stages. This variation reflects the complexity of translating imagination into reality. Cinema does not dictate architectural outcomes, but it reveals possibilities. It isolates ideas and presents them in their most refined form, allowing them to be understood before they become necessary.

Conclusion

The environments we inhabit today often feel familiar — not because we have experienced them before, but because we have seen them imagined. This familiarity reflects a convergence between cinematic speculation and architectural reality. The progression from city to room, from infrastructure to experience and finally to system reveals a consistent

trajectory. Ideas once considered futuristic gradually become part of everyday life.

The significance of this relationship lies not in imitation, but in anticipation. Cinema expands the boundaries of architectural imagination, allowing designers to engage with possibilities beyond immediate constraints. As architecture continues to evolve, this dialogue between imagination and reality will remain essential. The future of architecture may not be entirely new — it may simply be the realisation of ideas that have already been imagined.

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Satkhanda, Lucknow

A Royal History and Architectural Study

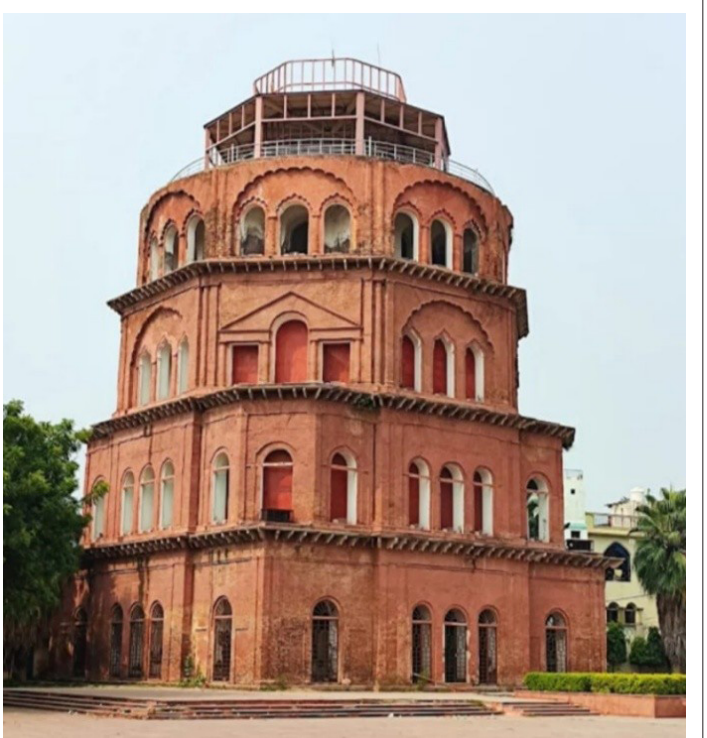
Ar. Akanchha Jain

1. Introduction

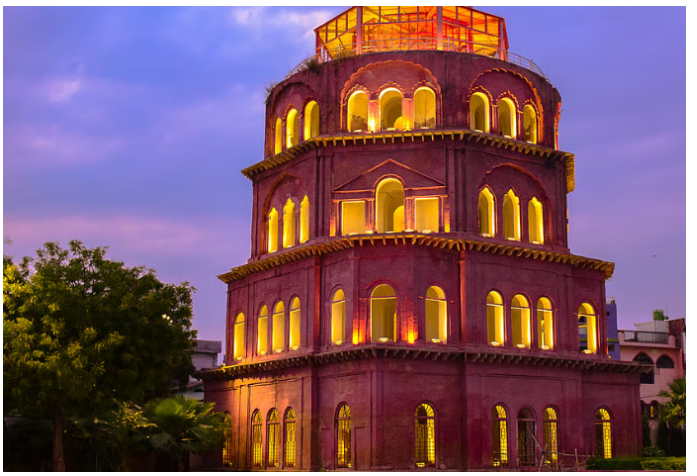
Lucknow, often described as the cultural heart of northern India during the 18th and 19th centuries, occupies a unique place in South Asia's architectural and artistic landscape. Under the patronage of the Nawabs of Awadh, particularly during the reigns of Asaf-ud-Daula (1775–1797) and Wajid Ali Shah (1847–1856), the city evolved into a vibrant hub where Mughal traditions, Persian aesthetics and local artistry merged into what scholars identify as Indo-Islamic eclecticism. The Nawabi court was deeply invested in architecture, not merely as a form of shelter or utility but as a political statement, an emblem of refinement and a visual manifestation of their semi-independent identity during a period of declining Mughal authority and increasing British influence.

This synthesis is most visibly reflected in monuments such as the Bara Imambara (1784), commissioned by Asaf-ud-Daula during a devastating famine, which became both a charitable work and a monumental statement of generosity; the Chhota Imambara (1838), erected by Nawab Mohammad Ali Shah, renowned for its intricate chandeliers and calligraphy; the Rumi Darwaza (1784), modelled after gateways in Constantinople and often compared to the Sublime Porte; and the Kaiserbagh Palace complex (1850s), which Wajid Ali Shah developed with influences from European neoclassicism. Each of these structures demonstrates the Nawabi desire to rival Mughal Delhi while simultaneously engaging with Persianate and European traditions.

Amidst this architectural panorama stands the Satkhanda, literally meaning "seven storeys," a monument both remarkable and enigmatic. Commissioned by Nawab Mohammad Ali Shah (r. 1837–1842), Satkhanda was envisioned as a seven-storey watchtower and astronomical observatory, reflecting not only the Mughal tradition of monumental towers such as the Qutb Minar in Delhi (12th–13th century) but also contemporary European towers and follies that combined utility with grandeur. Its cylindrical form, arcaded windows and decorative arches embody this fusion. Yet, unlike the Qutb Minar or the Charminar of Hyderabad, Satkhanda was never completed. Construction ceased abruptly at the fourth storey, likely due to



Satkhanda, Lucknow, in 2010
Source: Author



Night view of Satkhanda, Lucknow
Source: Author

the Nawab's untimely death in 1842, leaving the monument as a poignant fragment of unfinished ambition.

The Satkhanda's incompletion places it within a broader history of unfinished monuments, from the Hassan Tower in Rabat, Morocco (12th century), to the Palace of Soviets in Moscow (20th century), where architecture becomes a record of interrupted histories. In Lucknow, this unfinished tower stands as a metaphor for the Nawabi era itself: filled with aspiration, artistic experimentation and grandeur, yet curtailed by political fragility, colonial pressures and mortality.

2. Objectives of the Study

The primary objectives of this study are:

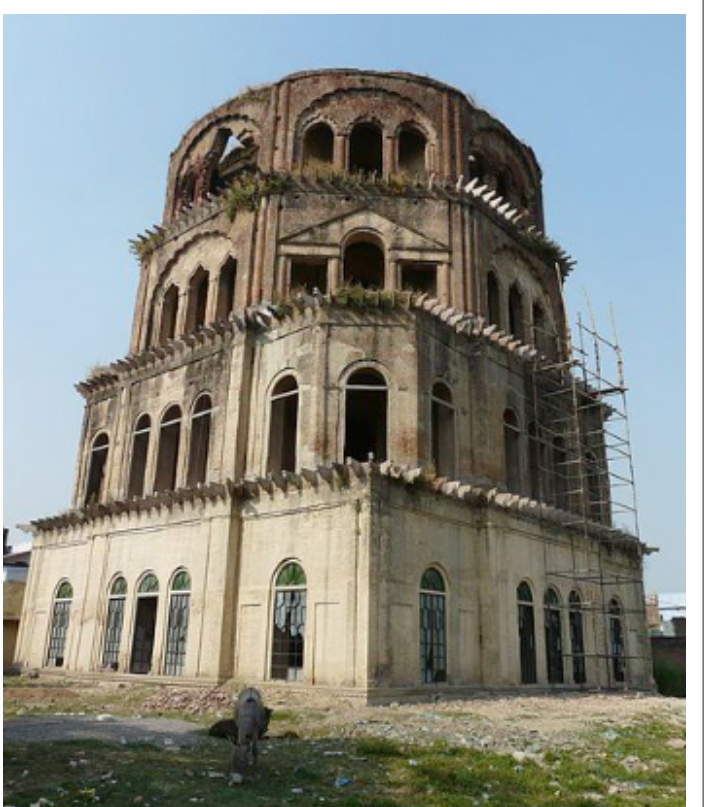
1. To analyse the historical context of Satkhanda, situating its conception under Nawab Muhammad Ali Shah within the cultural efflorescence of Lucknow and the growing influence of British colonial power.
2. To interpret the architectural design and dimensions of the monument, highlighting its synthesis of Mughal, Persian and European stylistic elements and its intended function as both an astronomical observatory and a royal watchtower.
3. To examine the significance of incompletion in Satkhanda, considering it as both a fragment of Nawabi ambition and part of a broader global tradition of unfinished monuments.
4. To identify the conservation challenges faced by the monument today, including material decay, urban encroachments and lack of visibility within Lucknow's heritage discourse.
5. To propose strategies for sustainable preservation, including scientific restoration, tourism integration, educational use and digital documentation, thereby repositioning Satkhanda as a meaningful part of India's architectural and cultural heritage.

3. Methodology

This study adopts a multi-disciplinary qualitative approach, combining historical research, architectural analysis and heritage management perspectives to examine the Satkhanda in depth. The methodology includes the following components:

3.1 Historical Research

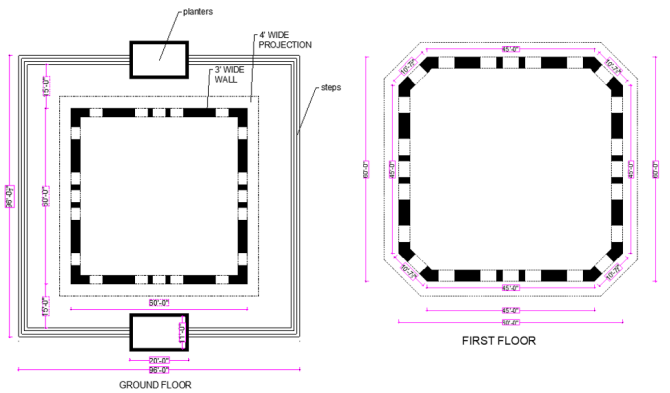
- Consultation of primary sources such as 19th-century accounts of Lucknow, records of the Nawabi court and early colonial reports.
- Review of secondary literature, including works by architectural historians (e.g., Rosie Llewellyn-Jones, Catherine Asher) to contextualise Satkhanda within Indo-Islamic and Nawabi architecture.
- Comparative study with other unfinished monuments globally (e.g., Hassan Tower, Morocco; Unfinished Obelisk, Aswan) to situate Satkhanda within the discourse of incomplete heritage.



Satkhanda before reconstruction
Source: Author

3.2 Architectural Documentation

- Analysis of existing measurements and proportions (base plan, storey heights, wall thickness, openings, staircase dimensions) drawn from site surveys and conservation reports.
- Preparation of schematic plans, sections and elevations to reconstruct both the existing four-storey structure and the intended seven-storey form.
- Stylistic analysis of arches, openings, wall surfaces and tapering silhouette to identify Mughal, Persian and European influences.



Ground and first floor plans of Satkhanda, Lucknow
Source: Author

3.3 Field Observation (Site Analysis)

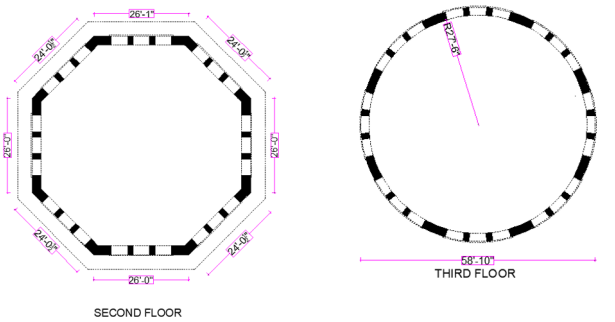
- On-site observation of material conditions, including erosion, plaster loss, structural cracks and vegetation growth.
- Assessment of urban context, including encroachments, traffic and visibility within the modern cityscape of Lucknow.
- Documentation of visitor engagement and current management practices under the Archaeological Survey of India (ASI).

3.4 Conservation Assessment

- Application of heritage conservation frameworks (e.g., ICOMOS guidelines, Indian heritage policies) to evaluate the adequacy of present measures.
- Identification of gaps in conservation, such as a lack of interpretation, digital documentation and integration with heritage tourism.

3.5 Proposed Interventions

- Formulation of recommendations based on a synthesis of historical, architectural and conservation findings.



Second and third floor plans of Satkhanda, Lucknow
Source: Author

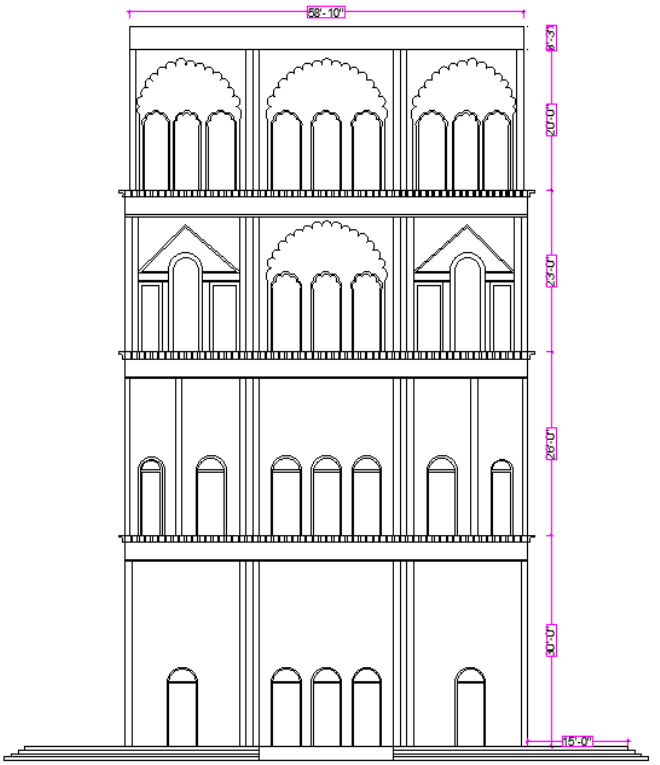
- Suggested measures include scientific restoration, tourism integration, educational usage and digital preservation.

4. Architectural Description

The Satkhanda is among the most distinctive monuments of Lucknow, not only because of its unfinished state but also due to its unusual form, which fuses Mughal, Persian and European stylistic vocabularies. Although halted at the fourth storey, its surviving mass allows us to reconstruct both its intended proportions and its symbolic meaning.

4.1 Overall Dimensions and Layout

- **Intended Height:** Approximately 67 to 70 meters would have been the total height if all seven storeys had been completed. This measurement emphasises the building's impressive scale, highlighting not only its vertical reach but also the architectural ambition behind its design. Each level would contribute to the structure's overall aesthetics and functionality, potentially offering panoramic views and space for various uses. Moreover, completing all seven storeys might have created a significant landmark in the area, symbolising progress and modernity while serving the community.
- **Current Height:** The height measures approximately 33 to 35 meters, which is equivalent to four stories and includes an additional parapet at the top. This architectural feature serves not only as a decorative element but also enhances the building's overall aesthetic appeal and functionality. The parapet can help protect the roof from wind, enhance occupant safety by preventing accidental falls and even offer a unique vantage point for views of the surrounding area. Such height and design are typical in modern urban architecture, where maximising both space and style is essential in densely populated environments.



Front elevation of Satkhanda, Lucknow
Source: Author

- **Base Plan:** Octagonal, measuring about 18 m across the flats. This eight-sided plan situates the structure within the Indo-Islamic tradition, where octagonal bases were employed in minarets, mausoleums and pavilions to symbolise cosmic order.
- **Wall Thickness:** At the base, 1.20 m, gradually tapering to 0.80 m in the upper levels, a technique borrowed from Mughal engineering that combines structural stability with visual lightness.

4.2 Storey Heights and Vertical Composition

The tower exhibits a progressive diminution of storey height, a strategy that enhances both structural stability and vertical emphasis:

- First storey: 10 m
- Second storey: 8 m
- Third storey: 7 m
- Fourth storey: 6 m
- Total (existing): 31–32 m plus parapet

Had construction proceeded, the upper three storeys would have continued this rhythm of reduction, culminating in a tapering crown or domical termination.

4.3 Arched Openings and Fenestration

Each of the eight sides is pierced by symmetrically placed arched openings that serve dual purposes: illumination and ventilation.

- Average arch height: 2.5 m
- Average arch width: 1.2 m
- Arrangement: Regularly spaced on all faces, ensuring uninterrupted light, air circulation and panoramic views of the city.

The pointed arches recall Mughal and Persian aesthetics, yet their restraint and proportional regularity reveal an affinity with European neoclassical sensibilities.

4.4 Staircase and Circulation

A spiral staircase provides the internal circulation:

- Width: 1.0 m
- Character: Narrow, steep and functional, intended not for grand ceremonial processions but for scientific access to observational points.
- This utilitarian character reflects the Nawab's astronomical intent, where the staircase acted as a practical device for scholars and attendants rather than courtiers.

4.5 Stylistic Features and Ornamentation

- Mughal Influence: Evident in the use of pointed arches, lime plaster ornament and the rhythmic fenestration pattern.
- Persian Influence: Seen in the octagonal plan and the emphasis on symmetry and geometry.
- European Influence: Particularly noticeable in the vertical proportions, plain wall surfaces and restrained façade treatment, contrasting with the elaborate ornamentation typical of Awadhi Imambara.
- Observatory Intent: The alignment of windows and the stepped reduction of height facilitated unobstructed sky visibility, reinforcing its intended role as a scientific tower.

4.6 Massing and Silhouette

In elevation, the Satkhanda presents a tapering silhouette, with the diameter reducing by approximately 1.5 m per storey. This progressive reduction gives the structure both stability and elegance, producing the impression of a minaret or lighthouse rising above the city. Symbolically, this silhouette was intended to embody a cosmic axis, a vertical link between Earth and heaven, while serving as a practical royal observatory.

4.7 Defects in Satkhanda

Despite its architectural significance, Satkhanda exhibits several defects that compromise its structural integrity, visual character and heritage value. These defects arise from a combination of unfinished construction, material vulnerabilities, neglect and urban pressures, collectively threatening to diminish the landmark's historical significance. The incomplete sections of the structure reflect a lack of attention and resources, leading to further deterioration over time. Additionally, the choice of materials used in its construction may not have been the most suitable for withstanding environmental challenges, resulting in wear and tear that could have been avoided.

Urban pressures, such as pollution and unsympathetic development in the surrounding area, further exacerbate these issues. As a result, Satkhanda not only suffers physical damage but also erodes its aesthetic appeal, which is integral to its status as a cultural monument. Addressing these challenges requires a concerted effort from conservationists, local authorities and the community to ensure this valuable piece of heritage is preserved for future generations, retaining its significance and charm in an ever-evolving urban landscape.

4.7.1. Structural Defects

- Cracks in Masonry Walls: Longitudinal and transverse cracks are visible on the lower storeys, caused by settlement, moisture infiltration and lack of maintenance.
- Weak Bonding Mortar: The original lime mortar has lost strength over time, leading to loosening of bricks and disintegration at joints.
- Foundation Stress: Encroachments and urban activities around the site may have disturbed soil stability, contributing to minor structural shifts.
- Incomplete Load Distribution: Since only four out of the planned seven storeys were built, the tower's structural rhythm was never realised, making it more vulnerable to lateral forces and weathering.

4.7.2. Material Defects

- Brick Erosion: The Lakhauri bricks used in construction show signs of surface scaling and edge disintegration due to climatic exposure.
- Plaster Peeling: The original lime plaster has largely flaked off, leaving large patches of exposed masonry vulnerable to rain and pollution.
- Vegetation Growth: Roots of small plants and moss have penetrated cracks, accelerating material decay.
- Salt Crystallisation: Rising damp has caused efflorescence, where salts crystallise on the walls, further weakening surfaces.

4.7.3. Design and Functional Defects

- Narrow Staircase: The spiral staircase (1m wide) is too steep and unsafe for modern visitors, restricting access to upper levels.
- Lack of Drainage: Inadequate water disposal leads to rainwater stagnation on ledges, worsening wall dampness.
- Unfinished Massing: The tower abruptly ends at the fourth storey, creating an aesthetically truncated form and exposing upper layers to accelerated weathering.

4.7.4. Conservation-Related Defects

- Inadequate Restoration: Previous ASI interventions have focused only on patchwork repairs and structural stabilisation, without comprehensive restoration.
- Absence of Protective Layer: No effective shelter or weatherproof coating protects the exposed upper structure.
- Encroachments: Urban development has reduced the monument's visual prominence, weakening its historic spatial context.
- Tourist Neglect: Lack of interpretive signage, pathways and security has left the site underappreciated and more vulnerable to vandalism.

5. Conservation Challenges

The Satkhanda, though historically significant, has remained one of the less-celebrated monuments of Lucknow. Its unfinished form, combined with decades of neglect, has left it particularly vulnerable to environmental, social and managerial challenges. A study of its conservation issues highlights the challenges of preserving a monument that is at once incomplete, underrecognised and embedded within an expanding urban fabric.

5.1 Material Decay

Constructed primarily of Lakhauri bricks bonded with lime mortar and finished with lime plaster, Satkhanda is highly susceptible to environmental stress. The humid subtropical climate of Lucknow, characterised by heavy monsoon rains and fluctuating temperatures, accelerates erosion,

plaster flaking and brick weathering. Micro-cracks in the masonry have allowed water infiltration, further weakening the structural fabric. In the absence of regular maintenance for much of the 19th and 20th centuries, vegetation growth, salt crystallisation and atmospheric pollution have compounded the monument's deterioration.

5.2 Encroachments and Urban Pressures

Over time, the surrounding context of Satkhanda has undergone dramatic change. Urban sprawl, road widening and informal settlements have encroached upon the monument's immediate setting. This has compromised its visual integrity, reducing the sense of isolation and grandeur that a tower of this scale demands. In several cases, nearby construction has also exerted physical stress on the monument's foundation zone. Without a protective buffer zone and strict urban management, Satkhanda risks being overwhelmed by the city it was once meant to survey.

5.3 Current Conservation Efforts

The Archaeological Survey of India (ASI) now manages the site, ensuring its protection under heritage legislation. However, interventions so far have been largely limited to structural stabilisation—repairing cracks, repointing masonry and restricting further damage. While such measures are crucial, they have not yet extended to holistic conservation planning, visitor management, or site interpretation. Without a broader conservation strategy, Satkhanda risks remaining structurally stable yet underutilised.

6. Conclusion

Satkhanda, despite its incomplete status, stands out as one of the most captivating monuments in Lucknow. It serves as a remarkable testament to the Nawabs' innovative vision, which sought to seamlessly integrate science, surveillance and aesthetics into a harmonious architectural structure. The building's unfinished condition adds a layer of intrigue and mystery, prompting both scholars and casual visitors alike to speculate about the monumental grandeur it might have achieved as a seven-story tower. Rather than viewing Satkhanda as a mere failed project, we should celebrate it as a powerful symbol of ambition and resilience. This monument encapsulates a significant cultural moment in which the fields of architecture, astronomy and politics converged, reflecting the complexities and aspirations of its era.

The allure of Satkhanda lies not only in its physical form but also in the rich narratives and historical contexts that surround it, inviting a deeper exploration of the artistic and intellectual currents of its time. The structure's design, characterised by intricate carvings and a striking facade, hints at the high level of craftsmanship and artistic intent that once permeated it. Furthermore, the stories passed down through generations serve to enrich our understanding of the societal values and technological advancements of the period.

Visitors are often captivated by the contrast between the monument's unfinished state and the grand ambitions that inspired its creation. As we explore the story of Satkhanda, we find not just a physical landmark but also a reflection of the human spirit's pursuit of beauty and knowledge amid complex history. This makes Satkhanda a meaningful site of inquiry, where every stone and arch bears the weight of time and the echoes of dreams unfulfilled yet enduring.

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DREAM HOME

By Ar. Vibha Shrivastava

Fact File:

Project Name: Pandit's Residence

Location: Bhopal

Plot area: 10000 sq. ft.

Total Built up area: 4000 sq. ft.

Structural Consultant: Jitendra Shrivastava

Project completion year: 2009-2010

As per client statement, "As I am Neuro Surgeon and I work with 1/1000th mm part precision in brain and spine surgeries. My house is to be in rough and green finish."

He is very eco-friendly, so he wanted his house close to nature. By making a lot of openings in the house as well as beautiful gardens. He is also a big fan of Laurie Baker's architectural style. The design deployed some of Laurie Baker's architectural elements in his house.

Architectural Innovations and Aesthetics

- Central courtyard planning
- Vernacular architecture
- Laurie Baker's architectural style

Use of New Products

- Taragram bricks
- Rustic finished tiles
- Steel structure
- Light weight concrete tiles

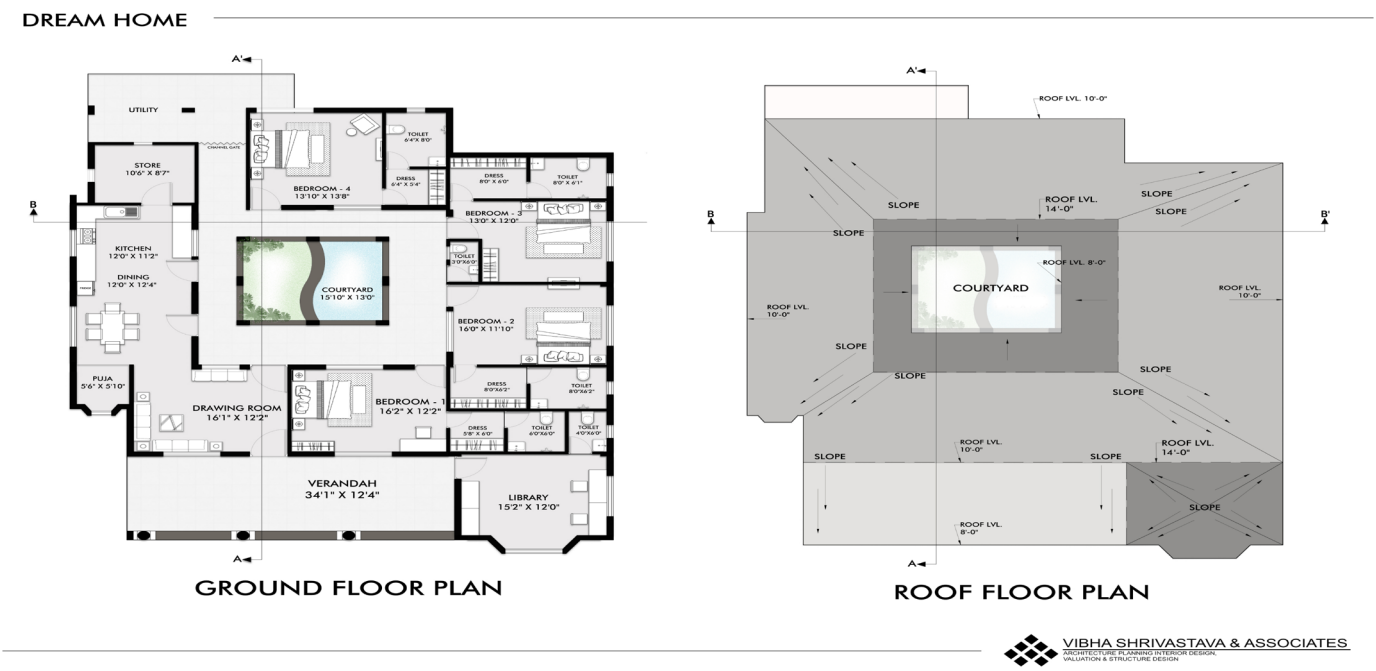

Figure1: Dream home: Floor Plans

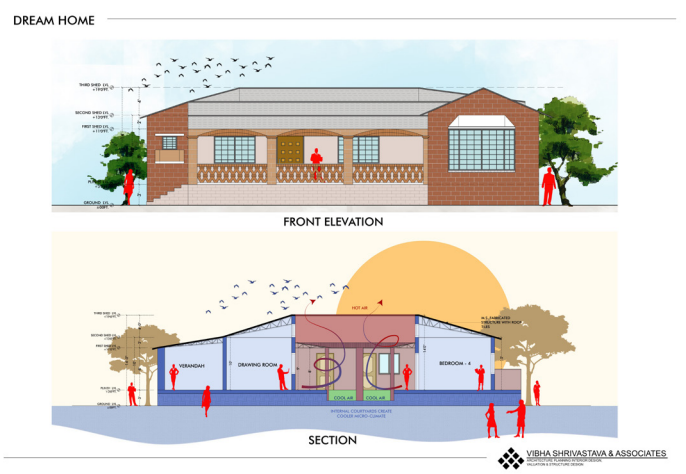

Figure 2: Dream home: Elevation and Section

Figure 3: Final view

Figure 4: Self-supported segmental arches

- Kota stones
- Fenesta windows

Use of Environment Friendly Materials

- Taragram bricks
- Taragram tiles for roofing
- Steel structure in place of wooden truss

Figure 5: Column details

- Red Dholpur stone framing in windows
- Fenesta window instead of teak wood window
- Pine wood plank for false ceiling
- Kota and Jaisalmer stone flooring
- Rustic tile flooring.

Special Considerations for Improving Aesthetics

- Masonry of teragram bricks with rat-trap bonds
- Self-supporting arches
- Windows with stone jamming
- Brick jali partition and railing
- Bay window in library-for sitting and lighting
- Ventilators for lighting

Laurie Baker's Architectural Style

- Low cost, high quality
- Bare brick masonry construction
- Brick jali walls inviting a natural air flow to cool interiors and creating intricate patterns of light and shadow

Figur 6: Partition wall

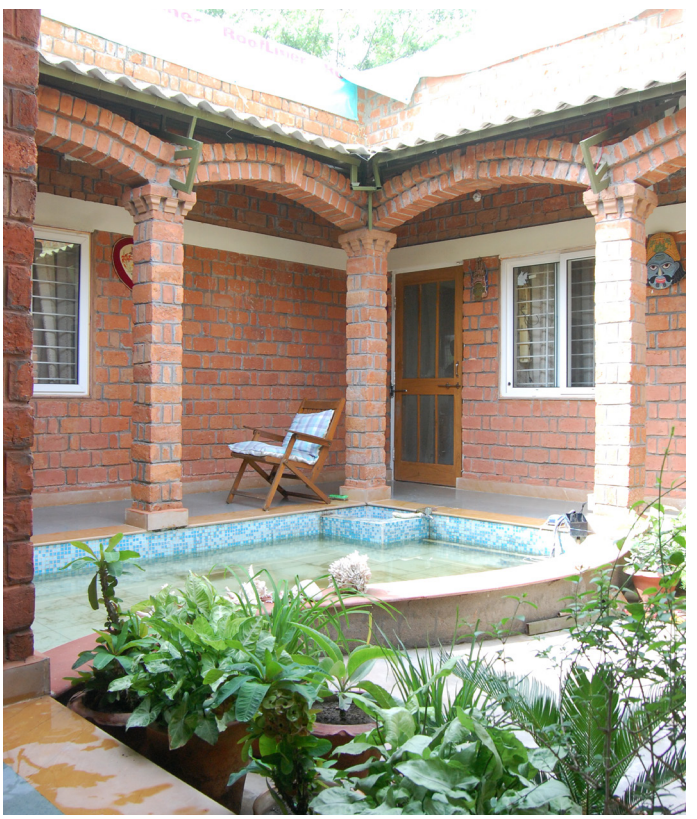

Figure 7: Interior courtyard

Figure 8: Interior of illuminated room with two distinct Walls: Brick and Plastic with Paint

Figure 9: Truss and False ceiling details

Quality Management

As the brickwork of the elevation and the interior is without plaster, so the joints of brickwork and finishing of brick should be in proper manner. That's why it is supervised properly.

Special Feature

Conservation of nature by doing beautiful landscaping.

Figure 10: Combination of exposed brick and white plastic wall

Figure 11: Well-lit library with Bay window

Details

(a)Then the fixing of the roof tile is directly on the purlin and it is tied under the tiles using steel wire/ thread. So, it also needs proper supervision.

(b)The gutter construction is also very important, as it is a requirement for the sloping roof.

Special Features in Structural Design.

- Bare column
- Self-supported arch
- Steel truss
- Extended lintel beam

The main entrance features a large, recessed pointed arch. Within this arch, a secondary circular form creates a “keyhole” effect, while the side of the tower is adorned with an intricate vertical strip of geometric jali work, providing texture and light filtration.

Figure 12: Entry door with steel frame

All Images Courtesy: Author

Vibha Shrivastava (F 12330), graduated B.Arch. from NIT Raipur in 1993, then masters in urban planning from SPA Delhi to start practice in Bhopal in 1999. Her practice spans institutional, healthcare, housing and industrial projects, alongside empanelled public-sector work and visiting faculty roles at MANIT and SPA Bhopal.
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The 'Light' Box

By Ar Chintan Shah

Fact File

Client name - Mr. Jay Gohil

Design firm - Shodh Architects, Surat

Project Designers - Ar. Chintan Shah and Ar. Henil Jhaveri

Photography by - pcube_studio

Furniture Consultant - Mr. Ravibhai

Year of completion – 2024

With the growing land prices in the urban and fringe areas of tier II cities of our country, the financial deal for the small land parcels is also becoming expensive for the middle-class people of the society; and with the amount of money spent on the purchase of land irrespective of its size, the common narrative of the client is always to have a large spacious bungalow to live in.

Built on a mere plot size measuring 23 ft x 45 ft, the project is a 3-storey residence built in the growing upscale suburban development of the Surat City. The client Mr. Jay Gohil, elder son of the family had a basic requirement of 5 bedrooms residence which can accommodate up to 10 members of his multigenerational family.

The front of the site facing east direction (Figure 1) is accessed from the society road, the west has an existing low rise development and the north and the south directions have shared common walls with the neighbours. These restrictions which are generally very common in plotted developments led to the decision of getting natural light from the top into the lower levels of central habitable spaces. And as the name of the project suggests 'The Light Box' is a residence designed with the simple ideas of getting maximum day light into the house, creating stack effect for air circulation and minimalistic approach in designing of spaces. The play of light has been one of the major features of the design as one can observe

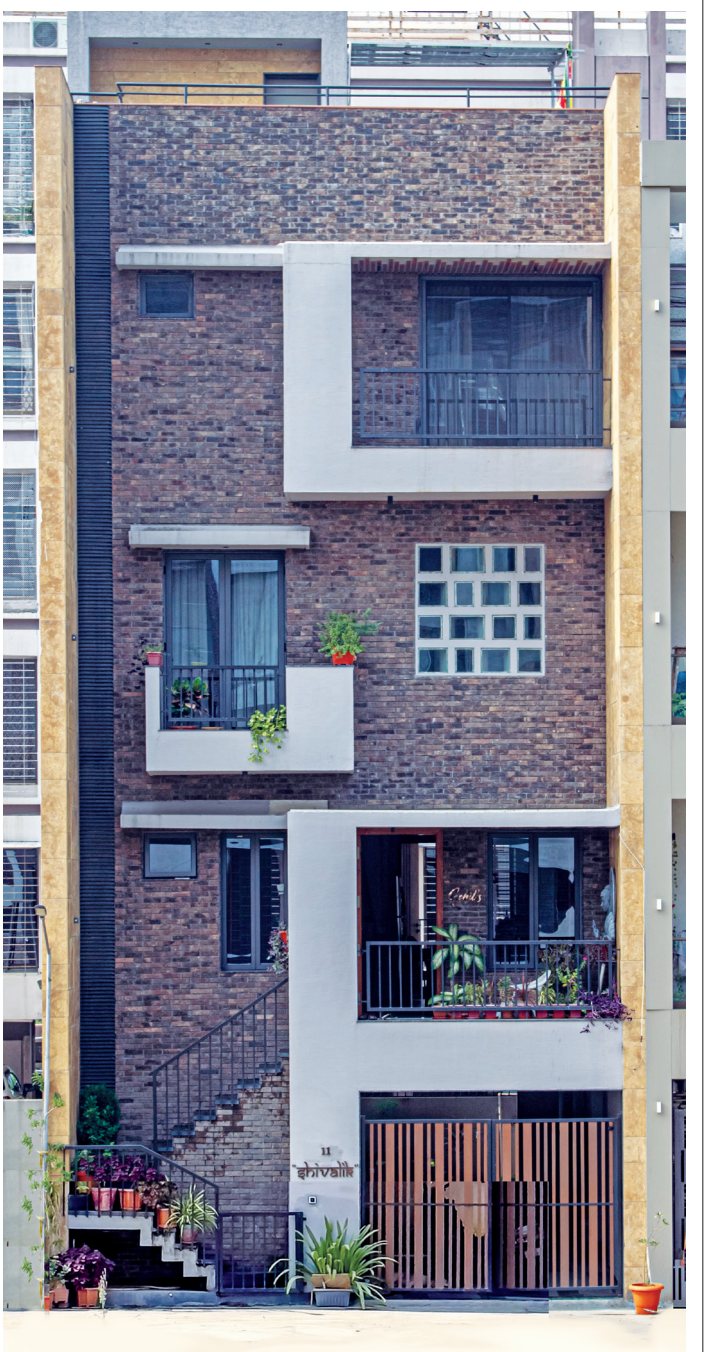

Figure 1: Front Facade facing east direction

the interesting patterns formed by the natural lights through punctures on its internal walls or on the external facade through voids in massing.

The sectional division of the building is such that ground floor is to be used for vehicular parking and also it has a small bedroom for guests. The long space in the ground which is almost 40 ft. deep is envisioned to be used not only for parking but it also to be used by children for playing or for family social events whenever required. The family spaces start from the first floor which has living area, kitchen, dining space, parents' room and a common toilet. The above two floors are dedicated for three bedrooms with attached toilets, informal sitting and a pooja space. The residence has an 'open plan' where visual connectivity among all floors is a major design decision. This visual and verbal interaction which happens among different family members while on separate levels adds value to their social life especially when three generations are living under the one roof.

"Kids, come downstairs, the lunch is ready", calls grandmother from the kitchen located on the 1st floor.

"Yes, coming in a minute", replies the granddaughter while coming out from her 3rd floor bedroom.

The house is designed with the idea of maintaining the appropriate scales and volumes into the design of various spaces. The entry to the house is from the front staircase which leads to the first floor semi open entrance foyer of 6 x 12 ft (Figure 2). This is purposefully given a low height of 8 ft. to have its own enclosure and give a sense of cosy feeling to the users with greenery around. But as you enter the living space ((Figure 3) which is 20 ft high, there is an experience of volumetric transition which is further enhanced when a person moves ahead towards the dining space (Figure 4) which is again 30 ft high covered with 2 layered laminated glass roofs on top. This glass roof keeps the house lighted in most times of the day and is detailed out in sections by giving metal louvers at the sides which helps the hot air coming from the first floor to exit from the front and back terraces. The heighted volume of spaces is also assumed to be suitable for the hot and humid climate of the city to get thermal comfort. The second floor has a younger son's bedroom and a large pooja space (Figure 6) which also has an informal sitting (Figure 5) which can be used when guests are around. The third floor is dedicated to the master bedroom and daughter's bedroom (Figure 7) with their attached toilets. The central staircase and glass roof divides the terrace into front and back terraces. The former is designed to be used for social gatherings in the evening and the latter can be used as a service terrace.

Figure 2: Entry Foyer at first floor

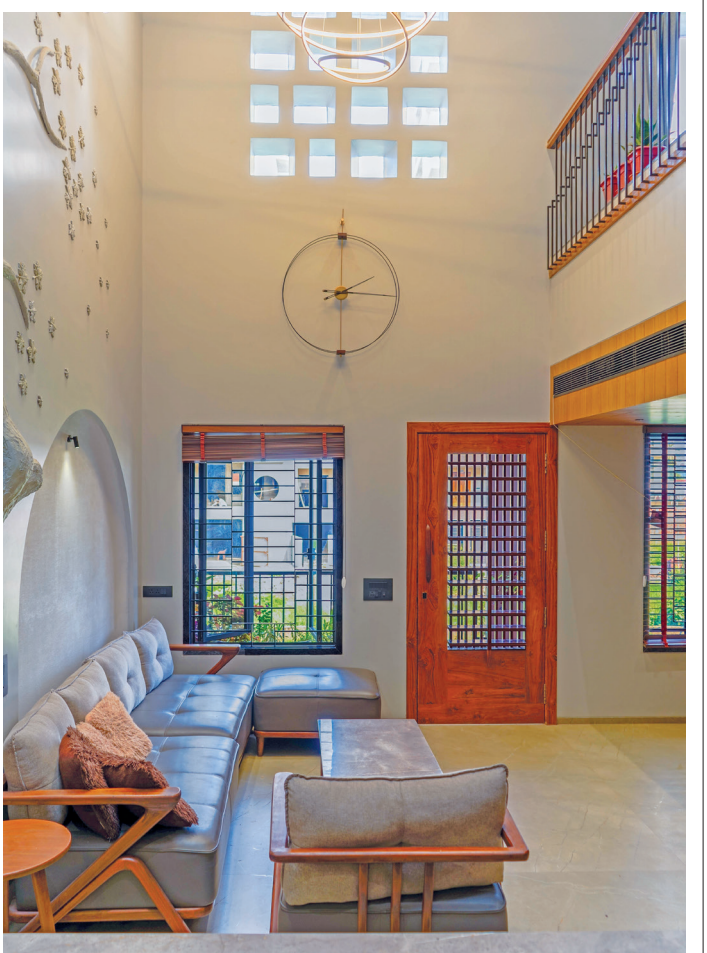

Figure 3: Living space with high volume

Figure 4: Dining space with high skylight

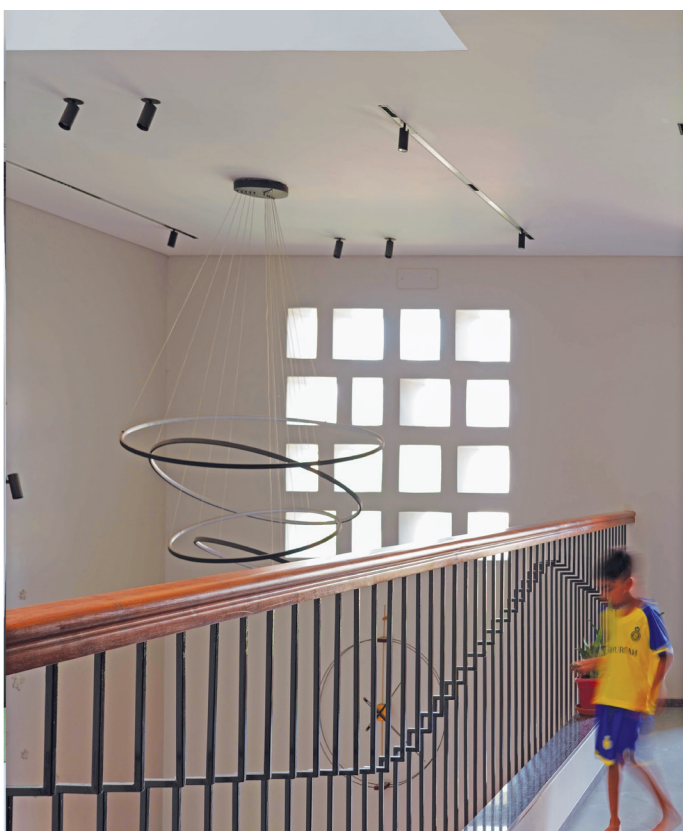

Figure 5: Common sitting overlooking in living area

Figure 6: Pooja space at second floor

Figure 7: Daughter's bedroom at third floor

Another important feature of the planning is that common spaces like passages and staircases at all levels are kept to minimum so that the bedrooms can be given appropriate sizes. Apart from the meticulous planning of the house, the emphasis is also given to the detailing of elements like the internal railings on second and third floor which are designed in such a way that low height brick parapets can be used for seating purpose in the informal interaction spaces.

The facade of the house is the composition of masses in the form of balconies of different sizes at the different levels. It is basically layered with three finished materials - the brick cladding on one of the

Figure 8: Art work and play of light from central skylight

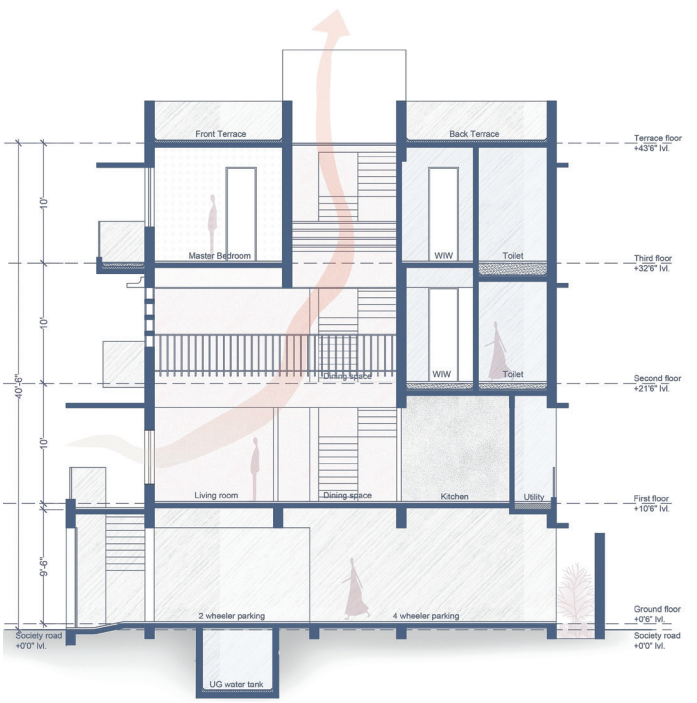

Figure 9: Longitudinal Section

surfaces, while all surfaces that project ahead of the brick cladding are coated with texture paint; and yellow sand stone is used on the two long side walls. The purpose of doing so is to highlight each planar surface of the facade by differentiating it with colour and texture. The metal railings are powder coated with dark grey colour used internally and externally are minimalistic in design so that they act simply as a physical barrier and not try to dominate any surface.

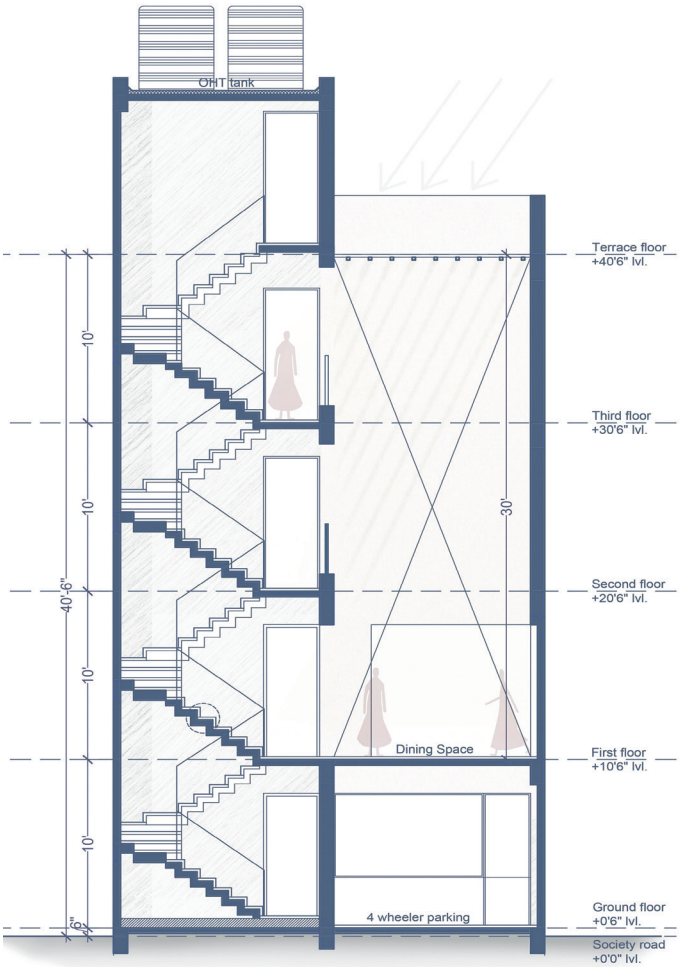

Figure 10: Cross Section

Overall, the design of the project is to create an architecture which promotes social interaction among all family members - something that is lacking in today's urban life - by creating pockets of spaces which can be used in varied ways in different times of the day. The individuals from all 3 generations of a family can use these formal and informal spaces as per their social needs and allow them to be on their own.

All images are sourced from the author.

Chintan Shah (A20303) is an Assistant professor at IDPT, Sarvajanik University, Surat. Founder of his design firm 'Shodh' Architects, he started his professional journey under the very reputed design firm of the city, 'Aangan Architects' whose teachings are clearly evident in his own design philosophies like exploring design with the mass and volume, experimenting with the different materials, playing with the natural light or using various components like staircase as an artistic element into the designs.
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Architecture and Aesthetic Sensibility of Sen Kapadia

By Ainsley Lewis

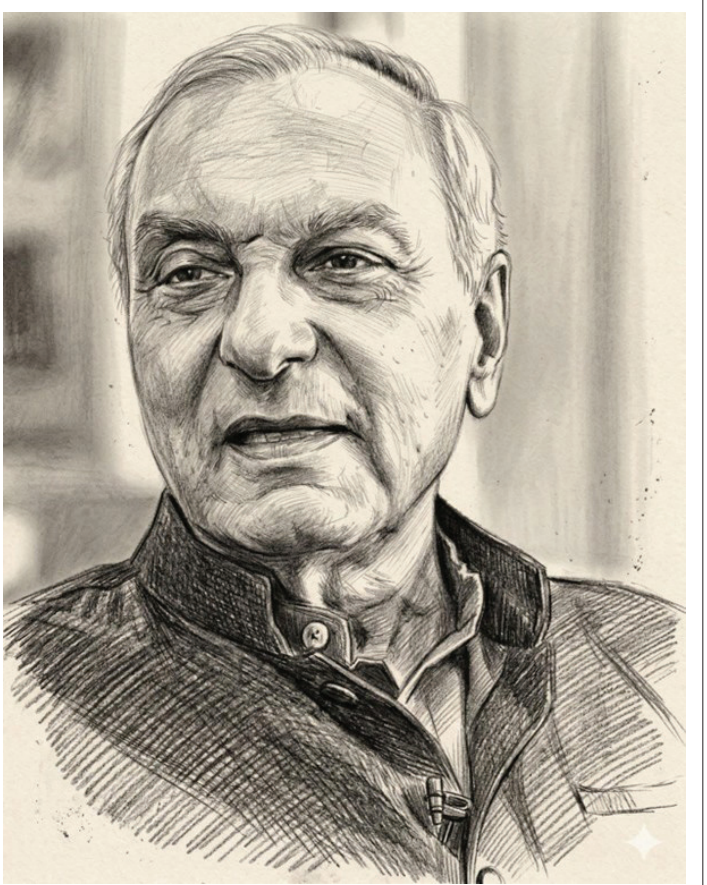
In 1990 sitting in the CEPT library browsing through some architectural magazines (Inside Outside Feb/ March 1990) an architect's office caught my attention. Spatially it was a linear double volume, white space flooded with natural light. Punctuating this space was a tree and at the end of this space was a volume with a curved roof. A colourful kite with a long tail soaring towards the skylight. All these elements were very exciting to a young graduate who had just begun his academic architectural journey.

Fast-forward a few years and I am sitting across the architect of this wonderful space. After discussing architecture and my thoughts about it, I started my internship. Thus began my journey to interact, learn and understand the design philosophy of Sen Kapadia.

Although an intern I was treated like a young professional making working drawings and visiting sites. Sen would often talk about being a first-generation architect and developed his aesthetic sensibility on his own through this engagement with great masters like Kahn and Doshi, visits to contemporary architecture, readings from books, but most of all from art, film and jazz (Check out this video, "Atlas Eclipticalis score" https://share.google/mV3ZYvvOGhPXrUWt6).

The learning at the office was great and this was more an extension to architectural school. Saturday was something to look forward to as Sen would invite staff into his cabin and discuss film, architecture, art, music and any performance he attended. All of these were influences to his aesthetic sensibility.

His library was well curated with several books that one could borrow and he would regularly purchase more books on art and architecture introducing me to Dadaism and the works of architects such as



Portrait sketch of Sen Kapadia (F03772)

Louis Barragan and Emilio Ambasz. His hunger for contemporary discourse was satiated through this engagement and that would be part of his references for architectural aesthetics. This aesthetic was cultivated through his eclectic engagement with the arts. Through all these discourses I got to understand his work. His aesthetic sensibility was unique and to understand and appreciate his work one's mind's eye had to be trained. This sensibility had to be cultivated and acquired through such readings, as Sen did not settle for anything conventional.

After having completed my architectural studies, I rejoined the office. The next five years gave me deeper insight into his aesthetic sense. Discussion with fine minds like Prabhod & Mitra Pareikh, Teyeb Mehta, Sarayu Ahuja and many such individuals was something that gave me an opportunity to further understand Sen's thinking.

He was a stickler for time and was punctual for every meeting. Even during the era of wired phones, he ensured that everyone's time was respected. We would have to leave the office at 6 pm and he encouraged us staff to engage in visits to art galleries and cultural performances instilling in us an appreciation of the arts. The discussions on the way to and from these engagements were riveting with us staff having an open dialogue about the work of art.

There were a variety of competitions and projects he worked on and many of which have been architecturally manifested. They have been published in books and magazines. After the Masters (Vikram Bhatt & Peter Scriver,1990), Sen Kapadia Architect in Pursuance of Meanings (2022), In conservation on contours of contemporary Indian Architecture (Balkrishna Doshi & Sen Kapadia,2007) are some of the books that have featured his work and captured his thoughts about architecture. His design interventions were aesthetically pleasing. However, one needed to have an acquired aesthetic sense to appreciate his vocabulary.

The IIT Computer Science Centre:

The IIT Computer science centre is one such competition winning institutional building. The volume of the building is split into two blocks sandwiched with a scissor stair (Image 1). This stair was an informal 'third space' for students as a breakout space between their academic sessions. An insight into the detailed drawings indicate his concern for proportions of the tectonic elements enhancing the overall aesthetic of the building. The reading of the working drawings indicates how the concrete structural elements were encased in brick to obtain the appropriate proportion (Image 1).

The Sumeru Apartment building:

The Sumeru Apartment building was another such architectural marvel. An apartment block for 'vertical neighbourhoods' that was designed for 50 aspiring middle-income families within the rigid building regulations of Bombay.

Through active involvement with each of the families Sen created individual plans recognising the

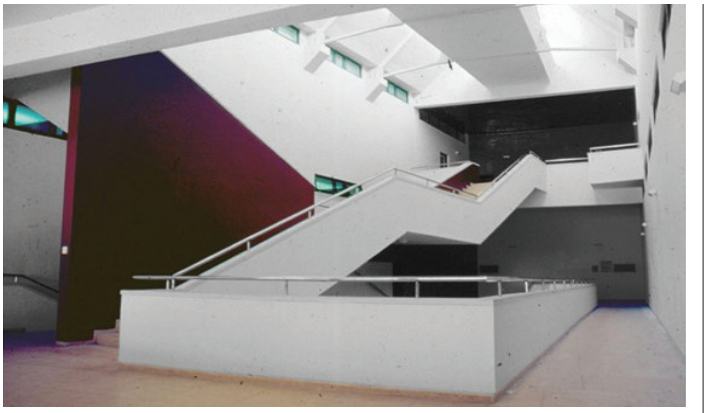


Image 1: View of the computer science and engineering department, IIT

individuality of every family. He designed spaces for all the age groups for community living. In this project his conviction for community spaces was reinforced by providing a refugee area more than the required fire-fighting norm, for the residents to congregate He patiently sat in a chaotic municipal office and explained the importance of communal spaces to the municipal engineer who was flabbergasted with such

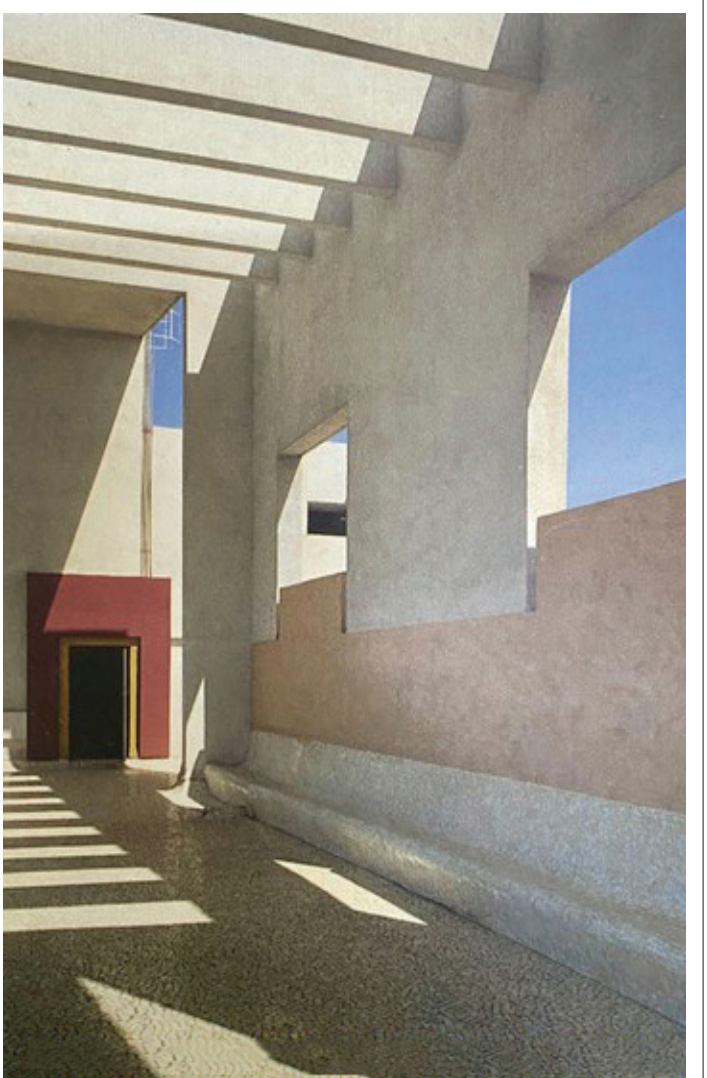


Image 2: Sen Kapadia's vision for a humane habitat

a proposition! (Image 3) The terrace at the eleventh floor was an outdoor space for cultural activities with an inclined pergola to provide shade (Image 2).

The aesthetic of this apartment is very distinct from the other buildings along the street (Image 4). The colour palette for the vertical blocks was borrowed from the miniature painting of Shrinathji Temple in

Image 3: Sumeru Apartment: view of communal space at the 8th floor

Nathdwara that was on display in his cabin. A visit to the building several decades later indicates that the architect's aesthetic inherited by the members is still retained with minimal intervention.

Gujarat Research Society:

When invited to intervene within an open area for a school building for Gujarat Research Society Sen's concern for open spaces in the city of Mumbai led to an intervention that was a double height bridge building that connected the existing primary and secondary sections. This bridge building as it was called at the office was supported on four large pilotis to retain the open playground for the school children and a space for cultural activities (Images 5 and 6).

These three projects showcase his leanings towards the urban issues that were part of his concerns about the city. Everything he did was carefully crafted through his aesthetic sensibility, whether it be drawings at his office, annual New year greeting card or his serigraph prints (Image 7). Closely reading James Sterling's axonometric drawings he evolved his own vocabulary of presentation drawings combining axonometric and miniature drawings (Image 8).

He introduced me to KRVIA and was amused when I went to his cabin to inform him that even though I was well-prepared for my first lecture there was a mass bunk by the students. All he said was welcome to an Architectural school in Bombay.

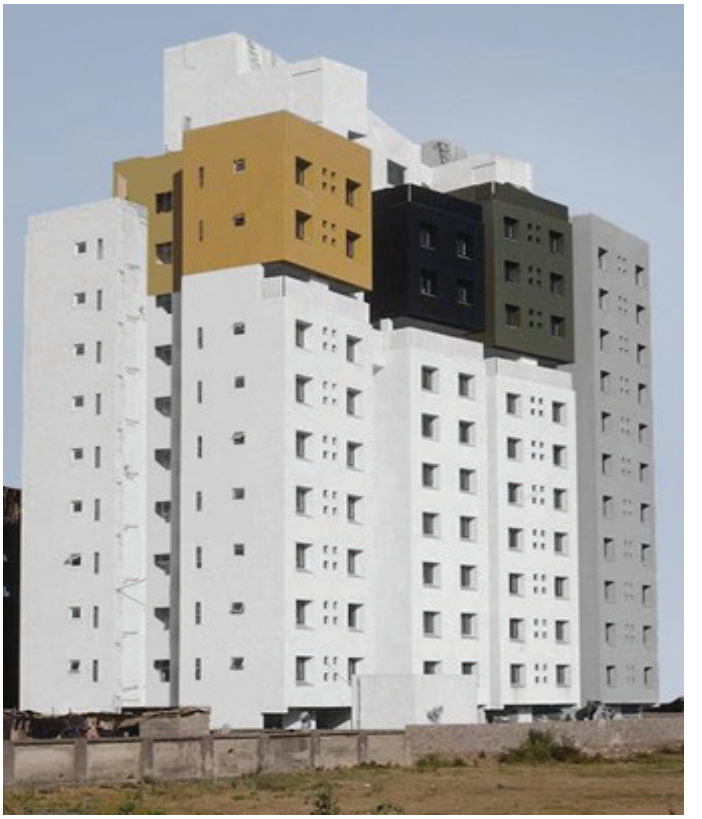


Image 4: Sumeru Apartment: exterior view

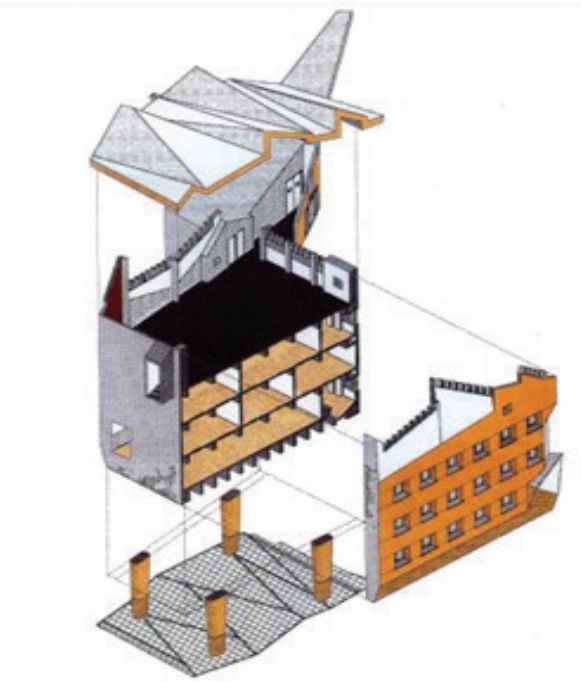


Image 5: Conceptual diagram for GRS building

He was passionate about Kamla Raheja Vidyanidhi Institute for Environmental Studies, Mumbai (KRVIA) and within five years founded an architectural school that made a mark in the city. The founding of the school was significant as any of the 'isms' in architecture. Architecture as a cultural practice being the motto, he invited fine minds from allied disciplines such as

Image 6: Gujarat Research Centre at Mumbai, 1998

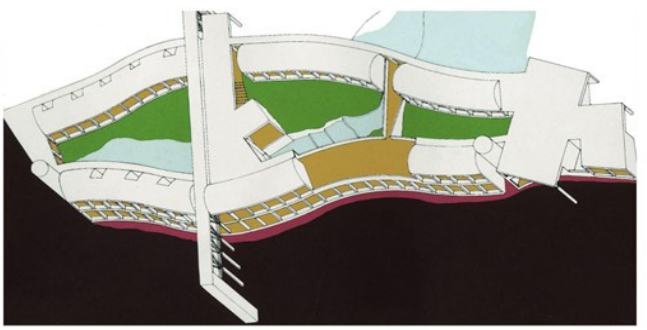


Image 7: Walmi-Axonometric view

Tyeb Mehta, Akbar Padamsee, Parag Trivedi, Atul Dodia, Assad Debo to name a few. The students had the opportunity to meet architects Doshi, Vasavada, Varkey and several structural engineers who understood the beauty of structural engineering Within a short span of 5 years, he planted a seed that had deep roots that left his mark. The 'Conceptual design school' as he would often refer to it continues to grow on this solid foundation continuing the legacy of programs that he set in motion such as the Encounters (individuals from various disciplines are invited to present their work to students), Design Cell (Research and consultancy of the school- the first project being the Charles Correa Mill land report), Reflection publications (Essays about architecture contributed by faculty), Introductory workshop (An initiation to architecture for graduate students) and the Kamla Raheja Memorial Lecture Series (Lecture by an eminent architectural guest speaker).

Image 8: View of proposed Kushi Nagar Complex

He was the mighty oak that stood his ground creating interventions that were aesthetically pleasing before bespoke became a buzz word (Brocker House) Aund Pune (Image 9).

Image 9: Brocker House- External view

Like the mighty oak his vision was deep-rooted and that is the architectural and academic legacy he has left us. Sen, will never be forgotten.

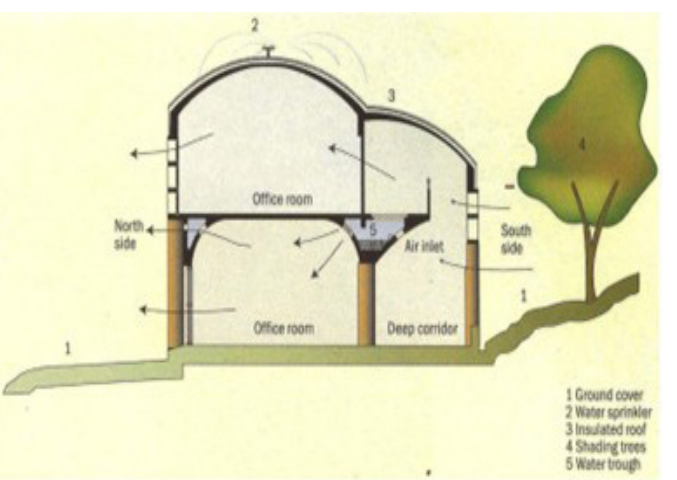


Image 10: Walmi- Section

Image 11: Author explaining his work to Sen Kapadia

Climate sensitive through passive architecture, before we talked about climate resilience - Water and Land Management Institute (WALMI) Bhopal (Image 10) and set up an architectural institute of excellence before branding became a buzzword (KRVIA).

Like the mighty oak his vision was deep-rooted and that is the architectural and academic legacy he has left us. Sen, will never be forgotten.

Prof. Shireesh Deshpande

An Architect of Spaces and Minds

By Dr. Sampada Peshwe, Prof. Shriram Marathe, Ar. Vasant Ranade, Ar. Dilip Naware, Ar. Pradyumna Sahasrabhojanee

With the passing of Prof. Shireesh Atmaram Deshpande (F00717) on the 10th of April 2026, not only Nagpur but the entire nation has lost a colossus. Spanning more than six decades, the illustrious career of Prof. Shireesh Deshpande made him one of the towering pillars of the nation's architecture fraternity.

Prof. S. A. Deshpande had a commanding personality; his mettle forged through his foundational years of working with several eminent architects on projects of national significance. In his early career days at Chandigarh, Prof. Deshpande experienced the marvels of Le Corbusier's works on the original 'Smart City' project in Chandigarh. He had the privilege of collaborating with prestigious architects on high-profile projects aligned with National vision, such as the Baroda Refinery and the Bhabha Atomic Research Centre (BARC) complex in Mumbai.

He followed his inner voice and decided to forego a highly promising career to focus on Teaching - shaping the future generations of architects with a deep understanding of Indian culture and milieu while rooted in modern architectural thought and technique. His distinguished journey in architecture education spanned more than half a century, marked by steadfast dedication, innovative pedagogy and visionary leadership. His work has left an indelible imprint on the architectural landscape, establishing him as a revered figure in the academic realm. He fostered generations of architects who now carry forward his ideals and vision and have earned eminent positions in the architectural ethos at national and global level. His renowned students include three past Presidents of the Council of Architecture of India – Prof. Uday Gadkari, Ar. Habeeb Khan and

Prof. Shireesh Atmaram Deshpande
Source: IIA Nagpur Centre

Prof. Abhay Purohit, as well as Dr. Ujwala Chakradeo, the Vice Chancellor of SNDT University, who attribute their success to his guidance, considering it the key ingredient that propelled them forward.

Shireesh Atmaram Deshpande is an iconic architectural figure celebrated for his invaluable contributions and unwavering dedication to the field. As the Head of Department for seventeen years at the Department of Architecture, VRCE (Visvesvaraya Regional College of Engineering) Nagpur; and an Emeritus Professor of Architecture, Design Chair and Academic Consultant at SMMCA and PIADS Colleges in Nagpur, his expertise and experience have shaped the landscape of architectural education nationwide and overseas (Image 1). Not limited to mere mentorship, he was instrumental in starting the

B.Arch. course at the Department of Architecture of LAD College, Nagpur, which later became Smt. Manoramabai Mundle College of Architecture (SMMCA). In his quest to advance architectural education, he played a pivotal role, with Dr. Ujwala Chakradeo, in initiating the unprecedented Master's program in Architecture Education at SMMCA, Nagpur. He has made an immense contribution to the formulation of the Teachers Training Program and conducted by SMMCA, Nagpur from 2007 to 2014 for NIASA (National Institute for Advanced Studies in Architecture), now called COA – TRC (Council of Architecture Training and Research Centre) (Image 2).

He was actively involved in research and academic discourse throughout his career. Through his scholarly pursuits, Prof. S. A. Deshpande published and presented over 50 papers at distinguished national and international forums and authored two books – The Ultimate Taj, published by SMMCA, Nagpur and Copal Publishers (Image 3) and The Design Dialog: Dialectics of Design in Architecture, published by the Council of Architecture, India (Image 4), firmly establishing his authority within architectural academia.

Prof. Shireesh Atmaram Deshpande was among the founder members of IIA Nagpur Centre and played a crucial role in the shaping of IIA Nagpur Centre, especially in its formative years. He served as the second Chairman of IIA Nagpur Centre. His role in IIA expanded to the national level, with him serving as a Council member, Jt. Hon. Secretary and then the President of IIA. During this period, he enthusiastically propagated the institute's objectives – 'To encourage the study of Architecture, to elevate the standard of Architectural Practice and by mutual support, to promote the interests of Architects throughout India'.

He put IIA on the global map by being appointed as the Chairman of the Committee for Architectural Education of ARCASIA (Architects Regional Council Asia). He also represented the Institute on the International Union of Architects (UIA), the South Asian Association for Regional Co-operation of Architects (SAARCH), and the Commonwealth Association of Architects (CAA) (Image 5).

His work deeply shaped the architectural ecosystem of Nagpur, but his influence reached far beyond. Prof. S. A. Deshpande helped advance architectural learning across not only India, but Asia, leaving a lasting legacy in the profession. He was deservedly decorated with the 'Prof. Madhav Achaval Gold Medal' by IIA for his profound contribution to architecture education.

Image 1: Prof. Deshpande engrossed in design deliberations with students in the design studio
Source: SMMCA, Nagpur

Image 2: Prof. S. A. Deshpande sharing his thoughts on the teaching of architecture with faculty members
Source: SMMCA, Nagpur

Image 3: Publication Ceremony of Prof. Deshpande's book 'The Ultimate Taj' by SMMCA, Nagpur
Source: SMMCA, Nagpur

In honour of his immense contribution to architecture education, the Prof. S. A. Deshpande Studio design Competition was constituted by the IIA Nagpur Centre in 2009. Typically, fourth year students from eleven architecture institutes under the aegis of Rashtrasant Tukadoji Maharaj Nagpur University

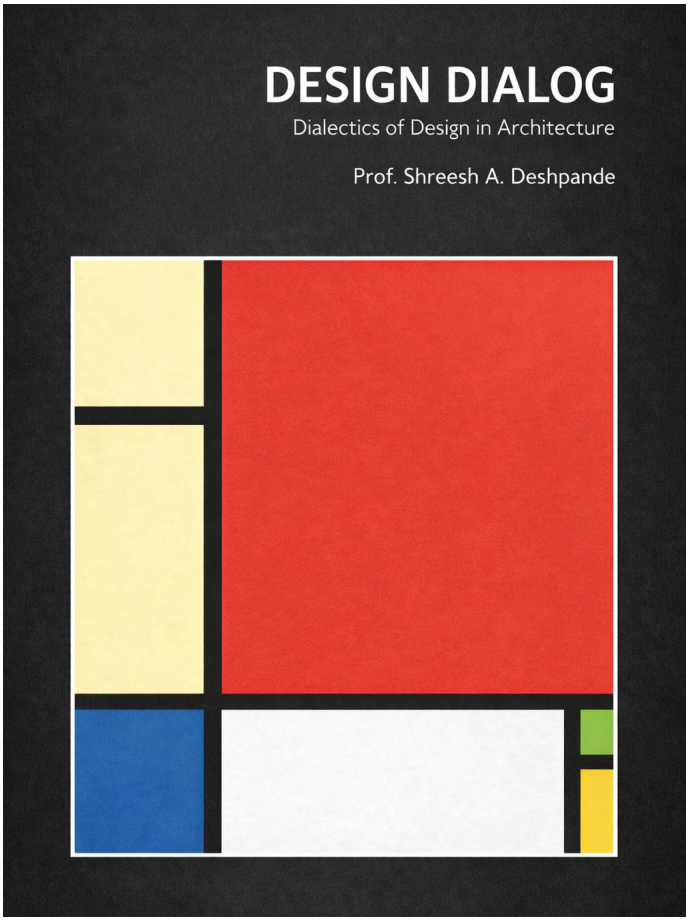


Image 4: Prof. Deshpande's book 'Design Dialog: Dialectics of Design in Architecture'
Source: Unmesh Deshpande

Image 5: Prof. S. A. Deshpande at the 3rd Asian Congress of Architects at Seoul, Korea (1988)
Source: Unmesh Deshpande

competed in this competition, known popularly as SADSDC, which will now see its 18th iteration in the upcoming academic year.

Prof. S. A. Deshpande was famously addressed as SAD Sir by his students. In fact, his jocular nature is evident from the fact that he would openly joke about this sobriquet bestowed upon him by stating 'SAD is my acronym, not my status'! Some of his close friends, colleagues and students have shared similar warm and candid memories and stories of Prof. S. A. Deshpande, offering unique perspectives into his role in the shaping of IIA Nagpur Centre, the nurturing of critical thinking among students as well as the architecture fraternity and the enriching of the architectural ecosystem at large.

A TEACHER OF TEACHERS AND MASTER OF MASTERS

By Prof. Shriram Marathe

Shireesh Atmaram Deshpande was not only a teacher but an educationist par excellence. He left a lucrative job as an architect with Ar. Choudhari at Chandigarh and joined as the head of department at Govt. Polytechnic which converted into the College of Architecture and moved to VRCE (Visvesvaraya Regional College of Engineering). He believed that students should not only listen to teachers but go beyond in acquiring knowledge. His favourite subjects were Architecture History and Design. He had inherited the mastery over language from his learned parents, i.e. Atmaram Deshpande and Kusumavatibai Deshpande and worked hard to improve it. Many of the senior architects are his students and many are now teachers. They speak very fondly about the way Prof. SAD (as he was lovingly known) used to teach and are grateful. He actively helped the teachers to further their knowledge.

Prof. Deshpande was anxious to get professionals to be a part of the Indian Institute of Architects. A number of meetings were held in his garden to try and get Nagpur to be a Centre. Nagpur became an early centre and had the distinction of holding the National Convention at Nagpur where Ar. Doshi was awarded the IIA Gold Medal. This gave Nagpur architects a taste of conferences and they started attending various conferences. Later, Nagpur Centre hosted Young Architects conferences.

When the first computer arrived in VRCE, he was the first to learn to use the computer with the tape recorder as the memory bank. The new beast needed an air-conditioned room. So, it was provided. Now of course the younger generation will find it difficult to imagine these primitive stages.

Having being very active in IIA, Prof. Deshpande became the President of the Institute and attended international conferences, particularly educational. He was awarded the 'Prof. Madhav Achaval Gold Medal' by IIA for his meritorious contribution to architecture education.

He wanted to further the education field in architecture. He helped LAD College, Nagpur establish a 4-year course of Interior and Home design as LAD had grant for only 4-year B.Sc. courses. The course was designed as an equivalent to three years of Architecture. The students could join 4th and 5th year of architecture course on completion of their B.Sc. to get their B.Arch. degree. He also encouraged post graduate courses in architecture. His efforts with Prof. Ujwala Chakradeo started the unique Masters in Architecture Education degree in SMMCA, Nagpur.

Prof. Deshpande was very easy to get on with his knowledge of the masters and could engage participants for many hours. In his loss we have lost a great teacher, an easy conversationist and a likable person.

A JOURNEY OF KINSHIP AND VISION

By Ar. Vasant Ranade

The roots of IIA Nagpur Centre lie in AAN (Association of Architects of Nagpur), which was formulated sometime around 1970. A few architects who were a part of AAN felt that a Nagpur Centre of the Indian Institute of Architects could be started. The minimum number of members required to start a new centre was twenty-one. Accordingly, twenty-two architects came together to start the IIA Nagpur Centre, which was established on the 26th of August 1973. It should be noted that the Nagpur Centre was the second IIA centre in the country, after IIA Pune Centre.

The initiative to start the Nagpur Centre was spearheaded by stalwart architects of Nagpur like Ar. Shyam Mavlankar, Prof. Shireesh Deshpande, Ar. A. S. Shinde, Prof. Ashok Chhatre and Ar. Atulchandra Mendhekar who was a young architecture graduate at that time. Ar. Shyam Mavlankar was the first Chairman of IIA Nagpur Centre and Prof. Deshpande took over as the Chairman of IIA Nagpur Centre for the next term, i.e. 1975 – 77, supported by Prof. Ashok Chhatre as the Hon. Secretary (Image 6).

One of the first initiatives started by Ar. Shireesh Deshpande as the Chairman of IIA Nagpur Centre was a Reading Club wherein recommended books on architecture were read and critically discussed by the members of the club. One of Prof. Deshpande's greatest strengths was the ability to motivate and inspire his peers, colleagues and students towards various initiatives.

Image 6: Prof. Ashok Chhatre and Prof. Deshpande enjoying some light moments together
Source: Unmesh Deshpande

Such was the faith the members of IIA Nagpur Centre had in Prof. Deshpande that they encouraged him to contest for the position of President of IIA and with the unwavering support of his IIA peers, he was elected as the President of IIA for the term 1992 – 94 (Image 7). As the IIA President, he embarked upon several unprecedented endeavours. He was the first IIA President to visit a majority of the IIA Centres at his own expense in order to foster genuine kinship with the members. He also took great efforts to connect with the student community, thereby establishing a connect of students with IIA.

I became an active member of IIA Nagpur Centre in 1986 during the organising of the 'Architectonic' event. One of my interesting memories of Prof.

Image 7: Prof. Deshpande as the IIA President
Source: Unmesh Deshpande

Deshpande is from the time when the IIA Nagpur Centre delegation, consisting of Prof. Shireesh Deshpande, Prof. Ashok Chhatre, Ar. Indrakumar Advani, Ar. Ramesh Bhambhani, Ar. Dilip Naware, Ar. Atulchandra Mendhekar and me, attended the 4th IIA National Convention at Ahmedabad in 1987. Prof. Deshpande, who was the Hon. Secretary of IIA at that time, informed the IIA Nagpur team that there were no bidders for the next IIA National Convention and that IIA Nagpur should give it a try. All of us team members immediately agreed with the suggestion, went ahead with the bidding and won the bid. Subsequently the 5th IIA National Convention was held at Nagpur in 1989.

Another practice which Prof. Deshpande pioneered was the official formation of an Advisory Committee of the IIA Nagpur Centre, the first such committee of IIA. The committee consists of the past chairmen of the IIA Nagpur Centre, with the Chairmanship of this committee taken up by the past chairmen in rotation, in the sequence of their earlier terms. The current Chairman of IIA Nagpur Centre takes up the role as the Secretary for this Advisory Committee. This practice is still ongoing, with me currently having the honour of serving as the Chairman of the Advisory Committee of IIA Nagpur Centre.

Prof. Shireesh Deshpande's vision, dedication, and pioneering spirit continue to illuminate the path of IIA Nagpur Centre. His legacy is not only etched in the institution's history but also in the hearts of generations of architects who were and will continue to be inspired by his leadership and humanity.

A LIGHT THAT LIVES WITHIN US

By Ar. Dilip Naware

I first came in contact with Prof. S. A. Deshpande at the end of 1967 in VRCE (Visvesvaraya Regional College of Architecture) campus, not as our teacher, but as a witty person. Once some of us students of final year B.Arch. were gathered on a wayside corner, enjoying samosas and tea. He happened to be passing by and joined us. He praised our gathering and savoured tea with us, his clever dialogues accompanying the moment, which left us all fascinated! In the truest sense he taught us the 'other side' of Architectural Design! He mentioned at that moment that 'Architectural Design cannot be taught' which became his permanent message to all students until his retirement. That is how I became his student, not through any lecture or tutorials, but through companionship.

I was his favourite buddy in our concurrent relationship with IIA Nagpur Centre, so much so that I would feel guilty if I was not able to meet him within a month. He was famously infamous for his sarcastic remarks and infamously famous for his sharp remarks and ability to solve any problem related to IIA Nagpur Centre administration. He was a diehard teacher and astute analyst, with an excellent knowledge of English and Marathi. I don't recollect whether he wrote or ventured in linguistic writing, but he certainly had the ability to write, like his legendary parents Shri. Atmaram and Smt. Kusumavati. When IIA Nagpur Centre decided, under my chairmanship, to host the National Convention, he was the first to oppose me, since he felt that I lacked the experience. But very soon, he turned into my strongest supporter, confident of my calibre which I had developed under his mentorship. Like good friends, we had our differences of opinion several times, but in difficult times he always stood by my side and staunchly supported me.

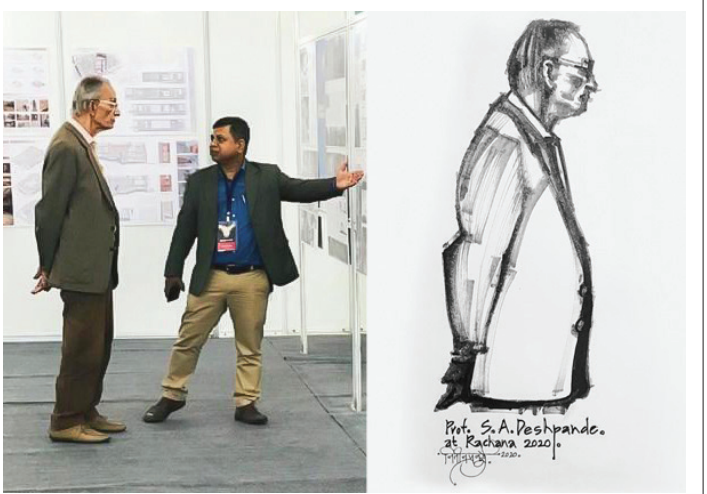


Image 8: The iconic stance of Prof. Deshpande captured by Ar. Nitin Kurvey.
Source: IIA Nagpur Centre

He was a combination, in the true sense - of facial expressions like his mother and a tall legendary personality like his illustrious father (Image 8). For the architecture fraternity, he was a sure-handed guide and a great source of knowledge and experience.

In recently times he had started to face dementia. However, he could remember his theories and experiences, although several times he couldn't remember the names of his visitors. To my surprise he would always recognise me! I don't know whether it a was boon or a bane, but I took it as an honour, for I was among the very few persons who he could recognise.

I still remember our samosa and tea meeting way back from almost 60 years ago, and his lasting expressions and impressions - my guiding force. As far as I am concerned, he hasn't left us. He resides in us forever.

THE LAST WORD, THE INFINITE DIALOGUE

By Ar. Pradyumna Sahasrabhojanee

Like most of architects in IIA Nagpur Centre, I came to know Prof. Deshpande when I joined the Department of Architecture at VRCE (Visvesvaraya Regional College of Engineering) Nagpur, now VNIT (Visvesvaraya National Institute of Technology). Prior to that I had heard about him as a friend of my father Ar. B. D. Sahasrabhojanee (Chairman IIA Nagpur Centre 1977-79), but did not have the opportunity of a personal meeting. Prof. Deshpande was the Head of the Department when I joined as a student and remained so until 1981-82 when I completed my graduation. In those days, the system of rotational head-ship was not introduced and Prof. Deshpande, if I remember correctly, remained as the Head of Architecture Department for 17 years.

In his younger days, Prof. Deshpande had worked on the Chandigarh project under Le Corbusier, of whom he was a great admirer. In my student days I was also greatly attracted by Le Corbusier's brutalist and sculptural architectural style. Prof. Deshpande asked me to read Le Modular, in which Le Corbusier discussed and proposed a system of proportions and dimension to be followed by his adherent architects. But when I read both the books in the series, I found that there was a flaw in Le Corbusier's theory which was inadvertently revealed by Le Corbusier himself in his book. His anthropocentric system was based on male human dimensions and the model which he had chosen earlier for deriving the dimensions was a standardized French Man. However, some of the dimensions which he derived did not match with his own scheme of things and designs which he had employed; so, he decided to use an Englishman's proportions (who was slightly taller) as a more perfect specimen. This change of track by him led me to think as to why a full-grown man should be considered as the standard? Why not women? Why not babies, whom everyone finds charming? And why not a tree? Why the anthropocentric approach, when nature is so beautiful?

I discussed this with Prof. Deshpande, who was furious at first for finding faults with his icon, but later on came to the conclusion that that no such set of dimensions could be imposed on architects.

Prof. Deshpande was my guide for my thesis. I used to visit him from time to time, although after long intervals. But apparently, he approved of the work which I was doing and never expressed a desire that I must meet him frequently. Finally, I took all the drawings, physical model and report to him for his approval. He gave me a go-ahead but asked me as to which juniors had worked with me on the thesis work for drafting, model making etc. I answered "No one". It was at this time that he really admonished me for not following the tradition of the Department, and told me that if I had taken along a few juniors, they would have learnt a thing or two from their participation.

Prof. Deshpande taught the History of Architecture, which was one of my favorite subjects, and he taught the subject with a lot of command and passion. Later on, when the Vidarbha Heritage Society formation was going on, Prof. Deshpande not only agreed to join the group but also agreed to become a petitioner in the PIL in which we pressed for the notification of Heritage List, Rules and Regulations for the city. As a result of the petition, the High Court formed the first Heritage Conservation Committee for Nagpur City under Nagpur Municipal Corporation for doing the Heritage listing and preparation of Regulations. As suggested by the High Court, Prof. Deshpande and I were nominated by the Vidarbha Heritage Society to be on the first Heritage Committee. Other members of the first Heritage Committee were Dr. B.R. Andhare (Historian), Ramesh Ladkhedkar (Naturalist) and P. T. Mase (Structural Engineer), fine men who we have unfortunately lost over the years. As the youngest non-officio expert member of the Heritage Committee, the work of going around the city for listing and documentation purposes was upon me; but all the ex-officio members supported my work with full gusto and force of conviction. Due to support from all of them, natural precincts like rivers, reservoirs with their catchments, hills, open spaces like Panjabrao Krishi Vidyapeeth Land, Kasturchand Park, etc. could be included in the Heritage List. This was the first instance of inclusion of natural heritage precincts in any city's Heritage List in India. Within this group also, Prof. Deshpande, who served as the Chairman of the sub-committee for listing purposes, always carried his weight within the sub-committee and with the Chairman of the Heritage Committee, town planners and the Commissioner as well; and this helped in finalizing a very comprehensive Heritage List.

Prof. Deshpande was well known for his extraordinary eloquence and sharp observations. This led to a natural tendency on his part to have the last word and to never lose a point of debate, but all without any malicious intent. Underneath the façade of intellectual stubbornness, I often found that he had a very open mind, and even after winning a point, he was ready to see other side and, in fact, next time around made it sure to discuss the argument from the opposite side as well.

Due to his qualities Prof. Deshpande received a lot of recognition and accolades during his lifetime, which were well deserved. People trusted him to do the right thing, and he did not fail them. May his memory stay with us for a long time to come.

MILES TO GO AND WORK TO DO

Prof. Shireesh Atmaram Deshpande was a profound confluence of multifarious virtues – poetic, pragmatic,

disciplinarian, inclusive, exacting, visionary, erudite and the list goes on. What could be a more befitting culmination of this deeply heartfelt tribute to this titan than his own poetic words, embodying his heart and soul, and open to interpretation, like his boundless mind!

There are miles to go and work to do ---------- So said he

There is nowhere to go and no work ---------- Left to be done

That dedication devotion and emotion ---------- Riding on the crest of every wave

That washed the writing on the sand ---------- An empty beach of memory

Thoughts black and white rolled ---------- In the chasms of depression

Thunder in the sky blue and bright ---------- Silent darkness deep beneath

That reassuring helping hand ----------Receding and disappearing

Then I have nowhere to go as yet ----------
Hands as empty that of a donor

SAD sir, we are eternally in your debt for shaping our minds the way you did. You will be fondly remembered as a Daanveer – for generously sharing your immeasurable treasure of knowledge with the world.

(This article is a humble tribute, offered with profound respect and remembrance on behalf of the fraternity of IIA Nagpur Centre.)

Acknowledgement: We are grateful to Mr. Unmesh Deshpande, son of Prof. S. A. Deshpande, for graciously providing information and photographs that enriched this tribute, with portions of the article drawing upon the invaluable material provided by him..

Dr. Sampada Peshwe (F13271), Architect, Academician and Designer, is currently an Associate Professor and the Dean of Academics at Smt. Manoramabai Mundle College of Architecture, Nagpur. She has several national and international publications to her credit, has edited six books and has been a resource person in numerous workshops and teacher training programs. She is a co-opted Executive member of IIA Nagpur Centre and a member of the editorial team of JIIA since 2023.
Email: sampada.ap@gmail.com

Prof. Shriram Marathe (F02815) obtained his Diploma in Architecture from Govt. Polytechnic, Nagpur in 1965 and worked for several years in the UK before establishing his practice in Nagpur in 1987. He served as IIA Maharashtra Chapter Chairman (1998–2000), National Council Member (1997–2004), Secretary of the Publication Board (1994–2000), and Executive Editor of JIIA (1997–2000). With extensive professional experience and several prestigious projects to his credit, he also contributed as visiting faculty at VNIT and fulltime faculty at SMMCA Nagpur.
Email: srm37@marathe.net

Ar. Vasant Ranade (F03943), alumnus of Sir J. J. College of Architecture (1970), began his career with Ar. Uttam C. Jain before founding Ranade & Ranade Architects in Nagpur with his wife Hema. A stalwart of IIA, he was the Chairman of IIA Nagpur Centre (2008–10) and Convenor for several national events. He served in IIA as an Executive Council Member, Western Regional Representative and Council Member from 1992–2003; was the Chairman of Publication Board for nine years and Editor of JIIA for three years.
Email: vasant.ranade@gmail.com

Ar. Dilip Naware (F05329), a 1967 graduate of the Department of Architecture, VRCE, Nagpur, is an accomplished architect noted for his expertise in cinema theatre design. Registered as a valuer in 1973, he is recognized as the nation's most experienced Valuer. He has made significant contributions to the Nagpur DCR 2000 Building Byelaws and NBC. He was a founding member of the Nagpur branch of Institution of Valuers, has served in various capacities and was the first recipient of the IOV Excellence Award. He was the Hon. Secretary (1981–83) and later served as the Chairman of IIA Nagpur Centre (1987–89).
Email: ar.dlnaware@gmail.com

Ar. Pradyumna Sahasrabhojanee (A06256), an Architect and Urban Designer with varied experience, played a key role in erecting nearly 6,000 permanent shelters in earthquake-ravaged Kutch. He served as the Hon. Treasurer and later as the Hon. Secretary (2002-04) of IIA Nagpur Centre. Associated with several academic institutions, he actively promotes eco-sensitive architecture, planning, heritage conservation and ecological restoration. A qualified mountaineer, he also organizes and performs in musical programmes.
Email: sahasrabhojanee@gmail.com

A Beacon of Wisdom and Grace

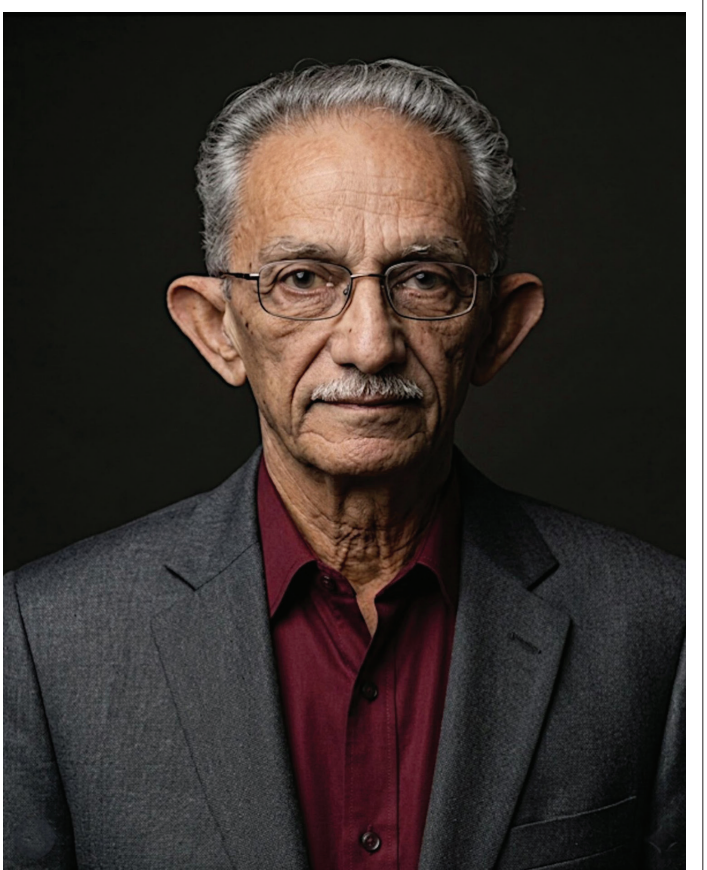
Remembering Prof. Shireesh Deshpande

By Sarbjit Singh Bahga

It is with profound sadness that we mourn the passing of Professor Shireesh Atmaram Deshpande (F00717), a legendary figure in Indian architectural education, who left for his heavenly abode on the night of 10 April 2026 at the age of 91. His departure marks the end of an era in India's architectural field, leaving behind a rich legacy of wisdom, dedication and grace that will continue to inspire generations of architects.

Professor Shireesh Atmaram Deshpande — affectionately called "Dada" by his family and "Sir" by generations of architects — was a towering figure in Indian architectural education. Born on 22 September 1934 in Nagpur, Maharashtra, into an illustrious literary family, he was the son of the renowned poet Kavi Anil (Shri Atmaram Raoji Deshpande) and Shreemati Kusumavati Deshpande. This heritage of intellect, discipline and cultural depth shaped his life's work. He chose the quiet, profound path of teaching over the glamour of corporate practice and, in doing so, transformed the very soul of architectural education in India.

After earning his Diploma in Architecture from the Sir J.J. School of Architecture, Mumbai, in 1956, he obtained a Diploma in Town and Country Planning from the School of Planning and Architecture, New Delhi (1959) and a further diploma from Bouwcentrum, Rotterdam, in 1963. Early in his career, he worked as an architect-planner with J.K. Choudhury in Chandigarh (1959–1961) — where he came under the direct influence of Le Corbusier's vision — then with the Delhi Development Authority (1961–1963) and Gujarat Refineries, Baroda (1963–1965). Yet, at the height of what could have been a glittering professional practice, he made a deliberate



Prof S.A. Deshpande (F00717) (22.09.1934 – 10.04.2026)

and courageous choice: he returned to Nagpur in 1966 to join the Visvesvaraya Regional College of Engineering (VRCE, now VNIT) as an educator. For nearly four decades, until 2007, he served as Head of the Department of Architecture and later became an emeritus professor whose influence far outlasted his formal tenure.

Prof. Deshpande's greatest legacy lies in the classroom and the studio. He pioneered India's first

Figure 1: Prof S.A. Deshpande and his Karambhoomi – the VRCE, now VNIT Nagpur where he served as educator from 1966 to 2007

M.Arch. programme in Architectural Education and introduced the revolutionary "Talkshop to Workshop" pedagogy — an approach that shifted learning from passive lectures to immersive, experiential and interdisciplinary exploration deeply rooted in Indian ethos. He established the Planning Cell at VNIT, which delivered landmark projects such as the master plan of Panjabrao Krishi Vidyapeeth, Akola. As President of the Indian Institute of Architects (1992–1994) and a lifelong associate of ARCASIA, he shaped national policy and standards. His contributions were recognised with the MASA Lifetime Achievement Award and the Madhav Achwal Gold Medal. He was also listed in Marquis Who's Who. In honour of his work, the Indian Institute of Architects instituted the Prof. S.A. Deshpande Studio Design Competition.

Figure 2: Group photo of 1982 batch of short-term course on Industrial Architecture. Prof S.A. Deshpande (front row in the middle) and the author (top row 4th from right)

A prolific and reflective writer, he authored two deeply researched books — *The Ultimate Taj Mahal* and *Design Dialogue – Dialectics of Design in Architecture* — that remain essential reading for students and practitioners alike. The book on the Taj Mahal stands out for its rarely seen architectural drawings of the monument, photographs taken by the author himself from unique vantage points, documentation of hidden parts of the structure and the author's distinctive analysis.

Figure 3: Prof S.A. Deshpande Studio Design Competition 2022 – a felicitation ceremony

Even after retirement, he continued to guide, mentor and inspire. A registered architect with the Council of Architecture (1974) and a Fellow of the Indian Institute of Architects, he remained active in architectural discourse until the very end. Professor Deshpande passed away peacefully on the night of 10 April 2026 at his residence in Paramount Heights, Shivaji Nagar, Nagpur. He is survived by his son Unmesh Deshpande, daughters Sharvari and Prajakta and a vast extended family of students and admirers across India and abroad.

Memories of Time Spent with Sir

During his illustrious career spanning more than four decades as an educator, Prof. S.A. Deshpande touched countless hearts, bridged cultures and reshaped the lives of thousands of students — including mine. I had the privilege of being his student, albeit for a brief period of about two weeks in February 1982. I attended a short-term course on Industrial Architecture conducted by the Department of Architecture at Visvesvaraya Regional College of Engineering, Nagpur (now Visvesvaraya National Institute of Technology – VNIT, Nagpur). Prof.

Figure 4: Prof S.A. Deshpande Studio Design Competition 2018 – a felicitation ceremony

Figure 5: Prof S.A. Deshpande Studio Design Competition 2019 – a felicitation ceremony

Deshpande Sir was the Head of the Department at the time and he had specially designed this course for working professionals like architects and engineers.

We were a batch of 17 participants from diverse organisations and regions across the country. I was perhaps the youngest in the group. Becoming a student of Prof. Deshpande and his esteemed colleagues was a matter of great honour and privilege. The memories of those two weeks remain a cherished treasure for all of us, even after more than four decades.

About five years ago, I shared our group photograph with Sir on his social media account, just to remind him of his "nice" students. His instant and warm reply was, "Those were the great times."

Apart from teaching the technical subjects in our Industrial Architecture course, Prof. Deshpande Sir took on the role of a caring host, mentor and guide. He ensured our comfortable stay on the campus and personally looked after our well-being. He would often visit our guest house to check if we were comfortable and would join us for meals. This served a dual purpose: ensuring the quality of food served to us and creating opportunities for informal, meaningful interactions. We were deeply humbled by his genuine hospitality and warmth.

One afternoon, while another faculty member was taking our class, Prof. Deshpande hurriedly entered the classroom, interrupted briefly and advised us not to venture out of the campus after college hours due to some unrest in Nagpur city. Such was his genuine concern for the safety of his students!

Even today, every gesture and every word of Deshpande Sir resonates deeply in our hearts. Perhaps that is why, when I received the news of his passing a day after 10 April 2026, my eyes welled up instantly and I was left speechless for a while.

A Touching Tribute

Dada is gone, yet it feels as if the very air in Nagpur's architectural studios still carries the quiet echo of his voice — measured, poetic and laced with that disarming humour that could lighten the heaviest critique.

Figure 6: Prof S.A. Deshpande with others on the foundation Day of IIA

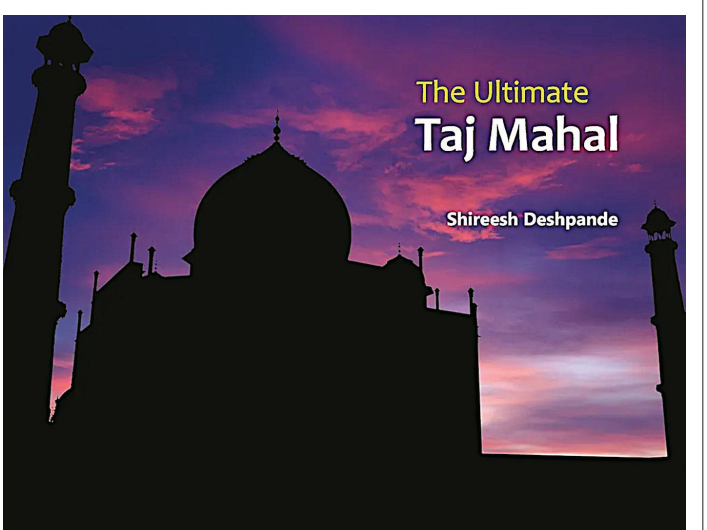
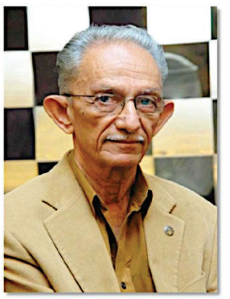


Figure 7: Prof S.A. Deshpande's book - The Ultimate Taj Mahal



Obituary Note

It is with profound sorrow that we inform you that on 10th April 2026, our beloved Dada,

Shri Shireesh Atmaram Deshpande passed away peacefully due to old age at 91.

The funeral procession will depart from our residence on **11th April** at approximately 4:00 PM.

Grieving,

Deshpande Family

301, Paramount Heights
40, Shivaji Nagar
Nagpur – 440010

Figure 8: Rest in eternal peace, beloved Sir. We all will never forget you

He never sought the spotlight. While others chased grand projects and international fame, Shireesh Deshpande chose the far more difficult task: to mould young minds into thoughtful, responsible and rooted architects. He lived with the elegant discipline of a true gentleman — humble, precise and compassionate. Whether it was sharing stories of Chandigarh under Le Corbusier, reciting his father's sonnets, or quietly helping a struggling student with fees or guidance, he gave without fanfare. In an age of noise, he was a quiet force of reason and wisdom.

Today, the studios he built, the programmes he founded, the competition that bears his name and the countless architects practising across the country are living testaments to a life spent in the service of a higher ideal. The torch he carried so gracefully has now passed to us — his students, his children and his extended family of admirers.

Dada, you may have left us on 10 April 2026, but your teachings, your clarity, your gentle laughter and your unwavering belief in the power of good design will light our paths forever. We promise to carry forward the flame you lit with such quiet brilliance.

Rest in eternal peace, beloved Sir. Your students, your family and an entire generation of Indian architects will never forget you.

All Images Courtesy: Author

Sarbjit Singh Bahga (A11822) is a Chandigarh-based architect and author. He has 44 years of experience designing various types of buildings, complexes and large campuses. A monograph on his selected works, "MODERN REGIONALISM: The Architecture of Sarbjit Bahga" has been published. Bahga is also a keen researcher and a prolific architectural writer, having 12 books to his credit.
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IIA PUBLICATION
POSTAL REGD. NO.MCS/007/2024-2026

RNI NO.9469/57
POSTED AT PATRIKA CHANNEL SORTING OFFICE, MUMBAI-400001
PUBLISHED ON 14TH OF EVERY FOLLOWING MONTH AND
POSTED ON 15TH & 16TH OF EVERY FOLLOWING MONTH

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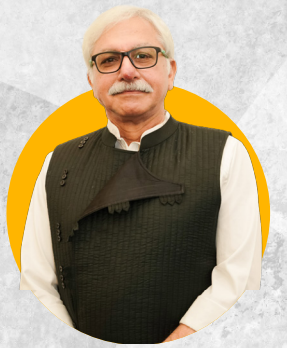

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