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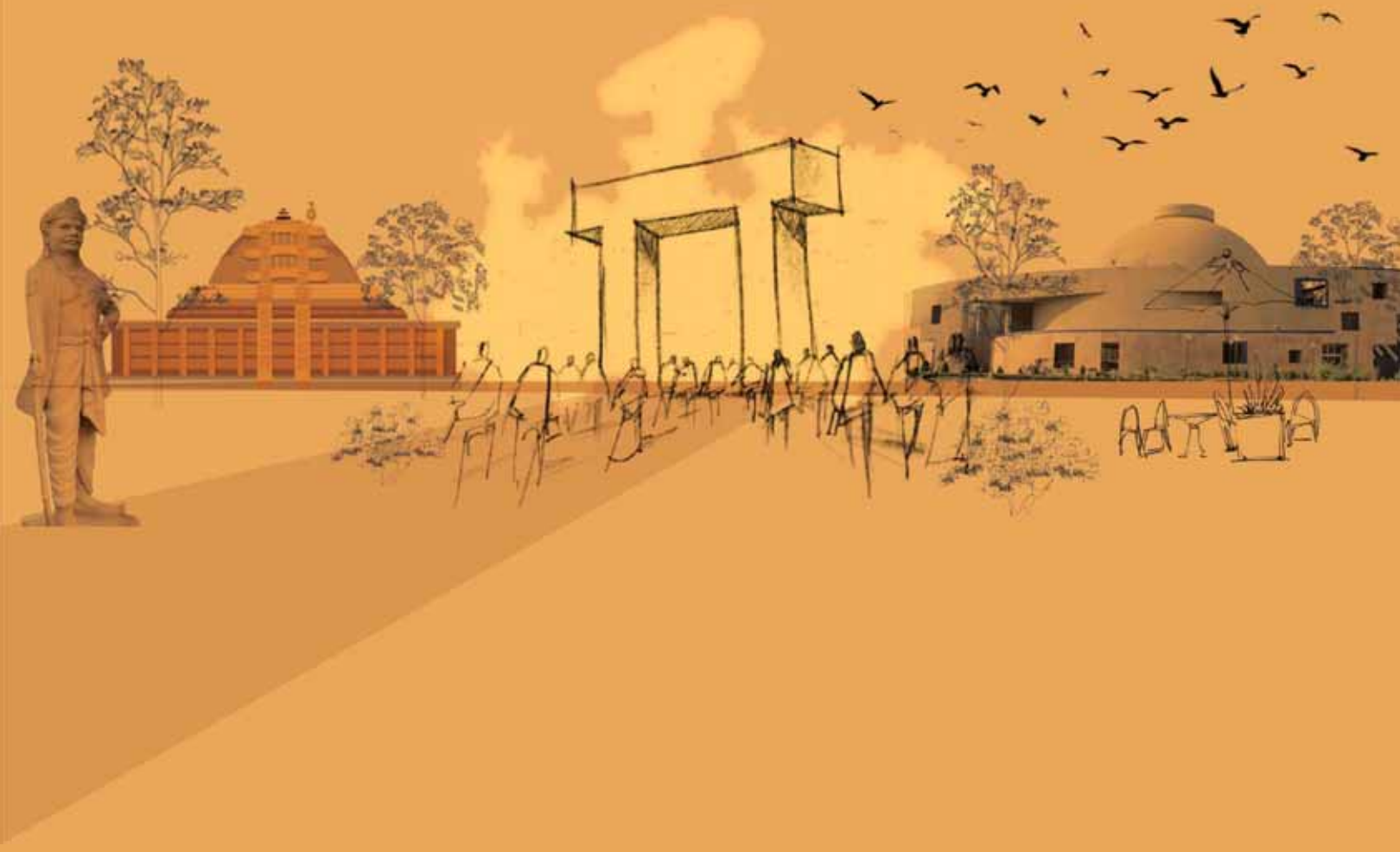

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2025. 9. 8. - 9. 12. Incheon, KOREA

ACA 21
A BETTER TOMORROW

# ARCASIA STUDENTS' DESIGN COMPETITION 2025

THEME

## PLUG-IN ARCHITECTURE FOR A BETTER TOMORROW

| | |
|---|---|
| **Announcement of Competition** | 10 March, 2025 |
| **Submission Closes**(submission to Member Institutes) | 10 June, 2025 |
| **Submission of 3 Finalists** from each Member Institutes to KIRA | 30 June, 2025 |
| **Final judging and notification of the finalists** | 30 July, 2025 |
| **Award Ceremony** | 10 September, 2025 during ACA 21 |

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Please enter the QR code
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Korea Institute of Registered Architects

Incheon Metropolitan City

# We strongly condemn the terrorist attack on Pahalgam.

# Heartfelt condolences to all the families who lost their loved ones...

# We stand with you in these hard times.

# जय हिंद

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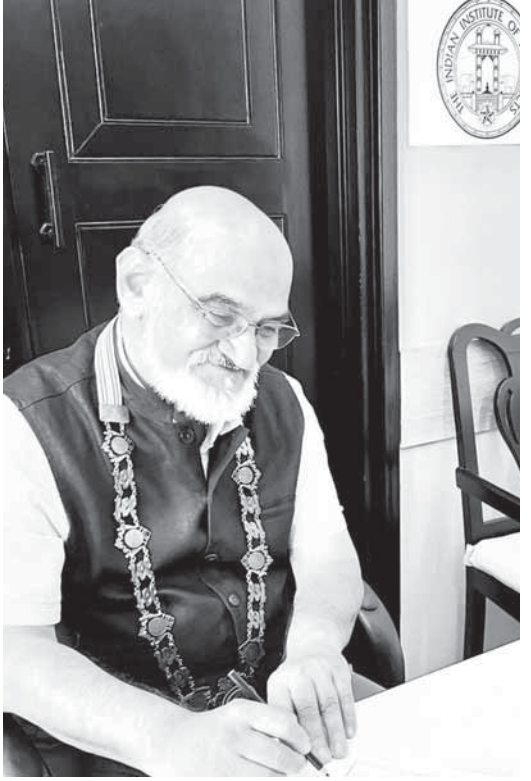
# PRESIDENT'S MESSAGE



Dear Fellow Architects

Warm Greetings!

The Indian Institute of Architects is enhancing awareness towards responsible architecture and sustainable progress. The IIA National Convention 2025 which was held recently in Madhya Pradesh with the theme TRANSOM, was the best example of this movement, where visionaries, innovators and change makers brought together to discuss the shape of the future.

WhereasThe Indian Institute of Architects (IIA) are deeply distressed and saddened by the recent terrorist attack in Pahalgam, Kashmir. We express our deepest condolences to the families affected in this attack. Our thoughts and prayers are with those who are grieving and those who continue to suffer the trauma of this horrific incident.

I am sure the Indian Government will not spare those who are behind this heinous act and will be brought to justice. I urge global unity and renewed efforts to eradicate terrorism, emphasizing the moral obligation to ensure a safe and peaceful world for all, including future generations.

I appeal to everyone to prioritize your safety and well-being during this challenging time. Those staying near border areas please take utmost care of yourself and your dear ones.

Stay safe, Stay united, Stay calm, Stay Strong and follow the official guidelines.

Jai Hind!

Warm regards

**Ar. Vilas Avachat**
President IIA

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# EDITOR'S NOTE

Greetings to all IIA members from the JIIA Team.

We, the whole architectural fraternity of Akhand Bharat condemn the heinous and cowardly attack on innocent Indian tourists in Pahalgam, Kashmir. We mourn the departed souls and extend our heartfelt condolences to the families who suffered due to this irrational act of violence. The land of Kashyap Rishi turned into a land of violence. We hope to see Kashmir as a real heaven for all Indians and should again become an important intellectual contributor of our Bharat. In this difficult time, our fraternity stands with our government and our defence forces. Together, let us build a future where the essence of humanity is respected without any distinction of faith.

We, as architects, exactly focus on this aspect of the enhanced habitat and we only see the comfort of the occupants. To discuss various aspects of this physical expression which symbolises intangible emotions for humankind, the discourses of architecture were deliberated at the national level in the form of NATCON 2025 fabulously hosted by the IIA Madhya Pradesh Chapter which completed 50 years of its inception in 2025. It was conducted in the two cities, Bhopal and Indore, where various sessions of talks, discussions, exhibition and cultural events were experienced by more than a thousand architects from across India. Kudos to the IIA MP Chapter Chairperson who was ably supported by the IIA Bhopal and IIA Indore Centre Chairpersons and their entire team.

We take this opportunity to thank the authors who show their faith in the quality of the content and the outreach with which we are able to disseminate the knowledge across the fraternity. In this journey we have received the unwavering support of our President, Office Bearers and Committee Members.

We extend our heartfelt gratitude to all dedicated IIA members who work tirelessly to create these platforms for engagement and knowledge-sharing. Your efforts are crucial to the growth and outreach of Indian architecture on the world stage. We encourage every IIA member to actively participate in these initiatives and showcase our collective leadership in the global architectural discourse.

We hereby again invite all members to contribute to JIIA with articles, project features, research papers, and importantly, through sponsorship and funding. Your support and involvement continue to be the backbone of this publication.

Stay undivided and stay safe.

Jai Hind.

**Prof. Vinit Mirkar**
Editor, JIIA





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# IIA NATCON 2025 : TRANSOM

## Bridging the Past, Present and Future

**By Ar. Nitin Ghule, Ishita Jain and Shreed Kanoongo**

As the IIA Madhya Pradesh Chapter celebrates 50 glorious years of dedication to the pursuit of excellence in architecture, NATCON 2025 unfolds as a memorable milestone celebration – a salute to heritage, a look at the present and a leap to the future. Organized in the culturally affluent and architecturally valuable cities of Indore and Bhopal, the event theme *TRANSOM – Connecting Past, Present and Future*, establishes the tone for a discussion firmly embedded in continuity, context and change.

Indian architecture has always been a 'transom', a crossing-over point, that links the universal wisdom of our built heritage and the changing aspirations of contemporary society. This year's theme explores this critical intersection, which reiterates that 'Bridging Makes Sense', not metaphorically, but as a worthy practice of convergence of tradition and innovation, sustainability and technology, and culture and function.

The Malwa region of Madhya Pradesh, where this action takes place, is an appropriate backdrop for such a discussion. Its vernacular architecture is a living archive of knowledge. These traditional practices show an intuitive understanding of climate, culture, and community- principles that still inspire and inform sustainable design thinking today.

In commemorating the 50-year odyssey, the IIA Madhya Pradesh Chapter reiterates its pledge to create a built environment in which history is not just conserved, but interpreted with relevance, for generations yet to come. Through TRANSOM, we connect generations of thinking and doing, paying homage to the heritage of Indian architecture while creating a robust and context-sensitive architectural future.

*TRANSOM – A passage through time, uniting legacy with vision.*

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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 FIVE 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/7pDFva1HDH4hfUyj8*

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**

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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**

*google form link: https://forms.gle/Ru4JBLSHwaYEBTcg7*

(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 : Cover Design**

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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 will be adjusted as per the layout requirements of the JIIA Cover.

**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

# Women's Safety Perspective in Tourist Places
## A Bibliometric Analysis

By Dr. Supriya Vyas, Dr. Neha Pranav Kolhe, Dr. Jagdish Singh and Madhumanti Das

**ABSTRACT:**
Ensuring women's safety is important for protecting individual rights, addressing gender inequality, promoting social well-being and supporting economic growth. Safety and security are crucial for creating safe and secure environments at tourist destinations. Women's safety has become a vital factor in various tourist locations for sustainable tourism development, as it influences travel decisions and overall experiences. This study presents an in-depth review of existing literature on women's safety in tourist destinations. It identifies key research gaps and includes a bibliometric analysis based on the Scopus database (1994–2024). The study also explores various safety-related challenges and issues affecting women travellers. It highlights that concerns such as harassment and limited accessibility significantly impact women's travel choices and experiences. Emphasising the importance of women's safety in tourism is essential to empower women to travel freely, confidently and to enjoy their journeys fully. The study focuses on understanding the nature of risks faced by female travellers, their safety perceptions and the socio-cultural and environmental factors influencing these perceptions.

**KEYWORDS:** women's safety, safety and security, bibliometric analysis, tourism, tourists

## 1. INTRODUCTION

### 1.1 Background

"Safety and security are vital to providing quality in tourism. More than any other economic activity, the success or failure of a tourism destination depends on being able to provide a safe and secure environment for visitors" (UNWTO, 1996).

"Safety is the condition/set of circumstances where the likelihood of negative effects on objectives is low" (P. Blokland and G. Reniers, 2017). Safety indicates the state of being safeguarded against undesirable outcomes, accounting for unintentional exceptions. Security refers to measures taken to be protected from undesirable outcomes caused by human nature and actions. Tourists are particularly vulnerable as transitory visitors and often face challenges in identifying unfamiliar places. For tourists, safety and security are interlinked and equally vital considerations (Amir, Ismail and See, 2015).

### 1.2 Need for women's safety

Women are mostly susceptible to crimes, particularly those of a sexual nature (Brown and Osman 2017). Irrespective of where women are, they are not safe anywhere. It is not about any political party or any specific state anymore. In India, it is not about any particular party; it is about individual choice. Not having the courage to say injustice is injustice within ourselves means that humans are not human—they are considered conscienceless and the waste material of society.

An individual's behaviour is affected by men's or women's interactions with the social and physical environments where they reside, engage or perform any activities (Stokols 1996). In society, not only is the wrongdoing of bad people responsible for unethical activities, but the silence of good people is also responsible.

In any tourist place, if we consider a stretch of road, and along it, if there is an inadequate number of streetlights or poor visibility, and CCTV cameras are either not present or are in an inappropriate position, there are many incidents that go unrecorded during early or late hours. Besides, accessible infrastructure is required for different age groups of people to ensure women's safety. In various tourist places, there is a lack of accessible infrastructure that can be used to analyse and assess women's safety. Travel

motivations are highlighted as genuine needs that lead travellers to visit and fulfil those needs (Tasci and Ko 2017).

Rising criminal cases can cause fear and anxiety among tourists, impacting their willingness to travel to different tourist places (Anuar, Bookhari and Aziz 2012). In our society, in most families, women are asked to remain quiet in many situations just for the sake of family reputation, even when they feel agitated with their relatives and family members. Women face challenges due to socio-cultural norms and household duties (Wilson and Little 2008). Just because they are asked to be silent, countless incidents remain unrevealed. Only those upon whom such incidents occur know how heavy the burden and trauma they carry for their entire lives is. Those touches of primal human nature remain like birthmarks; even if they wish to tell someone, they stay silent deliberately.

Where women are not safe in their homes, securing them in public places becomes even more difficult. Women must be able to manifest themselves freely and experience a sense of equality (Doran 2017). These women must raise their voices against those who are inhuman. Besides, those who strongly appreciate foreign culture often assume that foreign countries are much safer than ours and that the crime rate is lower there. However, while these people have adopted foreign culture, the count of crime cases is comparatively higher. At the end of the day, people themselves are responsible for their faults. If they feel ashamed, they should be ashamed of themselves, not of our country.

Ultimately, the decaying society tells many stories about women's safety, but only those who have witnessed such incidents truly know the reality, and women's safety remains merely a story. Politics is involved in crime, the looting of evidence and the protection of perpetrators. There is so much corruption and malaise everywhere. After all, it is not just a political issue, because the people remain the same.

There is a beautiful quote about basic education: "If you are educating your daughter on bad touch, make sure your son knows about it too." In metropolitan cities in India, the trend of changing employment and late-night activities has influenced the consciousness around women's safety (Gupta, Kolhe and Vyas 2024). In addition, the case of Abhaya has opened many chapters of a bigger story that is still yet to be revealed.

Apart from all these inputs, on the other side, perceptions about women's safety differ. According to public opinion, the needs of elderly people are quite different from those of young adults in terms of infrastructure and other basic facilities for women's safety in various tourist places. It varies among different age groups. According to Beirman (2020), the perception of safety and security plays a vital role in a visitor's decision to select tourist destinations, which greatly depends on the presence of these factors.

## 2. REVIEW OF LITERATURE

A study on the variation of safe tourism was conducted on young and elderly age groups concerning gender, revealing distinctive characteristics in safety (Kim, Hall and Kwon 2023). Another study highlights travel motivation connected with personal values, showing variations based on age, gender, visit experience and other factors. Different values impact the motivations of potential and repeat visitors, including both younger and older individuals. This helps improve targeted approaches for different demographic groups (Maghrifani, Sneddon and Liu 2024).

A further article discusses women's safety in tourism in Kazakhstan, outlining various strategies to promote gender equality and combat violence. These strategies include collaboration with stakeholders for systemic change, technological innovations for security, women-only transportation and accommodation, and gender-sensitive training for tourism professionals (Bayanbayeva et al. 2023). Other studies explore how physical, social and environmental factors impact the perception of women's safety in green environments, using QGIS and interviews conducted in the urban stream corridor of Barcelona. Key factors identified include visibility, vegetation density, lighting and land use, which significantly affect safety perceptions (Gargiulo et al. 2020).

Another study examines the perceptions of urban women in India and their need for safety and technological advancement. The findings suggest the importance of designing holistic safety technologies that provide better support for women (Kaur, Gupta and Singh 2022). A separate study explores the role of leisure tourism in boosting economic growth, particularly in the early stages of development, although its impact diminishes as economies grow. Unlike business tourism, the growth effects of leisure tourism are limited due to non-reproducible natural and heritage resources and the lack of ongoing productivity improvements in the industry (Pandey, Mishra and Shukla 2014).

It has been observed across many parameters that the concept of "eyes on the street", developed

by Jacobs (1961), is frequently used by scholars as an important factor (Koskela and Pain n.d.). Internationally, parameters for studying women's safety in urban areas include well-lit corridors (Painter 1996). One such study was conducted at the city level in two European cities. In the study of Lleida city, researchers used emotional indicators—emotional valence (anger, fear, sadness), emotional intensity (arousal) and dominance (level of self-control over emotions)—to measure the perception of safety in public spaces (Paül i Agustí, Guilera and Guerrero Lladós 2022).

Another study investigates how one tourism organisation in India focuses on safe journeys for women, reducing safety concerns and increasing travel motivation, while providing an actionable framework for implementation (Chhajer, Lal and Tandon 2022).

Furthermore, another paper explores the perception of foreign solo female travellers in India, recognising that safety concerns go beyond risky destinations and are embedded in everyday life. It also questions whether solo female travel challenges established gender power dynamics, as many women have normalised a sense of "unsafety" (Thomas and Mura 2019).

India's booming tourism industry is driven by rising incomes and government support, although challenges such as inadequate infrastructure and health concerns require collaborative solutions for sustainable tourism growth (Basak et al. 2021).

## 3. METHODOLOGY

Bibliometric analysis is an established methodology. The authors applied bibliometric analysis visualisations to create a clearer understanding of the research on a topic (Cavalcante, Coelho and Bairrada 2021). This bibliometric analysis includes depicting the research scope and outlining a few objectives related to women's safety in tourist places. An exclusive study of 482 documents was conducted using the Scopus database, applying keywords such as "women's safety", "public space", "safe and security", "tourism", "SDG" and "safety perception". The Scopus database is a feasible source for effectively and promptly acquiring global academic information.

A screening process was conducted to refine the search results. In this study, screening was limited to social science, arts and humanities and environmental science. In addition, only articles, review papers and book chapters were considered for the study. The paper did not consider conference papers, books, letters, editorials, conference reviews, notes or CSV files that were created by exporting the retrieved data for analysis.

VOSviewer software was used to generate visual representations, including citation analysis, co-authorship networks and keyword co-occurrence. Table 1 indicates the grouping of keywords, and the final result of the keyword analysis is presented. Moreover, only research documents in the English language were considered. This study reveals research trends, distinguished publications and authors, offering insights into research gaps and future research directions on women's safety.

## 4. RESULT AND ANALYSIS

This section addresses significant gaps in the research field and highlights emerging trends. The existing literature explores safety perceptions, gender-based violence and safety measures in the context of the role of technology. This study demonstrates the significance of using GIS-based and mobile

Table 1: Search results of keywords from Scopus database
*Source: Authors*

| Keywords | No. of articles |
|---|---|
| "Women's safety" | 257 |
| "Women's safety" AND "Gender" | 102 |
| "Women's safety" AND "Safety and security" | 11 |
| "Women's safety" AND "Public space" | 30 |
| "Safety and security" AND "Tourism" | 176 |
| "Safety and security" AND "Tourism" AND "Perception of safety" | 11 |
| "Women's safety" AND "SDG" | 2 |
| ["Women's safety" OR "Safety and security" AND "Tourism" OR "Gender" OR "Public space" OR "Perception of safety" OR" SDG"] | 482 |

applications for real-time monitoring of safety in specific tourist destinations.

It also emphasises that developed countries conduct most of the research on women's safety, while developing countries still require more attention to this vital issue. This bibliometric analysis further underlines the research gap related to the study of women's safety. The results identify the importance of gender-sensitive planning and planning interventions to foster safe and secure environments for tourists.

This study focuses on the research gap in safety perception based on gender, age and socio-economic status, which is largely underrepresented in developing countries.

Figure 1 highlights the distribution of documents by the top 10 countries, showing the United States as the most productive contributor with almost 93 documents, followed by the UK and India, which have significant but comparatively lower counts. This distribution indicates a strong concentration of research in developed countries. The analysis reveals a distinct comparison between developed and developing nations.

Figure 2 illustrates a noticeable increase in the number of documents published over time. A rapid rise is observed from 2016 onwards, indicating that the growth is likely driven by global awareness and increased attention to safety and security issues. The continued increase in recent years highlights the growing relevance of women's safety.

Figure 3 shows interconnected themes of women's safety, tourism and safety & security through clusters of keywords that represent key research areas in this domain. The gender-based violence and public spaces cluster highlights issues related to women's safety and sexual harassment; these concerns are linked to urban planning and inclusive public spaces. This map underscores their significance across disciplines, with connections to societal factors, crime and social media as key influencers. It reveals the importance of integrated approaches in addressing women's safety, along with specific gaps in region-specific studies and the role of technological advancement in shaping perceptions of safety in tourist places.

Figure 4 highlights the connections between the documents based on shared references and reveals clusters of research with thematic correspondence. Using bibliometric coupling in this study, with a minimum threshold of 15 citations, 136 out of 482 documents were considered suitable. This analysis underscores the significance of key documents in

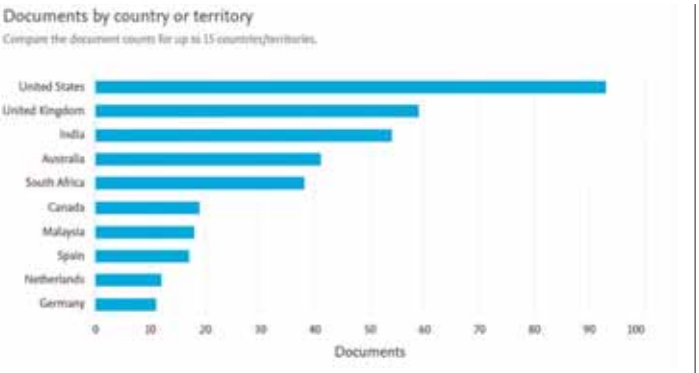


Figure 1: Country-wise analysis of publications
*Source: Authors*

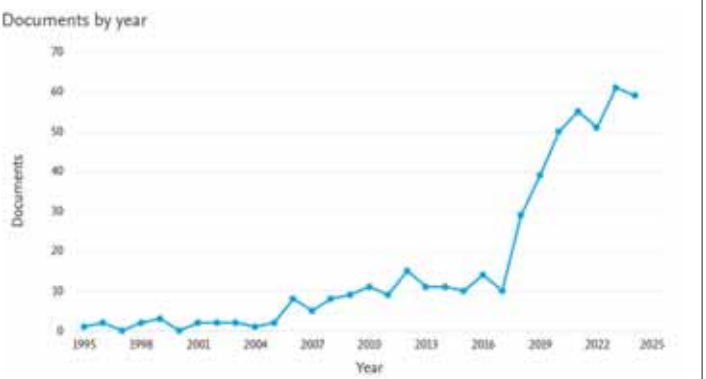


Figure 2: Documents by year
*Source: Authors*

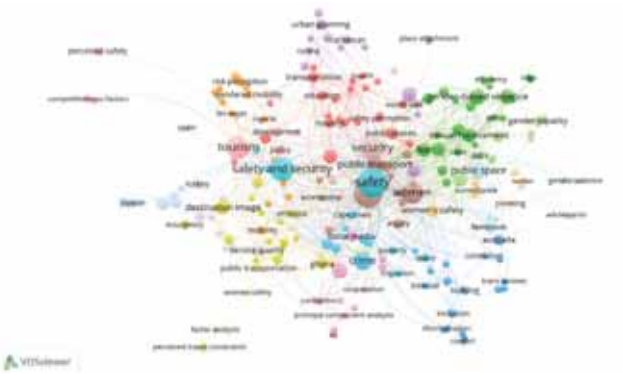


Figure 3: Co-occurrence analysis of keywords using VOS viewer
*Source: Authors*

shaping current research directions on women's safety in tourist places. Here, the red colour cluster represents the most prominent group, containing the largest number of documents, followed by the green, orange and purple clusters, which define various dimensions of this research.

Figure 5 illustrates the collaborative networks among different countries contributing to research on women's safety in tourist places. The key focus of activity is demonstrated mainly by the United States and the United Kingdom, followed by India and Australia, within the global research field, with potential connections to other countries during a specific time period. The map highlights that India has emerged as an important contributor in recent

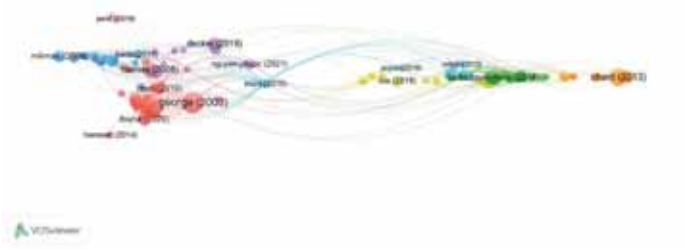

Figure 4: Bibliographic coupling of documents
*Source: Authors*

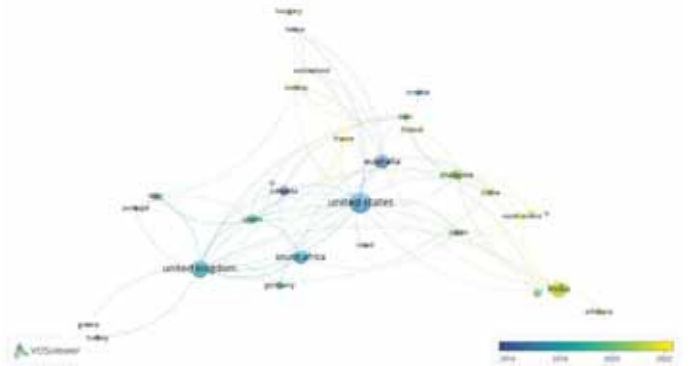

Figure 5: Co-authorship by countries
*Source: Authors*

years, underlining its growing focus on women's safety issues in tourism. Collaborative clusters indicate diverse geographic perspectives, mostly in Europe, Asia and Africa. However, the uneven distribution of connections shows that a few regions, such as Africa and some parts of Asia, are less connected to the global research field. This highlights the need for extensive international collaboration to create comprehensive, context-specific planning interventions for enhancing women's safety in tourist destinations worldwide.

## 5. CONCLUSION

This study briefly highlights various research on the topic of women's safety using bibliometric methods from the years 1995 to 2024. The bibliometric analysis, co-authorship analysis and co-occurrence analysis presented here address significant gaps and related issues. Various safety measures should be considered in the context of women's safety, including the improvement of infrastructure for different age groups.

To promote safe tourism environments, a collaborative approach is needed. This includes specific planning interventions, inclusive strategies and increased attention to women's safety in tourist places. In the global scenario, the increasing number of publications and citations signifies the growing importance of this research field. In comparing developed and developing countries, there is a need to broaden the research scope in developing nations. To enhance safe tourism environments, collaboration among policymakers, researchers and industry stakeholders is essential. This includes planning interventions, inclusive strategies, the integration of advanced technologies and efforts to address concerns around women's safety, ultimately supporting equitable tourism environments. While challenges such as gender stereotypes continue to affect progress, collaborative efforts can strengthen the discourse on women's safety and security, ensuring inclusive development in this field.


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**RESEARCH PAPER**

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# Symbolism and Spirituality in Indian Aesthetics

## A Journey Through Tradition and Heritage

**By Roksana Chehna**

**ABSTRACT**

The Indian subcontinent, with its celebrated past, has always been a crucible of artistic and literary expression, deeply rooted in spiritual truths since the times of the *Vedas* and *Upanishads.* This research delves into the symbolic richness of Indian art and literature, exploring their profound connection to spirituality and their integration into the cultural fabric, traditions and heritage of India. Central to this study is the exploration of how the concept of beauty in ancient Indian heritage transcends mere aesthetics, drawing contrasts with established Western philosophical perspectives. While Western aestheticians often define beauty in terms of symmetry and mathematical properties, Indian thinkers perceive beauty through the subjective experience and spiritual resonance it evokes. The research employs a comprehensive analysis of existing literature, drawing on the works of Dr Ananda Coomaraswamy and other scholars. An example of this is the enduring presence of motifs such as the lotus (*padma*, symbolising purity and enlightenment), the chakra (Wheel of *Dharma*, representing cosmic order and the cycle of life) and the crocodile with a foliate tail (a guardian figure symbolising chaos and fertility), which are prevalent in Buddhist, Hindu and Jain art, despite the diverse cultural and geographical contexts in which they appear. Key themes explored include symbolism, the functional role of art, spirituality, traditional craftsmanship and the concept of rasa (emotional essence). By analysing the balance of form and content within the cultural context, the research reveals a fundamental truth: traditional Indian art is deeply symbolic, with each element serving a higher purpose beyond mere visual appeal. In conclusion, the paper underscores the need for a deeper appreciation of Indian art, which encompasses a vast array of artistic expressions—music, drama, literature and visual arts—integrating emotion and spirituality into a cohesive cultural experience. It calls for a renewed appreciation of the symbolic and spiritual depths of Indian aesthetics, urging us to look beyond the surface and embrace the rich cultural heritage that has flourished for millennia.

KEYWORDS: *Rasa*, rasa theory, *dhvani*, Indian aesthetics, theory of beauty

### 1. INTRODUCTION

The Indian subcontinent, rich in its celebrated ancient history, has long served as a centre for artistic and literary endeavours deeply intertwined with spiritual wisdom. From the Vedic and Upanishadic eras to the present, Indian art and literature have flourished, blending profound philosophical and spiritual insights into the fabric of its culture. This study explores the symbolic depth of Indian art and literature, investigating their deep-rooted connection to spirituality and how they contribute to India's cultural traditions and heritage.

At the heart of this research lies the exploration of how the concept of beauty in ancient Indian heritage goes beyond superficial aesthetics, contrasting with conventional Western philosophical viewpoints. Western aesthetic traditions, particularly those shaped by classical Greek thought, tend to prioritise symmetry and proportion as the essence of beauty. In contrast, Indian aesthetics places greater emphasis on the personal experience and spiritual resonance elicited by an artwork, as seen in the teachings of Bharata Muni and Abhinavagupta. This distinction highlights the unique nature of Indian aesthetics, where art becomes a vessel for conveying profound spiritual and philosophical insights.

The research employs a comprehensive analysis of existing literature, drawing on the scholarly works of Dr Ananda Coomaraswamy and other scholars of Indian aesthetics. Coomaraswamy's extensive body of work emphasises the symbolic and spiritual dimensions that permeate Indian art forms, offering a comprehensive exploration of the cultural and philosophical contexts that shape Indian aesthetics. The study also includes an examination of ancient Sanskrit texts such as the *Natyasastra*, which explore the connection between art, emotion and spirituality through key concepts such as *rasa* (emotional essence) and *dhvani* (suggestion).



Key themes explored in this research include symbolism, the functional role of art, spirituality and traditional craftsmanship. By analysing the balance of form and content within the cultural context, the research reveals that traditional Indian art is deeply symbolic, with each element serving a higher purpose beyond mere visual appeal. This underscores the need for a deeper appreciation of Indian art traditions, which encompass a vast array of artistic expressions—music, drama, literature and visual arts. These forms integrate emotion and spirituality into a cohesive cultural experience, reflecting the rich tapestry of Indian culture.

### 1.1 Aim and Objectives

Aim: The primary aim of this study is to explore how traditional Indian art, with its deeply symbolic and spiritual dimensions, transcends mere aesthetics and serves as a medium for conveying profound philosophical and spiritual insights. Specifically, the research seeks to understand the differences between Indian and Western perceptions of beauty, and how these differences reflect broader cultural and philosophical contexts.

Hypothesis: The hypothesis of this study is that traditional Indian art is inherently more focused on symbolic and spiritual dimensions than Western art, which often emphasises aesthetic principles such as symmetry and proportion. This focus on symbolism and spirituality in Indian art reflects a deeper cultural and philosophical engagement with art as a medium for conveying metaphysical truths.

Objectives

- To analyse the symbolic elements in traditional Indian art forms and their connection to spiritual and philosophical themes
- To contrast the principles of beauty and aesthetics in Indian and Western art, highlighting the unique approaches and cultural underpinnings of each tradition
- To explore the role of traditional craftsmanship in Indian art and its integration of emotion and spirituality
- To delve into the concept of *rasa* (emotional essence) in Indian aesthetics and its importance in the creation and appreciation of art
- To provide a historical overview of Indian art and literature, examining how these forms have evolved and maintained their spiritual and symbolic significance over time

Scope and Limitations

Scope:

- The study covers a wide range of artistic expressions in Indian art, including visual arts, literature, music and drama
- It examines historical texts and contemporary scholarly interpretations to provide a comprehensive overview of Indian aesthetics
- The research includes a comparative analysis with Western aesthetics to highlight cultural and philosophical differences

Limitations:

- The study is limited to the available literature and may not include all perspectives or recent developments in Indian art
- There may be inherent biases in the interpretation of ancient texts and scholarly works
- The comparative analysis may oversimplify complex cultural and philosophical traditions

## 2. LITERATURE REVIEW

The research design involves a comprehensive literature review and comparative analysis. This

approach allows for a thorough examination of existing theories and data, facilitating a detailed comparison between Indian and Western aesthetic principles. By drawing on primary sources such as ancient texts and the works of key scholars, the study ensures a deep and nuanced understanding of the subject matter. The research also includes an analysis of traditional motifs and their persistence in Indian art forms, providing concrete examples of the symbolic richness and spiritual depth of Indian aesthetics.

The aim, hypothesis and objectives of this study are derived from existing theories and data in the fields of aesthetics, art history and cultural studies. The works of Dr Ananda Coomaraswamy and other scholars of Indian aesthetics provide a foundational understanding of the symbolic and spiritual dimensions of Indian art. Ancient texts like the *Natyasastra* offer insights into the traditional Indian perspective on art, emotion and spirituality. This review synthesises key scholarly works and historical texts to provide a foundation for the study conducted in this paper.

### 2.1 Symbolism and Spirituality in Indian Art

Dr Ananda Coomaraswamy's extensive writings have been pivotal in interpreting the symbolic and spiritual dimensions of Indian art. Coomaraswamy (1956) emphasises that Indian art is deeply intertwined with metaphysical truths, where each artistic element serves a symbolic purpose beyond its visual appeal. His work highlights the concept of *rasa*, or emotional essence, which is central to understanding the spiritual and aesthetic experience in Indian art (Coomaraswamy, 1956).

### 2.2 Comparative Aesthetics: East vs West

Comparative studies highlight key distinctions between Indian and Western aesthetics. While some Western theorists, such as Immanuel Kant and Edmund Burke, explored beauty through principles like harmony and the sublime, Indian aesthetic traditions emphasise experiential and spiritual dimensions, as reflected in the concept of *rasa*. In contrast, Indian aesthetics, as discussed by scholars like Kapila Vatsyayan (1997), focus on the subjective experience of beauty and its spiritual resonance. This distinction is crucial in understanding how Indian art transcends mere aesthetics to convey deeper philosophical insights.

### 2.3 Traditional Craftsmanship and the Role of the Artisan

Traditional Indian craftsmanship integrates emotion and spirituality, reflecting a holistic cultural experience. The *Natyasastra*, an ancient Sanskrit text attributed to Bharata Muni, explores the relationship between art, emotion and spirituality. It introduces the concept of *dhvani* (suggestion), where the artist's internalised aesthetic intuition is externally expressed and perceived by the audience (Vatsyayan, 1997). This process highlights the integral role of the artisan in creating art that resonates on a spiritual level.

### 2.4 The Concept of Rasa in Indian Aesthetics

The concept of *rasa* is central to Indian aesthetics. Bharata Muni's *Natyasastra* identifies nine primary *rasas*, each corresponding to different emotional states and their artistic expressions. This framework has been extensively analysed by scholars such as Abhinavagupta, who expanded on Bharata's theories to explore how these emotional essences create a profound connection between the artist and the audience (Masson & Patwardhan, 1970). The lotus (*padma*, symbolising purity and enlightenment), the *chakra* (Wheel of Dharma, representing cosmic order and the cycle of life) and the crocodile with a foliate tail (a guardian symbolising chaos and fertility) are recurring motifs in Buddhist, Hindu and Jain art. Their widespread presence across diverse cultural and geographical contexts highlights the shared symbolic language of Indian artistic traditions.

## 3. METHODOLOGY

Methodological approaches in the study of Indian aesthetics often involve comparative analysis and interpretation of ancient texts. Scholars like Vatsyayan (1997) and Coomaraswamy (1956) employ a combination of textual analysis and historical context to unravel the layers of meaning in Indian art. This methodology allows for a nuanced understanding of how traditional Indian art integrates form, content and spiritual significance.

The research is grounded in a comprehensive review of existing literature and primary sources, conducted in a library setting with access to historical texts, scholarly articles and contemporary interpretations. The research design is qualitative, utilising a comparative analysis framework to examine the differences and similarities between Indian and Western aesthetic principles. The study also employs historical analysis to trace the evolution of Indian aesthetic concepts and their manifestation in various art forms.

### 3.1 Sampling Strategy and Case Study Selection

The sampling strategy involves selecting key texts and artworks that exemplify the core principles of Indian aesthetics. The primary sources include:

- Dr Ananda Coomaraswamy's works on Indian art and symbolism
- Ancient Sanskrit texts such as the *Natyasastra* and the *Vedas*
- Selected regional literary forms and contemporary scholarly interpretations

The case study selection criteria focus on works that are widely recognised for their influence on Indian aesthetics and those that provide a clear representation of the concepts of *rasa* and *dhvani*.

### 3.2 Research Design

The research design is qualitative, utilising a comparative analysis framework to examine the differences and similarities between Indian and Western aesthetic principles. The study also employs historical analysis to trace the evolution of Indian aesthetic concepts and their manifestation in various art forms.

### 3.3 Data Collection Methods

Data collection involves gathering information from both primary and secondary sources:

- Primary sources: Textual analysis of ancient texts such as the *Natyasastra* and selected writings by Dr Ananda Coomaraswamy
- Secondary sources: Review of scholarly articles, books and contemporary interpretations of Indian aesthetics

The tools for data collection include:

- Textual analysis: Close reading and interpretation of primary texts to extract key concepts and themes
- Comparative analysis: Comparing the aesthetic principles found in Indian texts with those of Western philosophers

### 3.4 Documentation of Data

Data are meticulously documented through detailed notes and summaries of key findings from the primary and secondary sources. The documentation process includes:

- Organising data by themes such as symbolism, spirituality, traditional craftsmanship and *rasa*
- Annotating texts to highlight relevant passages and their interpretations

### 3.5 Data Analysis Framework

The data analysis framework involves several steps:

- Thematic analysis: Identifying and categorising key themes within the collected data
- Comparative analysis: Drawing comparisons between Indian and Western aesthetic principles to highlight unique features of Indian aesthetics
- Interpretative analysis: Interpreting the symbolic and spiritual dimensions of Indian art based on the identified themes

## 4. DATA ANALYSIS AND FINDINGS

The findings from this study underscore the profound significance of symbolism, spirituality and emotional essence in traditional Indian art. By examining key concepts such as *rasa* and *dhvani*, the research highlights how Indian aesthetics transcend mere visual appeal, serving as a medium for conveying deep philosophical and spiritual truths. The comparative analysis with Western aesthetics further illuminates the unique aspects of Indian art, emphasising its holistic and integrative approach. These insights provide a comprehensive framework for understanding the enduring relevance and cultural richness of Indian art, urging a renewed appreciation for its symbolic and spiritual depths.

### 4.1 Symbolism and Its Higher Purpose

The symbolism in Indian art is not merely decorative but serves as a medium for conveying deeper philosophical and spiritual truths. For example, the lotus is not just a beautiful flower but a representation of spiritual awakening and the journey towards enlightenment (Figure 1).

Figure 1: Goddess Ganga, descended from Indian Art's focus on emotion & spirituality offers cultural continuity
*Source: Author*

### 4.2 *Rasa* and Emotional Essence

The analysis of *rasa* reveals its integral role in connecting the artist's inner emotions with the audience's experience. This emotional essence elevates the artwork from a mere visual object to a conduit for spiritual and emotional engagement. The nine *rasas* identified in the *Natyasastra* provide a comprehensive framework for understanding the emotional depth of Indian art (Figure 2).


Figure 2: Nine Rasa identified in Natyashastra
*Source: Author*

### 4.3 *Dhvani* and Suggestion

*Dhvani*, a concept rooted in Sanskrit poetics, emphasises suggestion over explicit representation. This principle, though originally applied to literature, also informs Indian visual art, where subtle symbolism is used to evoke deep emotional and spiritual responses, creating a bridge between the mundane and the divine (Figure 3).

### 4.4 Traditional Craftsmanship and Cultural Continuity

The role of traditional craftsmanship in Indian art is pivotal. Artisans not only create aesthetically pleasing objects but also embed ethical and moral values into their work. This integration ensures the continuity of cultural and spiritual traditions through generations.

### 4.5 Contradictory Findings

- While the primary focus of Indian aesthetics is on spiritual and emotional resonance, there are instances where aesthetic principles overlap with Western ideas of symmetry and form. For example, some classical Indian sculptures exhibit a high degree of symmetry and proportionality, suggesting that these attributes were also valued in certain contexts.
- The concept of *rasa* is subject to individual interpretation, leading to varying experiences among different audiences. This subjectivity can result in differing emotional responses to the same artwork, highlighting the complexity and diversity of aesthetic experience.

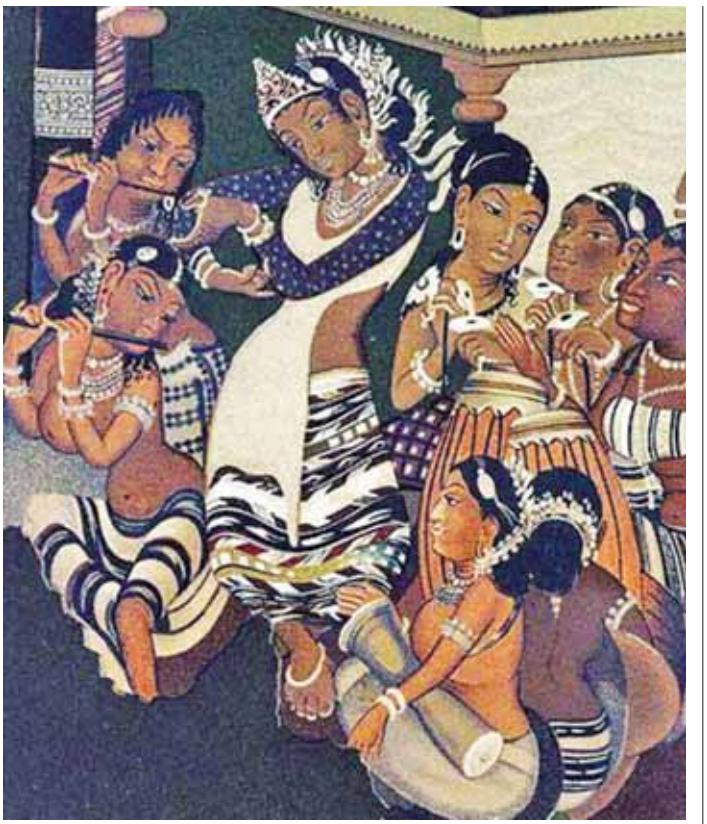

Figure 3: Indian Art's focus on emotion & spirituality offers cultural continuity
*Source: Author*

## 5. RESULTS AND DISCUSSION

### 5.1 Results

The results of this study provide a comprehensive understanding of the multifaceted dimensions of traditional Indian art and its profound connection to spirituality and aesthetics. The analysis of primary texts such as the *Natyasastra* and the works of Dr Ananda Coomaraswamy, alongside secondary sources, has yielded the following key findings:

- Symbolism in Indian Art: Traditional motifs like the lotus, the brimming pot and the crocodile with a foliate tail are prevalent across Buddhist, Hindu and Jain art, highlighting their transcultural significance and deep symbolic meanings. These motifs serve as conduits for conveying spiritual and philosophical truths (Figure 4).

Figure 4: Symbolism in Indian Art
*Source: Author*

- Rasa and Emotional Essence: The concept of *rasa* is central to Indian aesthetics, encompassing nine emotions that bridge the artist's inner experience with the audience's perception. This emotional essence elevates the artwork to a spiritual and emotional experience (Figure 5).

Figure 5: Emotional Essence
*Source: Author*

- Dhvani and Suggestion: The notion of *dhvani*, or suggestion, emphasises that the essence of art lies in what it evokes rather than in explicit depiction. This aligns with the idea that true art transcends the mundane and touches the supramundane plane (Figure 6).

Figure 6: Dhvani and Suggestion
*Source: Author*

- Traditional Craftsmanship: The role of the artisan is crucial in preserving and transmitting cultural values through art. Traditional Indian craftsmanship integrates ethical and moral values, which are reflected in the intricate designs and motifs used in various art forms (Figure 7).

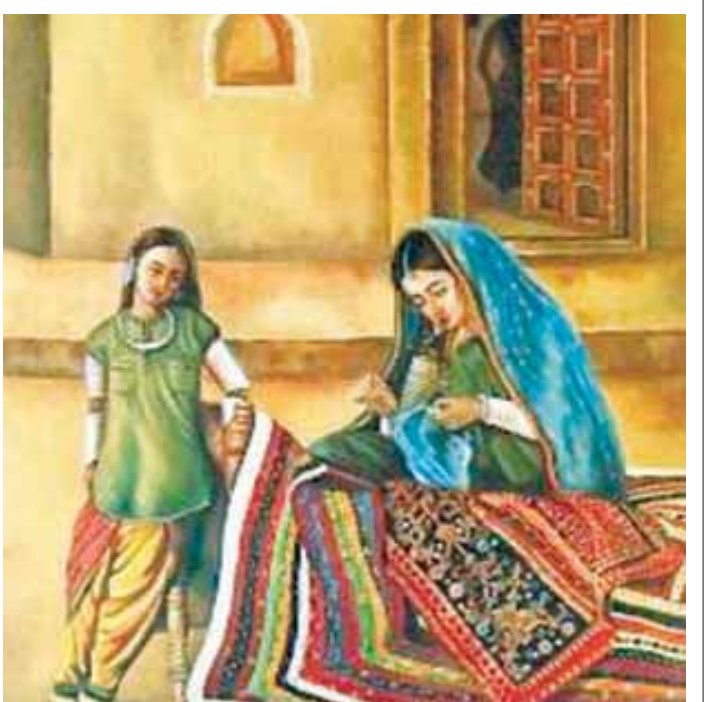

Figure 7: Traditional Craftsmanship
*Source: Author*

- Comparative Aesthetics: Indian aesthetics, with its focus on subjective experience and spiritual resonance, contrasts with Western aesthetics, which often emphasise symmetry and mathematical properties (Figure 8 & 9).

Figure 8: Focus on subjective experience and spiritual resonance
*Source: Author*

Figure 9: Emphasis on proportion and mathematical properties
*Source: Author*

## 5.2 Discussion

### *5.2.1 Aim and Hypotheses*

The primary aim of this study was to explore how beauty in traditional Indian art transcends mere aesthetics, serving as a medium for conveying profound spiritual and philosophical insights. The hypotheses were:

Traditional Indian art employs deep symbolism that serves a higher purpose beyond visual appeal.

The concept of *rasa* in Indian aesthetics bridges the artist's internal emotional experience with the audience's perception, creating a profound spiritual connection.

The results support these hypotheses, revealing the symbolic richness and spiritual depth of Indian art.

### *5.2.2 Implications of Results*

Symbolism and Higher Purpose: The recurring motifs in Indian art, such as the lotus, *chakra* and the brimming pot, underscore the symbolic nature of traditional Indian aesthetics. These symbols are not merely decorative but serve to convey deeper philosophical and spiritual truths. This reinforces the idea that traditional Indian art is deeply symbolic, with each element serving a higher purpose beyond mere visual appeal.

Rasa and Emotional Essence: The concept of *rasa* plays a crucial role in connecting the artist's inner emotions with the audience's ***experience***. This emotional essence elevates the artwork from a visual object to a conduit for spiritual and emotional engagement. The nine *rasas* provide a comprehensive framework for understanding the emotional depth of Indian art.

Dhvani and Suggestion: The notion of *dhvani*, or suggestion, emphasises the importance of subtlety and evocation in Indian art. This method of indirect representation aligns with the broader goal of art as a means of transcending the mundane and connecting with the divine. It highlights the need for a deeper appreciation of the suggestive and evocative aspects of Indian aesthetics.

Traditional Craftsmanship and Cultural Continuity: The role of traditional craftsmanship in Indian art is pivotal. Artisans not only create aesthetically pleasing objects but also embed ethical and moral values into their work. This integration ensures the continuity of cultural and spiritual traditions through generations, emphasising the holistic and integrative approach of Indian aesthetics.

Comparative Aesthetics: The comparative analysis with Western aesthetics reveals the unique aspects of Indian art, emphasising its focus on subjective experience and spiritual resonance. This contrast highlights the importance of understanding and appreciating the cultural and philosophical context in which Indian art is created.

Example – Goddess Ganga: The divine personification of the sacred river Ganges holds profound significance in Indian aesthetics, embodying purity, spiritual liberation and the harmonious balance between nature and divinity. Her imagery, often depicted with serene grace atop a *Makara*, a mythological aquatic creature symbolising the fluidity of water and the transformative power of life, reflects the deep connection between nature and spiritual consciousness in Indian visual culture.

The river Ganga, flowing from the matted locks of Lord Shiva, represents the descent of celestial energy onto the earthly realm—a theme central to Hindu cosmology, where the divine manifests

within the natural world. The lotus flowers she holds further reinforce her association with purity and transcendence, as the lotus in Indian aesthetics is a metaphor for spiritual enlightenment—emerging untainted from muddy waters.

The *Makara*, often depicted as part-crocodile and part-fish, is an emblem of duality, representing both the unpredictable forces of nature and the nurturing aspect of water, essential for sustenance and renewal. This interplay between destruction and creation mirrors the cyclical rhythms of existence, a fundamental concept in Indian philosophy.

However, the sanctity of the Ganges is not merely symbolic; it is also an ecological and cultural lifeline, making its preservation integral to sustaining both tradition and life itself. Thus, Goddess Ganga, in her visual and spiritual representation, encapsulates the essence of Indian aesthetics—where nature, mythology and devotion merge to create a deeply symbolic and holistic worldview.

### 5.3 Theoretical and Practical Consequences

The findings have several theoretical and practical implications. Theoretically, they contribute to a deeper understanding of Indian aesthetics, emphasising the importance of symbolism, emotional essence and spiritual resonance. Practically, the study underscores the need for a renewed appreciation of traditional Indian art, which can inform contemporary art practices and promote the preservation of cultural heritage.

## 6. CONCLUSIONS AND RECOMMENDATIONS

This study set out to explore how beauty in traditional Indian art transcends mere aesthetics, serving as a medium for conveying profound spiritual and philosophical insights. The research delved into the symbolic richness, the emotional essence encapsulated by the concept of *rasa* and the integral role of traditional craftsmanship within the broader cultural and spiritual context of India. Through a comprehensive analysis of primary and secondary sources, including the works of Dr Ananda Coomaraswamy and ancient texts like the *Natyasastra*, the study revealed that traditional Indian art is deeply symbolic and spiritually resonant. Each element in Indian art serves a higher purpose beyond mere visual appeal, reflecting deep philosophical and spiritual truths.

### 6.1 Practical Significance

The outcomes of this research have several practical implications:

Enhanced Appreciation of Indian Art: Understanding the symbolic and spiritual dimensions of Indian art can lead to a deeper appreciation of its cultural heritage, informing both art practitioners and enthusiasts. This appreciation can promote the preservation and continuation of traditional art forms.

Educational Frameworks: The insights gained from this study can be incorporated into educational curricula, helping students and scholars to better understand the complexities and depths of Indian aesthetics. This can foster a more holistic view of art history and cultural studies.

Contemporary Art Practices: Artists and designers can draw inspiration from the symbolic and spiritual aspects of traditional Indian art, incorporating these elements into contemporary practices. This fusion can lead to innovative art forms that resonate on a deeper emotional and spiritual level.

Cultural Tourism: The findings can enhance cultural tourism initiatives by providing richer, more informed narratives about Indian art and heritage sites. This can attract more visitors and promote cultural understanding.

### 6.2 Unresolved Problems and Further Research

While this study has provided significant insights, there are several areas that require further investigation:

Regional Variations: Indian art is highly diverse, with regional variations that reflect different cultural, historical and spiritual contexts. Future research could explore these regional differences in greater detail, providing a more nuanced understanding of Indian aesthetics.

Contemporary Adaptations: Investigating how traditional Indian aesthetic principles are being adapted in contemporary art forms could provide valuable insights into the evolving nature of Indian art and its relevance in the modern world.

Interdisciplinary Approaches: Further studies could adopt an interdisciplinary approach, integrating perspectives from anthropology, sociology and psychology to understand the broader cultural and social implications of Indian art.

Audience Reception: Researching how contemporary audiences, both within India and internationally, perceive and interpret traditional Indian art could offer valuable information on the impact and reception of these art forms in a globalised world.

In conclusion, this study underscores the profound significance of traditional Indian art, not merely as an aesthetic pursuit but as a spiritual and philosophical

journey. By appreciating its symbolic and spiritual depths, we can foster a richer cultural heritage and promote a deeper understanding of the diverse and complex traditions that have shaped Indian aesthetics for millennia.

**ACKNOWLEDGEMENTS**

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**RESEARCH PAPER**

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# Influence of European Styles on Architecture of Colonial Time Second Tier Towns

## A Myth or Reality?

**By Dr Seemantini Chaphalkar**

**Abstract**

Post-independence study of the colonial era, especially in architecture, is dominated by the grand narrative valorising imperial and princely enterprise of construction of classic buildings and towns, which are today our heritage. Post-colonial studies have thrown up various approaches challenging this narrative and opened our eyes to the participation and initiative of Indians in the so-called colonial project. In colonial time India, the architecture went through a total transformation and absorbed various European styles which dominated existing styles, ranging from a variety of historic styles to several regional vernacular styles. This popular conception, however stands corrected by a deeper study of a secondary town, the textile hub, Solapur in southeast Maharashtra. The paper looks at the architectural transformation in the town during British rule through the lens of Indian modernity. Away from primary sites of imperial influence, the citizens took the lead to adopt, assimilate or reject the percolation of European architectural styles. The choice of form, style, material and technology for the new buildings they built were determined by resource conditions as well as socio-cultural trends of the time. Using archival texts and graphic documentation of extant colonial era buildings, especially the school buildings, as well as the research of socio-economic situations of their making, the paper argues that the influence of European styles was quite cursory in secondary towns. Since the typology was new, the repetition of plans was bound to happen. But the elements of European styles were selectively adopted only when resource conditions permitted and only for a certain phase of time. The elements were used only when they could be easily crafted with local materials by local craftsmen or were available in local shops as assembled products. The meanings associated with the elements were changed by using them in different contexts for different purposes than the original. Secondary town citizens negotiated the change on their terms.

**Keywords:** Architectural transformation, Secondary towns, Colonial rule, Solapur, Assimilation.

### 1. Introduction

The history of colonialism around the world is full of conflicts and negotiations of indigenous communities with the colonisers in political, economic, social and cultural realms. In India interaction of multiple aspects of Indian culture with the British culture resulted in different degrees of acculturation in various domains of life. The field of Architecture and urbanism was most tangibly influenced by imperial policies and was one of the most active arenas of contestations and negotiations. Colonial time scholarship creates the metanarrative of British influence and dominance over indigenous practices whereas postcolonial scholars have often challenged this generalisation to bring forward tales of participation, negotiations and

contestations. However, the extant scholarship is limited to the stories of presidency towns and royal capitals, leaving out the large number of secondary towns which were important players in colonial politics, economics and urbanism.

The modernity achieved in India, in various walks of life, though triggered and guided by Western ideals and British institutions, was a result of decisions taken by key participants rooted in preexisting traditional systems and processes within specific contextual conditions (Guru, 2005). It was an uncertain and dynamic process (Giddens, 1998). Responding to values and practices of European modernity, Indian individuals, groups and societies negotiated, contested, modified, adapted and redefined features of precolonial practices to evolve their own expressions of Indian modernity in various regions and fields. These expressions were not only different from their Western counterparts but also from extant indigenous traditions; they were unique responses to the challenges of their contexts. This occurred in every facet of life, including architecture.

Despite the dynamic processes of modernity, the history of colonial architecture in India is limited to the discussion of state-initiated buildings in presidency towns such as Chennai, Kolkata, Mumbai and New Delhi and royal capitals such as Lucknow and Pune. The host of 'secondary' towns that transformed and produced a different kind of complicated engagement with colonial ideas are overlooked. Westernisation in India is discussed in terms of primary, secondary and tertiary processes. At a primary level, Western stimulus and the Indian recipient are directly linked while at the secondary level, the influence is transmitted through an indirect contact (Srinivas, 1956). A secondary level of economic and political operations is also indicated in this study. After discussing aims, objectives and research focus the literature review sets out the background and establishes the gap in extant scholarship. After a brief discussion of methodology, the discussion and analysis of school buildings is attempted, followed by observations and conclusions.

### 1.1 Aim and Objectives

Secondary towns were far from the imperial towns but not completely isolated; they engaged with industrialisation and modernity differently than presidency and royal towns. There was a cascading effect, circulation of images and percolation of new ideas occurring through key actors that straddled both the worlds at the center and periphery. At secondary level, there was more involvement of the local elite in decision making, but the social and political life was tied more closely to traditional forms of production and social structure. Secondary towns faced the dilemma between achieving the ideal image projected by the metropolitan world and the well-evolved architectural traditions. The role of local knowledge ingrained in building traditions was central to the production of architecture and was passed on from generation to generation, but it could not be helpful for the new types of buildings made necessary by the new economic and political systems in the making. Only metropolitan buildings could provide the guiding template for these buildings. On this background, how the dilemma of local traditional and new imagery imported from metropolitan towns resolve is the central enquiry of this research.

The research aims to interrogate how a secondary 'town', in this case 'Solapur', engaged with new ideas in architecture introduced by the rulers at presidency towns. Did contingencies of the place, such as the prevalent limited set of construction techniques, kinds of patronage and its long distance from the metropolis have any influence on its architectural production? What were the milestones and phases of development and did they concur with what was happening in metropolitan centers? What were the precolonial building systems? How did the precolonial building systems adjust to new materials, technologies, typologies and forms? What were the differences and commonalities between precolonial and colonial architecture? And finally, what refinement to the metanarrative can this enquiry offer?

In this paper, the scope is limited to a discussion of a single typology of buildings, the school. Education was a tool of the colonisers to produce loyal and efficient subordinates and the rulers developed a state-run education system to achieve it. However, these schools were not sufficient for the increasing number of aspiring students. The state had to allow private schools run by local organisations to fulfill the need. This paper examines the trajectory of school buildings during 130 years of colonisation in Solapur to comment upon the influence of European styles at secondary town level. The socio-economic, cultural and political processes that form the backdrop of architectural development are mentioned only when absolutely essential. Though the urban form of the city evolved in conjunction with the architecture, its development is not discussed here. The examples are representative enough and similar processes can be observed in any other secondary town of a similar socio-cultural context. Hence, the conclusions can well be generalised.

## 2. Literature Review

Pertinent literature about the colonial enterprise of producing buildings can be divided into four sets. In the first set, the authors have generally adhered to a grand imperial narrative of imperial inserts. In the second set, post-colonial scholars have scrutinised the finer negotiations to argue the collaborative nature of production and the emergent modernity, focusing on individual towns or projects. The third set documents historic buildings or towns and position themselves as part of post-independence national narrative. The fourth looks at discussions specifically focused on stylistic influences. All authors have analysed archival and textual data, photographs and drawings; some have also conducted interviews, surveys and site observations. In the end, I have examined texts discussing stylistic influences in architecture.

The first set of texts published by Western and Indian scholars creates a grand narrative of imperial inserts and their powerful influence on Indian architecture. The works describe the undertakings of infrastructure building by the Public Works Department, Railways and the various arms of the imperial government. The authors discuss the technical mastery as well as design prowess of European architects (Davies, 1985; Morris and Winchester, 1983), synthesis and flowering of the Indo Saracenic style (Metcalf, 1989; London, 1994), influence of Imperial architecture on indigenous traditions, the tastes of royalty and revival of construction and furnishing craft traditions (Tillotson, 1989) and the long controversial process of imperial identity creation through building of the capital city at New Delhi (Irving, 1981). The synthesis of bungalow through amalgamation of both architectural traditions (King, 1984), emerged as the favored residential type of the emerging middle class in 20th Century in major Indian cities (Desai et al., 2012). The authors conclude that these projects were initiated by imperial rule for the common public good, but also for advancing their commercial and imperial interests.

The considerable body of work by postcolonial scholars, focused on particular aspects/projects of colonisation, challenges imperial historiography. Building upon Said's paradigmatic theory for understanding conflict of oriental and occidental ideologies and the 'history from below' approach advocated by the Subaltern Studies Group, these scholars have explored the other side of colonial discourse. In Mumbai, urban form and buildings developed as a close collaboration between sets of English designers - officials and Indian contractors - engineers (Chopra, 2011). The excitement and wonder of Mumbai's urban development is recorded by participant citizen Govind Narayan (Rangnathan, 2009). Colonial growth and status of Chennai was founded on visionary economic and political decisions by key Indian Figureures (Stein, 1993). Similarly, the cultural character and urban form of Ahmedabad emerged through dynamic social processes and visionary decision making by key Figureures (Gillion, 1968; Yagnik and Sheth, 2011; Spodek, 2012), architecture of Lucknow, termed as hybrid by imperial historiography, is a nuanced process of political and cultural modernisation (Das, 1991, 2008). Lucknow's architecture and culture were a result of dynamic relations between the British and the Nawabs (Llewellyn-Jones, 1985). Modernity was introduced in Hyderabad city by influential persons, institutions and educational initiatives (Luther, 2006). Texts examining Indian modernities in Delhi and Chennai (Hosagrahar, 2005; Sitalakshmi, 2015) also chart the journey of modernity of these towns in the architectural-urban realms. The contestations between tradition and modernity shaped the process of capital city building at Bhubaneswar (Kalia, 1995). Many of these authors argue that colonised people were not passive witnesses of colonial social processes, but actively participated, contested or negotiated with them to achieve their own versions of modernity.

The third set arises out of the recent interest in heritage. These works are primarily documentations of historic buildings by adopting a descriptive approach, feeding into the nostalgia of the reader and calling out to her sense of civic responsibility. Colonial architecture of Mysore (Issar, 1991) and historic buildings in Satara, the capital city of the Marathas, in the Deccan (Unwala, 2010), architecture of more royal capitals such as Baroda (John, 2010), Ahmedabad (Pandya, 2001), and Bijapur (Daddee, 2014) has been documented, discussed, compiled and published for sharing of the respective authors' appreciation of the historic architecture with wider audiences. Heritage conservation has been emerging as a whole new field in the last few decades as a result of institutional efforts and as necessary to the nationalist construct. These texts provide a baseline documentation of historic cities for the consumption of travelers, city governance bodies, responsible local citizens and history lovers.

Most of the cities in the texts discussed here are presidency or royal cities, their buildings were built under imperial British or Indian royal patronage to serve different agendas. Their architecture was a result of political considerations and royal aspirations. In secondary towns, architecture was usually a

result of local contingencies and social and cultural processes resulting from negotiations with imperial policies. Very few microscopic views of secondary towns exist that have mapped the variations during the colonial period, but they discuss modernising processes in realms other than architecture.

The scale and cultural context of all these cities and their historians' lines of enquiry are different from the architectural and social processes in a secondary town, where this research intends to focus. Few scholars have discussed the local architecture of secondary towns or how their buildings were generated. This clearly justifies a closer look at colonial architecture and modernity at the secondary level. The assumption that secondary town architecture was a simple scaled-down version of presidency city buildings needs correction, which is attempted here.

Style in architecture is formed when a particular set of elements is used in a considerable number of buildings in a region repeatedly over a period of time. Art and architectural historians categorise styles based on the design of specific elements and features, and measure influence using perceptual similarity between the elements. Using similarity and feature matching methods, the influence can be precisely examined (Khan et al, 2021). Specific elements of a style can be identified and similarity can be measured on a Likert scale to assert the influence of a regional style over the architecture of another region (Ali et al, 2024). Transformations in the development of Islamic architecture can be explained by the movements of skilled craftsmen who travelled extensively in their search for challenging work across a broad region (Meinecke, 1996). The basic laws used in architecture can be identified with mathematical clarity and can be used for the purposeful creation of a set of emotions (Ballantyne, 2001). In post war, Poland's new churches were the result of local capabilities, conviction, persuasion and perseverance of the designers and patrons. In the larger background of prevailing artistic and ideological trends, the designers chose to evolve their versions fulfilling local needs and aspirations (Gil-Mastalerczyk, 2016). I have, however, used a more descriptive and qualitative approach focusing more on background processes and attitudes to architecture.

## 3. Methodology

The paper uses qualitative research methods and data from textual, archival, graphical sources and material evidence of objects, buildings and precincts. Primary data was generated through walking surveys of core town lanes, photo documentation, measured drawings and architectural analysis of extant buildings. The survey of archival documents at the Collector's Office Archives helped to understand the imperial government's perspective. Books, magazines, reports, surveys published during the time and afterwards related to that time form the secondary sources.

The data was categorised chronologically and based on patronage. Further, the buildings were categorised by the sub-types generated out of particular situations. This enabled the researcher to comment upon the chronological evolution of planning needs, construction techniques, forms, stylistic elements and patronage and to link them to the concurrent evolution in socio-cultural, economic and political domains. It was possible to understand the interlinking between socio-cultural situations and of development of schools.

## 4. Data Analysis and Findings: Religious Informality to Secular Formality

The analysis of data brought forward three categories of school buildings based on the patronage. There was only one state-initiated school, multiple Municipal schools and many schools established by local organisations.

The indigenous schools, before British began formal education, were informal and revolved around the teacher, who set the syllabus, taught and also conducted exams, probably on the front veranda of his wada house or the neighborhood temple. This education enabled local youth to read, write and do basic mathematics in the vernacular language. Wada houses were flexibly used for private and public functions such as offices, schools and clinics (Figure 1).

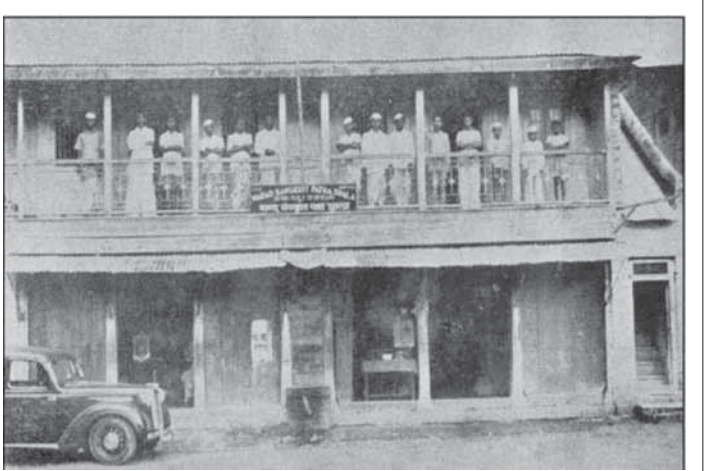

Figure 1: Warad Sanskrit Pathshala, 1878, an example of indigenous schools operated from Wada house.
*Source: Jadhav, 2016*

However, the British needed a workforce in their offices with a basic understanding of English language and modern accounting. Initially, the state began its only school from a single-floor stone building which went on expanding horizontally and then vertically in every decade as the demand for education grew. Established under the 'Directorate of Public Instruction' in 1853, this was the town's first secondary school (Jakkal, 1928; Kulkarni, 1953). Its classrooms were arranged in a linear manner, adjoining a veranda. The building grew in three wings perpendicular to one another making a C shape around a court. It was a simple load bearing structure, the first ever secular and double storied public building of the town (Figure 2, left). It soon became a convenient place for the town's cultural activities such as the public library (since 1857), Municipal Sanskrit Pathshala (since 1870s) and agricultural classes (since 1879) sponsored by the state, municipal grants and public donations (Jakkal, 1975).

Figure 2: City High School 1853-54, 1870 & American Mission: Early School Buildings
*Source: Kulkarni, 1953*



### 4.1 Conscious Efforts of Design by the State

In the last decade of the 19th Century, the state and the municipality collaborated on the construction of a new high school building after the need for a larger and better building was acutely felt. The government bore the land cost and half the construction cost, while the Municipality raised half the cost. The site was selected beyond the historic land fort and lake-temple precinct, which was the traditional southern boundary of the core town. This decision later proved beneficial as the high school defined the new town center for the next century. The work began in 1898-99 and the building was inaugurated in 1902 by Bombay Presidency Governor Lord H. N. Northcote and was also named after him, as was the convention of the time. The design was probably sent by the consulting surveyor/architect of the presidency government in Mumbai. The construction was undertaken by the local branch of PWD through local contractors.

The school was fitted with all necessary furniture and equipment; other conveniences and beautification measures such as porch, fountain, library, museum, chemistry laboratory, and gymnasium were added over the next ten years (Figure 5). Addition of another floor to the central portion and development of an outdoor sports ground further enhanced its utility and appearance and made the school one of the best in the region. The longer side of the E-shaped building was aligned in the north-south direction and the shorter arms were aligned to the east-west direction (Figures 3 & 4). The building enfolded two courtyards on the west within its perpendicular wings. It had continuous rows of classes protected by covered verandahs on all sides and deep projecting wings on the west for good ventilation, self-shading and glare free light. The central wing had a front verandah, a staircase block and a protruding porch. This wing housed a great hall for student assemblies, cultural programs and public lectures (Figure 3). The wings at the north and south ends had only single floors with gable ended sloping roofs (Figure 3).

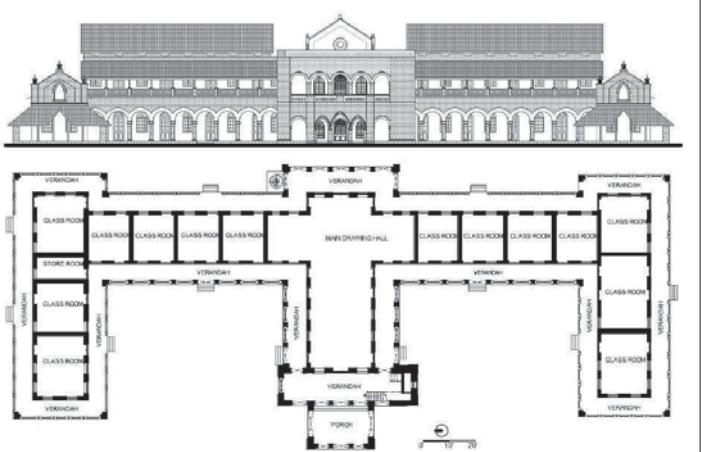

Figure 3: Northcote High School: Front West Elevation and Ground Floor Plan
*Source: Author*

Figure 4: Northcote High School: Northern End Wing & Southern Front Court
*Source: Author*

Figure 5: Northcote Highschool: Chemistry Laboratory & Gymnasium
*Source: Author*

Their gable walls were decorated with minarets of curious composition and ornamental Gothic windows. The western front verandah had a series of semicircular arches. The coursed masonry walls of black basalt stone were offset with white Shahabad stone arches. The pointed protruding molding accentuated the edges of the arches. This finer detail was probably used for the first time in the town and was repeated in many later buildings. The central wing had circular ventilators placed in the spandrels of the arches, which had Shahabad stone blocks border (Figure 4). The east verandah at the back however had simple wooden columns supporting the sloping clay tiled roof (Figure 6).

Figure 6: Northcote High School: Eastern (Rear) View
*Source: Author*

Except for these small details, the building was quite plain. A stringent budget allowed only a very low plinth. By this time, Shahabad stone was locally available. A Shahabad Stone Depot opened at Navi Peth in 1895; in 1901, another shop which sold the stone in both tile and block form (Kakade, 1895; 1901). The roof is entirely in timber. Some use of steel can be seen in the wrought iron railings and the support structure of staircase. A first floor was added in 1914 using steel girders to cover the ground floor and build above. The building thus evolved with time.

**4.2 Municipal Schools: Architecture for the Masses**

Economic and practical considerations governed many later municipal and private schools. Municipal schools were initially conducted in hired premises. In 1950, only 12 municipal schools had their own premises (Kulkarni, 1953). All these buildings had simple plans with linear arrangement of classrooms connected by wide semi semi-covered corridors. For bigger schools, more wings and floors were added to fulfill spatial needs. Most municipal schools were single storied tall buildings with spacious multifunctional verandahs covered with sloping clay tile roofs supported on timber framework. Most schools were often placed in large sites, which doubled as playgrounds. State-sponsored socio-cultural events were often held in the municipal school grounds (Figures 7, 8, 9, 10 & 12).


Figure 7: Municipal Boys Higher Primary School, 1922 West Front Elevation, Transverse Section and Ground Floor Plan.
*Source: Author*



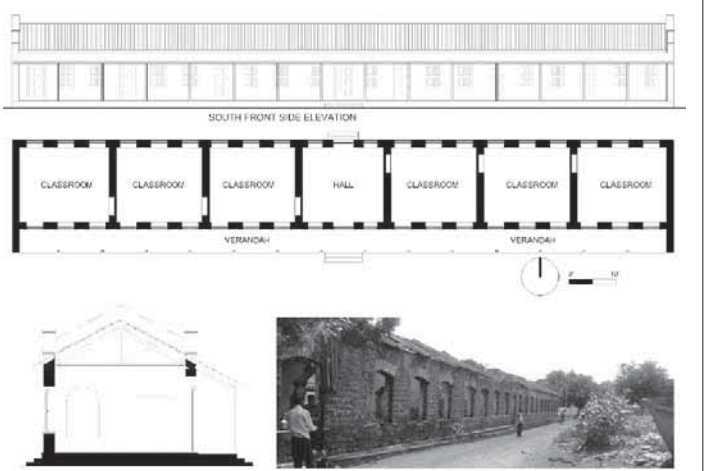


Figure 8: Konapure Chawl School, 1923: South Front Elevation, Ground Floor Plan, Transverse Section and North View
*Source: Author*

Figure 9: Urdu Boys School, 1944: South and North Views
*Source: Author*

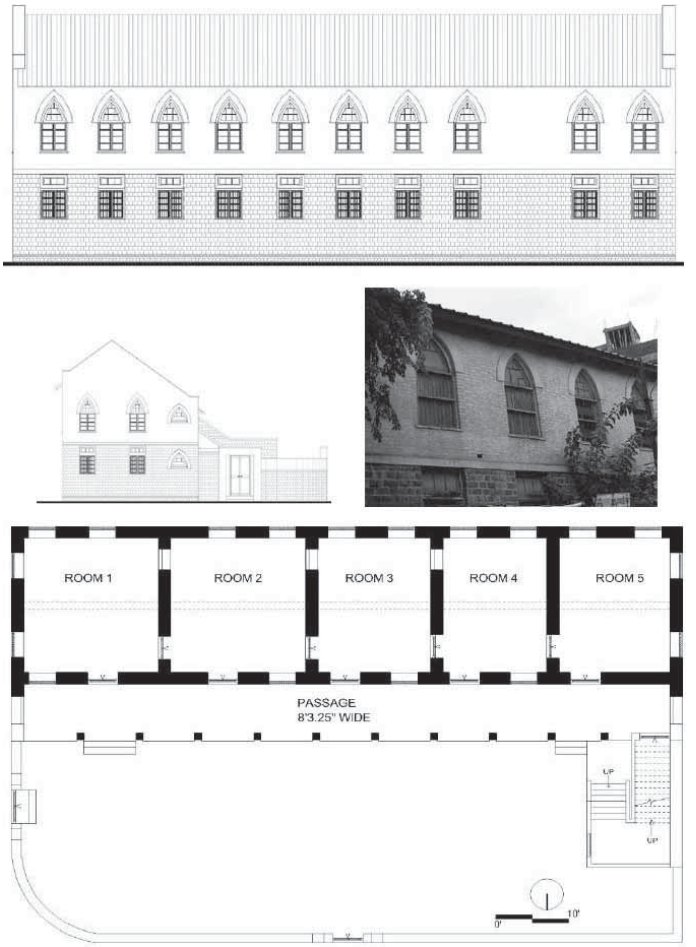


Figure 10: Chaupad Girl's School,1925: South Elevation, East Elevation, Southern View & Ground Floor Plan
*Source: Author*

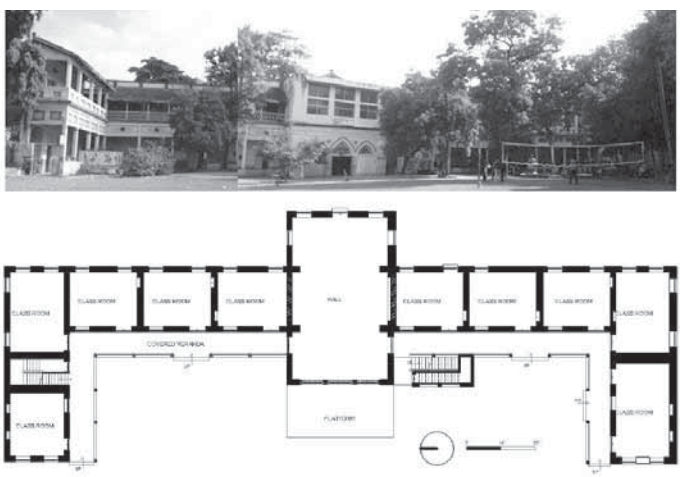

Figure 11: Surajabai Ramlal Sevasadan High School 1925-28, Western View & Ground Floor Plan
*Source: Author*

Figure 12: Urdu Girls School, 1940s: South and North Views
*Source: Author*

The municipality received a donation from wealthy patron Ramlal Lachhiram to build a girls' school in his wife's memory (Kulkarni, 1953). Reminiscent of Northcote High School, the building was a single-floor floor sprawling E-shaped stone building with a large hall at the center and two end wings enclosing a large court on the west. Spacious verandahs protected the linear arrangement of classrooms from the western wind and sun. A first floor was added when more donations were received and the number of students increased in the 1950s (Figure 11).

### 4.3 Rise of Private Local Schools

Dissatisfaction with government education, concern about growing westernisation and reducing control of pedagogical decisions prompted the establishment of Indian schools in Pune and Mumbai, followed by all other secondary towns. Since the 1870s, Lokmanya Tilak and Prof. G. K. Gokhale felt and consistently conveyed the need for national character building through Indian schools. Inspired by this discourse, the local private organisations began setting up their own schools since the late 19th CE. The Saraswati Mandir Organisation was founded in 1895 especially for girls' education (Kirloskar, 1970). Beginning with hired premises, they could soon inspire enthusiasm and generosity to earn a grant of land from the state and donations from patrons to build a simple tin roofed single storied building (Figure 13). Front verandahs were used by girls for eating meals and classrooms doubled as sleeping halls of the boarding house. The next school building could only be built 30 years and 50 years later with donations. Since the overall development did not happen at one time in planned manner, architectural expression resulted in an eclectic mix of different styles. The buildings evolved in response to social context and economic constraints just like most other social endeavors in town.

American mission school (Figure 2- middle and left) was doing meaningful work in primary education,

Figure 13: Saraswati Mandir Girls School, 1899, Early Buildings
*Source: Kirloskar, 1970*

health service and vocational training for outcasts and downtrodden in Solapur and surroundings since the 1860s. Their early buildings were simple sheds with sloping roofs and verandahs which provided space for ancillary activities (Figure 2- middle and left). The Mission built its first proper school building in 1908 (Figure 14), probably inspired by the contemporary Northcote High School building, it was much smaller in size. It had four classes situated on the ground floor and four on the first floor. End wings accommodated the staircase and office. The semicircular arcaded verandah on the northern front doubled as space for supplementary activities. The ground floor level verandah was extended to become a larger open platform which worked as an elevated stage for public address during religious sermons and cultural programs. Lime encased steel joist floor supported on black basalt load bearing walls and columns, timber structured and clay tiled sloping roof on the first floor, creating a visual language introduced by Northcote High School. The first-floor balcony railings were wooden, but the terrace front parapets had ready-made wrought iron grills of intricate design. The staircase was topped with pyramidal roofs, which created vertical tower-like features framing the linear sequence of arches.

Shikshan Prasarak Mandali, Pune was already running good educational institutes in Pune. They were invited be some local elite to establish a school in Solapur with a promise of funding by Seth Haribhai Devkaran's descendants. The school began in 1918 and functioned from hired premises until their own building was constructed in 1936 (Joshi, 1968).

The building was again inspired by the Northcote High School, but shorter in length and taller in height (Figure 15). Another famous school building of the Mandali in Pune may have informed the design (Figure 16). The set of materials and techniques was similar to earlier schools. The plain and stout form of the building was offset with an entrance porch on the northern front and on the south by verandas with semicircular arches. The central vertical shaft on the north rose to culminate in a triangular parapet with a clock; the school was the first and only educational building to have one. The building became the latest landmark and part of a larger public precinct around Hom Maidan (Figure 16).

Many caste groups inspired by the atmosphere of educational development in the city organised themselves to work for the upliftment and development of community members, Maratha Shikshan Mandal being one of them. Their building was a different expression that used stone at the

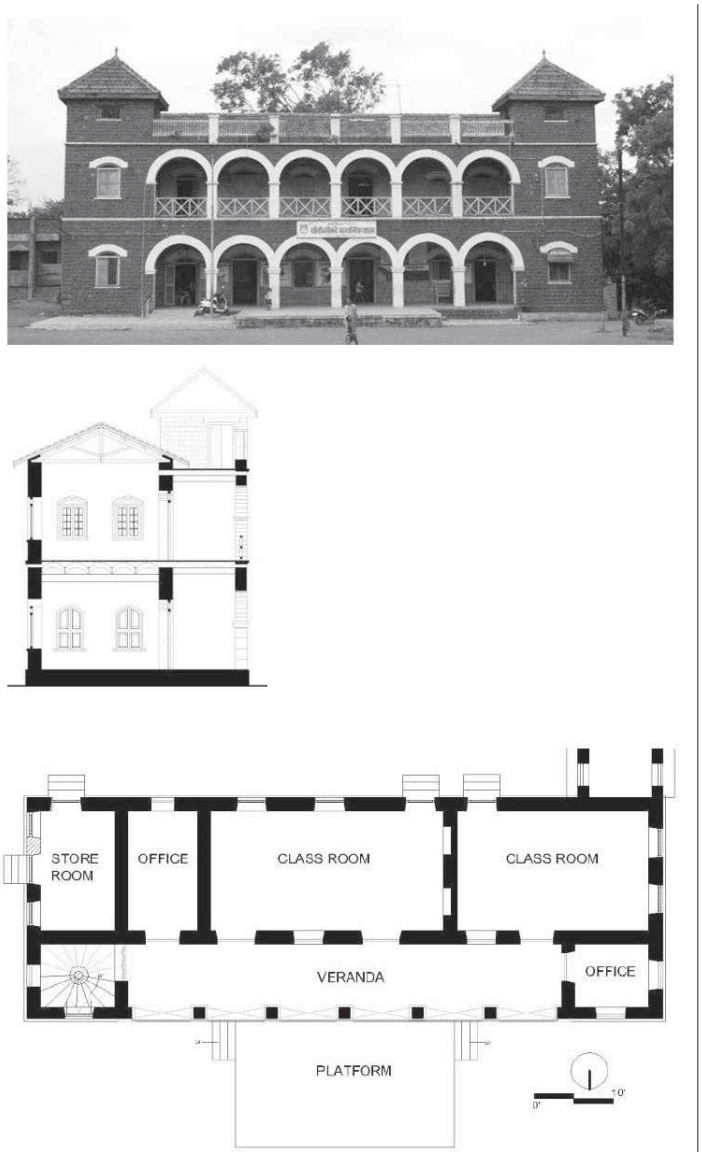


Figure 14: Voronoko School, 1900-1910: North Elevation, Transverse Section & Ground Floor Plan
*Source: Author*

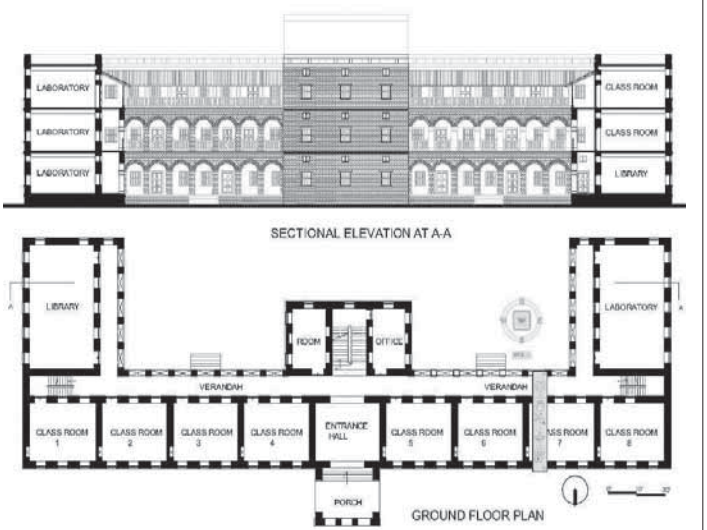


Figure 15: Haribhai Devkaran High School, 1936: Sectional elevation from South and Ground Floor Plan
*Source: Author*

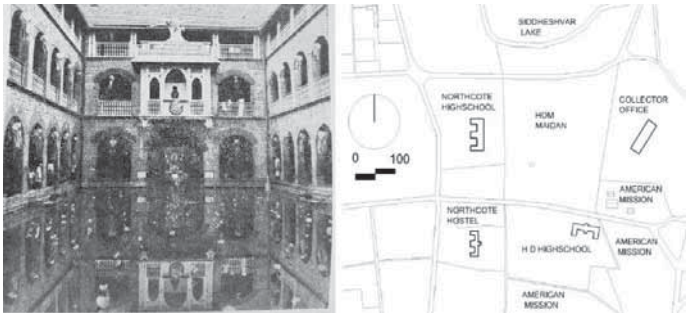


Figure 16: NMV High School, Pune, 1915: Internal Court & Haribhai Devkaran High School: Location Plan
*Source: Joshi, 1968, and Author*

ground floor and bricks and lime for the first floor. The building also combined training and a hostel in the same building in the initial years. The southern front façade was quite impressive in terms of color, texture, craftsmanship and design details. The north façade is more austere yet enlivened by a series of arches supporting a two-way open staircase leading to the upper floor (Figure 17).

The private patrons and community groups could bring their own educational renaissance to the town in the first quarter of the 20th century. However, their buildings were modest and proportional to their needs and resources.



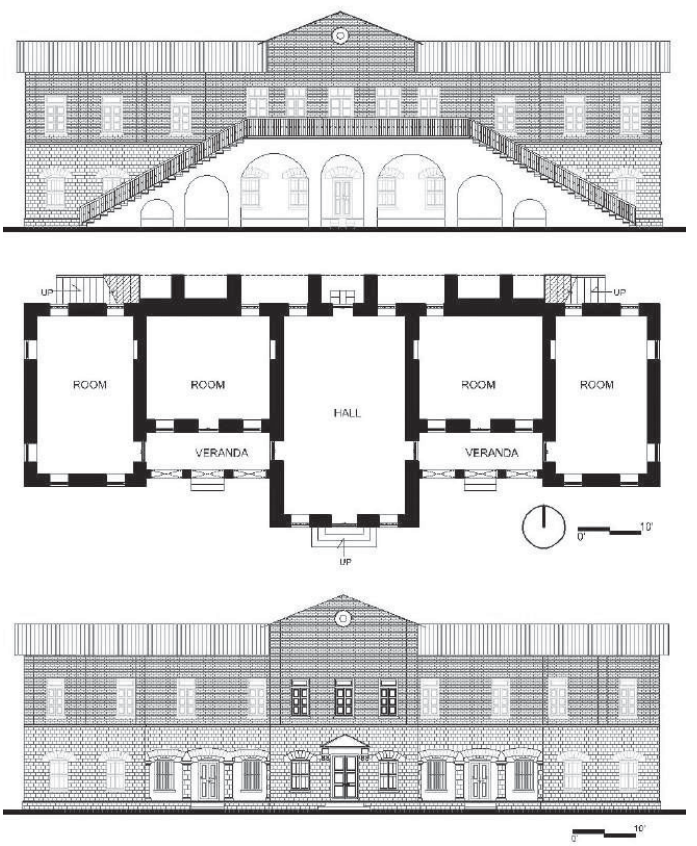


Figure 17: Maratha Shikshan Mandal, 1920s: North Elevation, Ground Floor Plan & South Elevation
*Source: Author*

## 5. Results and Discussion: Stylistic Influence

Many school buildings used the eye-catching combination of black basalt walls with Shahabad stone trimmings for arches, floor lines, corners and window frames. Most of the town schools had simple plans and simpler elevations. Even the materials and techniques were repeatedly used to achieve the institutional look. The British colonial style with semicircular and gothic arches, large halls with sloping timber truss roofs and clearstory lighting was also used in preceding buildings such as the municipal office (1873) and town hall (1898-1900), both designed by the Indian engineer Mr. Vasudev Bapuji Kanitkar (Kulkarni, 1953). The high school further strengthened the visual imagery of the stone walls and arches, the grand scale and appearance of a public building set in its own large grounds. Its considerable visual impact influenced the vocabulary of the private and public buildings alike. Many buildings tried to repeat some selective elements for the next half century. The school became a model for many schools of different sizes built by the municipality and private organisations. The building became a central landmark of the town and remained so for the entire century, while a public zone eventually developed around it. The façades were usually dressed in basalt stone masonry in lime mortar. Timber trusses were usually replaced by steel trusses in the 1920s, indicating local availability of steel and a shortage of good quality timber. Steel joists encased in lime concrete in a jack arch manner became a popular technique of mid and top floor roofing for large spans which changed roof profiles. Door and window frames and panels, staircases and balcony railings were still in timber, but wrought iron grills and precast concrete balusters increasingly replaced them. Clay tiled roofs needed replacing every few years which was expensive and cumbersome, and they were gradually replaced by tin sheets (Kakade, 1935). The use of these new materials and techniques eventually changed the appearance of schools. Semicircular and segmental arches were seldom used to embellish front façades; Chaupad Girl's School was the only municipal school to have Gothic windows for its first floor (Figure 10). S. R. Sevasadan Girls School had gothic arches only for its central hall (Figure 11), but did not repeat them on the first floor, indicating that the style was not in vogue anymore by the 1950s.

## 6. Observations

Private schools preferred vertical expansion to save foundation costs and valuable land. From the third decade of the 20th Century, steep prices of timber

and easy availability of steel made the builders shift from timber to steel structural members. All sizes of steel joists and girders were now locally available (Kakade, 1932). Elements such as segmental and semicircular arches, Indo Colonial column pedestals and capitals, wooden door and window frames and shutters, small-sized glazed panels and a white Shahabad carved molding band to indicate the floor line had become often used elements. One or all of these elements later became typical elements of every stone building in Solapur. The architecture of municipal schools was governed by limited budgets. A few private schools, such as H. D High School, could afford to build arched colonnades for verandahs.

Though industrial modernity had introduced changes in external form, structural systems and patterns of patronage, the multifunctionality of buildings had continued. In state buildings, standardisation often reduced the scope for individual expression and creativity, but in private buildings, more exploration was seen in plan organisation and external forms as a response to the availability of a greater variety of elements assimilated from metropolitan styles.

## 7. Conclusion

School buildings in Solapur under colonial rule directly resulted from socio-economic conditions in different phases. The architectural influences transmitted from state inserts seem to have influenced all the school buildings in later years, but it also continued the vernacular expression possible with the limited set of materials and crafts. The elements of European styles, such as Gothic, segmental and semi-circular arches, were gradually assimilated into local systems of architectural production by master masons and carpenters who had worked on or observed the construction of state buildings. The plans of later school buildings responded to socio-economic context, the plot sizes, needs and budgets of the patrons. Local style was constantly subjected to change, adaptation and development. The impulse of experimentation and assimilation was a natural response of living design and construction practices to the new ideas, images and forms. This cultural mixing, often termed as 'acculturation'- an assimilation of the dominant culture, was underway in all aspects of life and naturally extended to architecture. The closer observation of the secondary town buildings has evidently shown the fluidity of tradition, coupled with embracement of modernity. This nuanced narrative shows how unsatisfactory the superficial labelling of 'European influence' is in the case of school buildings of colonial time Solapur.

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**RESEARCH PAPER**

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# Energies in Built Spaces and Their Influence on Environment Human Health and Wellbeing

**By Ar Masood SK**

**Introduction**

India is considered as the land of the Mystic and enlightened - which is true about most of the great civilisations of the world which lasted for thousands of years. This wisdom is reflected in their work of Architecture, Temples, Irrigation projects, Alternate Medicine, Science and technology etc. Most of this wisdom we are still unable to decipher with our advanced ultra high-tech technology, resources, computers and our intelligent modern brain. Today this science is practiced as Bio geometry, the Physics of Quality that integrates the universal laws and natural dynamics of living energy systems. Similarly, Vaastu Shastra, Feng shui have been practiced in Indian and Chinese subcontinents.

In Western Philosophical context, matter appears to be solid, inert, passive and unconscious; life, consciousness and creative intelligence are seen as insignificant accidents and epiphenomena of material development. Western science portrays human beings as highly developed animals and thinking biological machines who have a fleeting and insignificant role in the overall scheme of things.

The technological advanced society we created offers us great comfort, communication and convenience just at a click of a button. But what is the price we are paying for our luxury using the modern science and technological innovations, wireless communication, material engineering, nanotechnology, Genetic engineering etc.? We have the reward of reduced life span, decreased immunity, chemical laced food, polluted indoor and outdoor environment, chlorinated and fluoride water, electronic smog, depletion of natural resources, non-eco- friendly materials, synthetic food etc. Are we progressing or we progressing towards peril?

**Geobiology** investigates the interaction between the earth and living things. In our culture, locations to avoid are referred to as **geopathic stress**. Current architecture fails to consider the impact of **geophysical anomalies** caused by geological features. Specific geological materials can also affect and/or enhance these occurrences. This research explores the physical features of these anomalies and their impact on biology, including humans, animals and plants. The human body interacts with these phenomena through several parameters, including magnetite, iron, silica, water, and electromagnetic fields. Long-term exposure to geologically disturbed areas can negatively impact human brain function, blood health, and immune system.

**Geophysical Anomalies**

**Geopathic Stresses:** Geopathic stress describes areas with high amounts of naturally occurring radiation and comes from the subsoil.

**Underground Water:** Groundwater flows through underground galleries and aquifers. Its friction with the environment attracts natural terrestrial radioactivity, reduces the earth's magnetic field, and affects surface air ionisation.

**Geological Faults:** Faults or fissures in the ground are breaks or fractures in the rocks. This break promotes the outflow of natural radiation to the surface, particularly gamma rays and the radioactive gas radon.

**Ground Cavity:** A ground cavity is a hollow space that is concealed underground. Such cavities can affect the Earth's magnetic field vertically and are frequently filled with gases or liquids.

**Hartmann Lines:** In the middle of the twentieth century, the German doctor Ernst Hartmann found a grid that spans the entire world and is tied to the Earth's magnetic field. They are parallel straight lines separated by roughly 2.5m east-west and 2m north-south. The neutral zone is located between the lines.

**Radioactivity:** The mineral composition of the soil beneath our buildings could include clays or minerals containing radioactive elements like uranium, thorium, or radium.

### Geological Phenomenon

A natural phenomenon involving the structure or composition of the earth, creating variation in magnetic fields results in conductivity and discontinuity of electric charge. The presence of limestone has a strong interaction with water flow, as its geological inter-structure is perfect for the production of natural electricity by hydro-geophysical means. Rocks such as basalt, volcanic lava, limestone, granite, and others with a high content of clay, magnetite, iron, magnesium, or other metals exhibit high electrical conductivity, thus becoming channels for any electric current, such as the one created by an underground water flow.

### Bio-geometry

Good buildings should adhere to the concepts of durability, utility, and beauty. They should be environmentally friendly, healthier for its occupants, and capable of healing and harmonising the negative energy fields generated by contemporary technology. The importance of indoor temperature for health and comfort has been highlighted, as individuals spend around 90% of their time indoors, particularly children and the elderly. The frequency of complaints concerning the quality of indoor air has risen. These concerns have been referred to as Sick Building Syndrome. Complaints are most likely due to the growing use of a wide range of materials in construction and furnishing, as well as limited ventilation inside dwellings. Bio-geometry is one of the new energy quality sciences that has arisen in architecture. It is a patented science of using the energy principles of shape to qualitatively balance biological energy systems and harmonise their interactions with the environment.

## 1. Location of the structure and the ground properties

### a. Geological Anomalies:

The placements of the Temples, Monuments, and Structures were not random but highly precise which is not possible without knowledge. These are usually placed on spots which have geophysical irregularities like fault underground or underground water (Pyramids) (Figure 1).

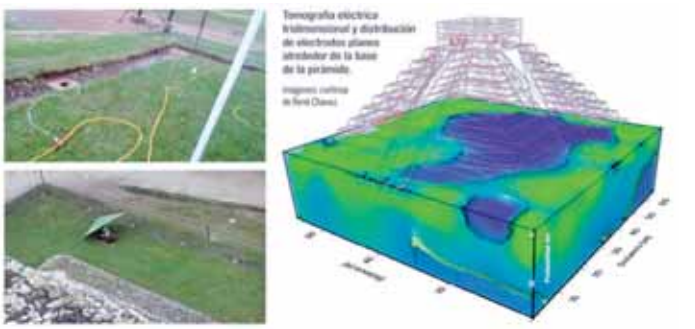

Figure 1: Electric tomography carried out at the pyramid of Chichen Itza showing the presence of underground water underneath it
*Source: Geophysics, 2015*

### b. Conductivity Discontinuity:

There seems to be some link between ancient Greek temples and fault lines. Examples the temple of Athena in Delphi (Figure 2 and 3).

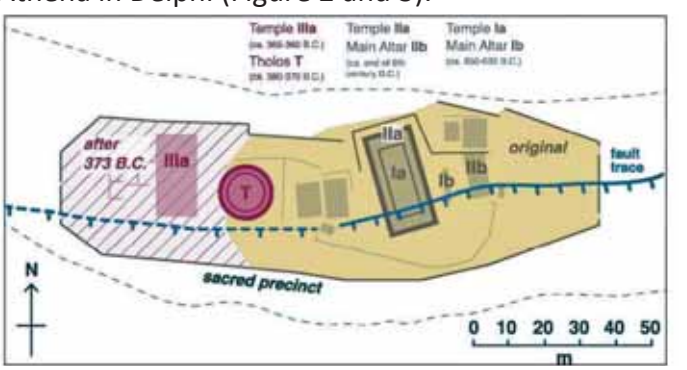


Figure 2: Map of the lower sanctuary of Delphi, central Greece, where a fault break cuts through the oldest temples and altars inside the shrine of Athena
*Source: Stewart. I ,1996*

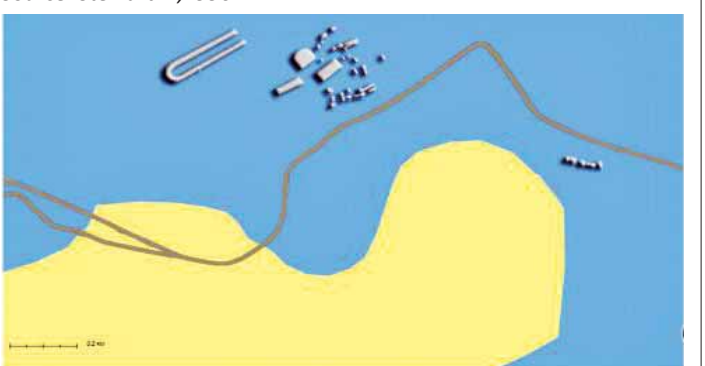

Figure 3: Geological map of Delphi temple area (redrawn data from IGME). The location of the temple, shown in grey, is placed in an area of intense geological change -a conductivity discontinuity- between elastic sediments (shown in yellow) and impure carbonate rocks (shown in blue).
*Source: Redrawn data from IGME*

Delphi, a principal oracular centre of antiquity, is located on a geological discontinuity.

### c. Biological effects

The interaction of these geophysical anomalies with human beings was analysed, showing the potential mechanisms that can trigger diseases, such as those of the blood, nervous, respiratory, genitourinary systems, as well as cancer (Giannoulopoulou L., Evangelou A., Karkabounas S., Papamarinopoulos S., 2018). Plants also seem to be affected by these anomalies; results confirm the correlation of geo-anomalies with dry seed metabolism and show suppression of germinative capacity of seeds within geo-anomaly zone with positive charges (Mamirova G. N., 2010) (Figure 4).


Figure 4. Corn seeds placed on a geophysical anomaly had 100% faster growth than controls, produced three times corn by weight.
*Source: Burke, J., & Halberg, K., 2005*

### d. Geometry of the buildings

Dr. Ibrahim Karim, an architect, demonstrated the impact of form and shape in his work on bio-geometry. An important case study was using certain geometries to reduce adverse health effects caused by a mobile antenna installed within a historic church in Hemberg, Switzerland (Figure 5).

Figure 5: Clockwise from top left - Bio-Geometry installation, Hemberg Church and Dr. Ibrahim Karim
*Source: https://biogeometryeurope.com/wp-content/uploads/2019/07/OfficialHembergStudy.pdf)https://biogeometryeurope.com/wp-content/uploads/2019/07/OfficialHembergStudy.pdf*

### e. Planets and Astronomy:

Due to the influence of celestial bodies like the sun, the telluric electric currents are stronger at particular times and on specific dates. According to the daily solar movement and solar winds, the geomagnetic field changes. The lunar day and yearly solar orientation both affect it.

### Conclusion: Effects on Humans, Plants and Animals

The impact of geography and geophysical features on biology has been documented from ancient times. This study defines geophysical anomalies, analyses their parameters, and explores how they interact with human biology, vegetation, and fauna. Natural electromagnetic waves and many sort of geo-anomalies have a clear impact on human biology. The production of electromagnetic fields is from the heart and the brain and the electrical transmission of signals is through the nerves.

The concept of Bio-geometry is a science of quality, a science that investigates how various objects interact on an imperceptible, subtle energy level. In the science of Bio-Geometry, we demonstrate an inner level of attributes that can be applied objectively and scientifically.

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ARTICLE

# Pinterest and the Illusion of Design

**Ar. Biranchi Sankar Panda**

Pinterest has transformed the way people interact with architecture and interior design. With endless images available at the swipe of a finger, it has made design more accessible than ever. Before the digital age, clients relied on magazines, showroom visits or their designer's expertise to develop a vision for their spaces. Today, they come armed with Pinterest boards filled with handpicked images that define their dream home. On the surface, this seems like a positive shift—clients are more involved in the design process and are able to articulate their preferences with clarity. But while Pinterest offers inspiration, it also promotes a superficial understanding of design, creating unrealistic expectations, encouraging mindless trend-following, and often disconnecting people from the reality of architecture and interior spaces.

One of the most valuable aspects of Pinterest is its ability to function as a visual communication tool. Architecture and interior design involve technical concepts that are often difficult for clients to grasp, leading to a gap between what a designer envisions and what a client imagines. A mood board filled with Pinterest images helps bridge this gap, providing a tangible reference point that both parties can work with. Instead of vague and contradictory descriptions like "modern but traditional" or "cozy yet minimal," clients can now present clear visual examples. For designers, this also serves as a convenient way to explore different aesthetics, keep up with global trends and create a structured direction for projects. Beyond communication, Pinterest has also played a role in democratizing design. What was once an exclusive field dominated by high-end firms is now open to anyone with an internet connection. Homeowners who previously relied entirely on professionals can now engage in the design process, making more informed choices and even discovering budget-friendly alternatives. However, just because design has become more accessible does not necessarily mean that people are making better design decisions.

The images that flood Pinterest pages create the illusion of effortless perfection—every room is immaculately styled, bathed in perfect lighting and free of any signs of daily life. These pictures rarely depict real homes; they are often staged setups from magazines, high-end hotels or luxury architectural projects designed for aesthetics rather than functionality. The bright, airy kitchen that looks perfect in a Pinterest photo might have been carefully edited to appear more spacious, or the stunning minimalistic living room might belong to someone who rarely uses the space. Many clients fail to realize that these images are curated to sell a fantasy rather than reflect reality. This leads to impractical design choices—an all-white colour scheme may become a maintenance nightmare in a home with children and pets, or open shelving that looks neat in a showroom turns into a cluttered mess in daily use. Pinterest fuels the desire for homes that look beautiful in pictures but may not function well in real life. A well-designed home should prioritize comfort, practicality and the unique needs of the people living in it. Unfortunately, Pinterest often shifts the focus towards creating spaces that look good in photographs rather than spaces that truly work for the occupants.

The platform also encourages trend-driven design over thoughtful, timeless solutions. Because Pinterest operates on an algorithm that promotes the most popular images, the same styles dominate for a period before being replaced by the next viral aesthetic. This cycle leads to short-term design thinking, where people select elements based on what is currently fashionable rather than what truly suits their needs and lifestyle. At one point, modern farmhouse designs with white shiplap walls and black metal fixtures flooded Pinterest feeds. Today, Japandi, a blend of Japanese and Scandinavian minimalism, is the new favourite. In a few years, another style will take over, and homes designed purely for trends may start to feel outdated. Unlike fashion, which changes every season, architecture and interior design are long-term investments. Walls, flooring, built-in furniture—these are not easily replaceable elements. Designing a home should be about creating a space that remains functional and appealing for years, not just something that looks good on Pinterest today. Yet, many homeowners are swayed by what is visually appealing in the moment, without considering whether their chosen style will still feel relevant and liveable a decade down the line.

Another major issue with Pinterest-fueled design thinking is what can be called the "Frankenstein effect." Because Pinterest allows users to save images from different sources, many clients end up with a collection of unrelated styles that they want to combine into a single space. A Mediterranean villa, a Scandinavian loft, a Japanese Zen-inspired bedroom—all beautiful in their own right, but together, they can result in a disjointed mess. While designers understand the importance of consistency, proportion and material harmony, many clients are unwilling to let go of their favourite images, even if they do not fit together. This leads to spaces that feel forced and disconnected, where each element competes for attention rather than contributing to a cohesive whole. Architects and designers often find themselves in the difficult position of explaining why certain combinations do not work, only to be met with resistance from clients who are emotionally attached to their Pinterest selections. Instead of using Pinterest as a source of general inspiration, many clients try to copy multiple ideas at once, leading to chaotic designs that lack a unified vision.

Perhaps the most frustrating aspect of Pinterest is its ability to distort budget expectations. The platform rarely provides context for the images it showcases. A sleek, high-end kitchen might look simple in a picture, but in reality, it could feature imported marble countertops, custom-made cabinetry, and designer lighting—all of which come with significant costs. Many clients assume that if they see an image on Pinterest, it must be easy to replicate, without considering the labour, materials and expertise involved. Designers often find themselves in endless discussions trying to explain why a Pinterest-inspired space may not be achievable within a given budget. This disconnect not only wastes time but also leads to disappointment when clients realize that their dream home may be far more expensive than they initially assumed. Pinterest encourages an illusion of affordability—people see DIY hacks and budget-friendly makeovers without understanding that quality design requires investment. Cheap imitations of high-end designs often result in poor craftsmanship and materials that deteriorate quickly.

For architects and designers, Pinterest presents a unique challenge. While it provides a useful starting point for discussions, it also diminishes the trust that clients once placed in professionals. In the past, clients relied on designers to guide them through the process, trusting their expertise to create a space that balanced aesthetics and function. Today, with Pinterest and similar platforms, many clients believe they already know what they want and simply need someone to execute their vision. This shifts the role of architects and designers from creative problem-solvers to mere service providers, reducing their ability to bring original, site-specific solutions to the table. It also adds pressure to deliver "Pinterest-worthy" spaces, where visual appeal is prioritised over liveability. Social media has conditioned people to judge spaces based on how they look in a photo rather than how they function in daily life. A home, however, is not a photoshoot backdrop—it is a place meant to be lived in, with all the mess, imperfections and evolving needs that come with real life. Architects and designers need to reclaim their role as experts, guiding clients toward designs that are not only visually appealing but also sustainable, practical and deeply connected to the way people live.

None of this means that Pinterest is inherently bad. When used correctly, it is an incredibly powerful tool for both clients and designers. But its influence must be approached with caution. Instead of blindly copying images, clients should focus on understanding the principles behind the designs they admire. Why does a particular space feel inviting? What makes a layout work well? How can a style be adapted to fit the realities of their home? Architects and designers, on the other hand, must take on the role of educators, helping clients navigate Pinterest

in a way that leads to thoughtful, functional design rather than a collection of mismatched trends. They must push back against the pressures of social media-driven aesthetics, reminding clients that a well-designed space is not just about looking beautiful in pictures—it is about creating a home that enhances daily life. Good design is not about assembling a collage of attractive images. It is about understanding space, light, materials and human behaviour. Pinterest may offer a glimpse into the world of design, but it cannot replace the depth of knowledge and experience that architects and designers bring to the table. The challenge, then, is not to reject Pinterest entirely, but to use it wisely—transforming it from a source of superficial inspiration into a tool for deeper, more thoughtful design conversations.





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# Evaluation of Wind-Catchers' Performance in the Vernacular Houses of Nagapattinam Region

**By Dr. Babu Rajeswaran and Ar. Purushothaman A**

The purpose of this study is to determine how comfortable users find indoor spaces in conventional structures with design features. The investigation was conducted in 70 traditional homes during the months of April and May in 2018 with a variety of modifications in the parameters selected, namely courtyards and wind-catchers. Seventy residences in the area were picked for a social survey showing the residents' degree of thermal comfort. According to the survey, 88.1% of the 250 total samples felt at ease using wind-catchers and 86.6% felt at ease using both wind-catchers and courtyards, which fulfils ASHRAE standard 55. But 75.3% of homes which have courtyards fall short of the required percentage. Wind-catchers and courtyards dominate the internal thermal comfort in traditional houses. Nearly 84% of the time, wind-catchers and courtyards dominate internal thermal comfort in traditional structures. Thus, it implies that wind-catchers are an important part of the architecture in Nagappattinam in order to provide year-round optimal thermal comfort. Therefore, designers may combine courtyards and wind-catchers as a latent structural system to significantly reduce energy consumption in contemporary homes.

## 1. Introduction

India is the nation of villages; the entire nation's growth depends on the development of villages. But in the past few decades, many villages have begun to vanish due to urbanisation. Most of the villages are developing, but the growth corrodes the unique character of our traditions. Rapid growth of villages and their housing systems make us unable to remember our unique design techniques which comforted humans all through the year. After constructing buildings, people make the indoors comfortable using active means of cooling. Most of the time, even during the pandemic, people started to utilise active mechanisms for indoor comfort considerably, thereby causing human health implications (Kuo *et. al.,* 2008) Simultaneously there is an immense gap between passive systems of cooling and active mechanisms (Corney & Flack, 2012). This prevailing condition leads to substantial energy consumption and huge energy demand all across our nation. Vernacular architecture is the treasure of traditional knowledge where immense ideas are experimented through various generations and the finest design techniques are practiced around centuries. One such unique design element is the wind catcher which allows the air to pass through the roofing system. Its sensible air flow technique makes the interior space highly comfortable. The performance of any building depends on thermal comfort which maintains the human body heat balance in control.

Nagapattinam is one of the finest examples of traditional housing settlements with various bio-climatic design strategies. Research conducted in office buildings of Brazil proves that the traditional setup is better for thermal comfort of occupants throughout the year (Andreasi, 2010). Nagappattinam possesses unique traditional houses with vernacular materials and design solutions such as three-tier brick bond walls for heavy thermal insulation, *jali* walls for effective air movement by Venturi effect, light pan tiled pitch roofs for circulation of hot and cold air in the building, courtyards as form of stack effect, continuous row housing and linear planned houses. The eco-friendly building materials are low

carbon emitters and least air polluting amongst the present conventional building materials (Cheng *et. al.*, 2020. Passive design techniques and strategies existing in our traditions always use the existing climate in a better manner (Chenvidyakarn, 2007). In vernacular buildings, indoor thermal comfort is studied to understand the prevailing sustainable design solutions. Detailed analysis of any passive technique is always important for effective energy-efficient design solutions (Subhashini, 2016). Hence, this research is a part of energy-efficiency analysis which assesses the two dominant design elements through questionnaire-based field survey using residents and other users aged between 18 and 60 years age for effective occupancy evaluation. Two types of vernacular houses − one with courtyards and multiple courtyards and the other with wind-catchers are selected as experimented study models for validation of the quantitative analysis to bring out the effectiveness of courtyards and wind-catchers.

## 2. Method of Study

### 2.1 Building Survey

In the core settlements of Nagapattinam, the Neela streets are chosen for study in which 76 traditional buildings that were over a 100 years old with sustainable techniques recommended by local building professional were selected (Thirumaran & Purushothaman, 2019). From these, there were 13 houses with courtyards, 13 houses with courtyards and wind-catchers as design technique. The selected houses are almost similar size and have the same type of planning. Sampling plays a crucial role in this type of research and assessment. To ensure reliable and valid results, a sample size of 250 respondents was selected, comprising existing occupants, native users, and architecture students. They were given a brief introduction to the purpose of the survey before participating. Figure 1 shows a typical example of grid-planned isolated housing style of peasants with central courtyard. Figure 2 shows the house with multiple courtyards in a linear planned Brahmin house of Nagappattinam. Figure 3 denotes a house with multiple courtyards and wind-catcher. Figure 4 shows single courtyard house with wind-catcher and figure 5 features photos of the above-stated houses.

### 2.2 Questionnaire Survey

Questionnaire consists of three parts - the first one includes the personal data of the user subjected to survey and the second one enquires about the thermal condition of the building by three dominant parameters such as temperature, humidity and air movement. Considering Health,

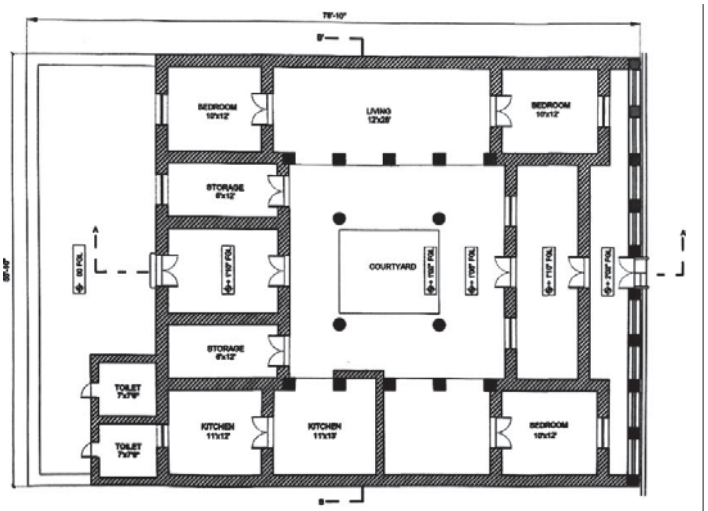


Fig 1: Surveyed central courtyard house with grid planning (sample 1)
*Source: Authors*

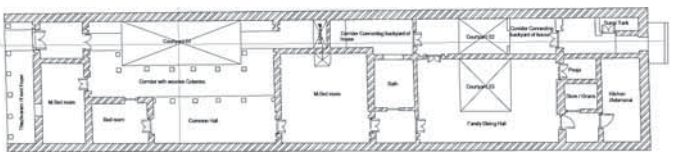

Fig 2: Surveyed multiple courtyard house (sample 2)
*Source: Authors*

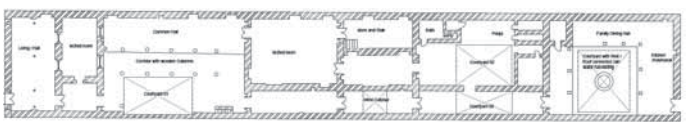

Fig 3: Surveyed multiple courtyard house with wind-catcher (sample 3)
*Source: Authors*

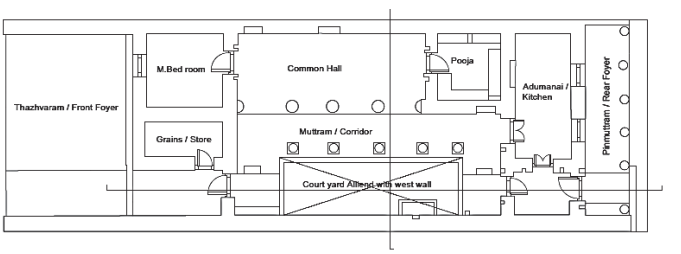


Fig 4: Surveyed single courtyard house with wind-catcher (sample 4)
*Source: Authors*

Safety and Environment (HSE) approach while designing is mandatory for holistic comfort of indoor environment (Motaghifard, Omidvari, & Kaazemi, 2020). Finally, the questionnaire concludes with overall thermal comfort condition of the building. The third part discusses the opinion of the respondents to recover from the discomfort.

The survey was conducted during April and May 2018 and the scale used is Likert scale based on literature studies (Appah-Dankyi & Koranteng, 2012; Dili, Naseer, & Varghese, 2010; Motaghifard, Omidvari, & Kaazemi, 2020; Subramanian, Ramachandran, &


Fig 5: Exterior and interior views of the surveyed courtyard and wind-catcher houses.
*Source: Authors*

Sentamil Kumar, 2017). A pilot study was conducted by asking the question – "What are all the dominant vernacular design elements which provides thermal comfort in traditional houses throughout the year?" The results with the answers of wind-catchers and courtyards alone dominated which is analysed by reliability of scales, the Cronbach's alpha value for 32 users was 0.843 using confidence level 1- =.95. The study above 0.6 is considered as reliable value supporting the scale ((Tavakol & Dennick, 2011)) as shown in table 1. So, the questionnaire survey validates to determine the thermal comfort scenario existing in the traditional houses in Nagappattinam, Tamil Nadu. The evaluation is done in a condition when the occupants are not using any of the active mechanisms (fan, cooler, AC) and are wearing regular clothing in peak summer. Two different scenarios, one with wind-catchers and the other with courtyards, are considered to understand the performance of these two design elements towards thermal comfort of indoors. One of the houses possesses AC in one of the master bedroom and the survey was conducted by excluding that room.

## 3. Results and Discussion

Thermal comfort of any buildings based on occupants' response should be around 80% and above respondents should get comfortable for better indoor environment as per ASHRAE standard 55, for temperature slightly cool (-1), normal / moderate condition (0) and slightly warm (1) are the acceptable condition. Figure 6 shows the subjective response of the occupants during the summer of 2018.

The example yield demonstrates that out of 250 inhabitants, in the houses with wind-catchers, the adequate scope of votes appeared to be 67.6%, with courtyards the worthy scope of solace votes is 72.8%, yet including the cool (-2) level of solace is 96.8%. So, also utilising and the upgraded solace level is 92.4% then with both of the structure components, client solace range is about 80.0% which fulfils the ASHRAE standards and with Enhanced Comfort including cool (-2), it gives 98.0% Comfort. The contrast between the agreeable scope of patios and wind-catcher alone is about 11.6 rate. Considering temperature as a real phenomenon, these components together work much better (figure 6). Comparative climatic area

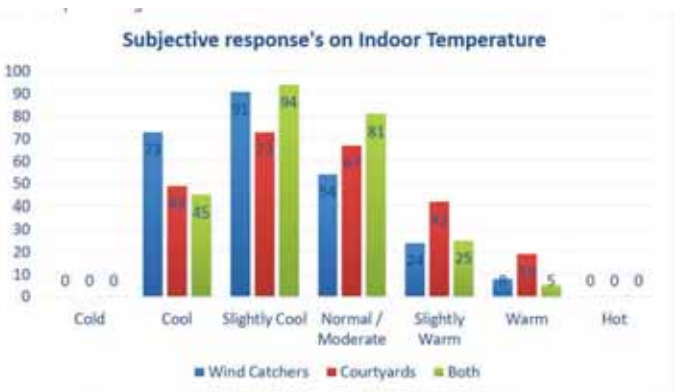


Fig 6: Survey response of users with respect to indoor temperature.
*Source: Authors*

demonstrates that customary structures are 87% superior to contemporary houses (Subramanian, Ramachandran, & Sentamil Kumar, 2017).

The results over dampness in figure 7 state that adequate condition including somewhat dry (-1), neutral (0) and slightly humid (1) in wind-catcher house agreeable range is 86% and courtyard houses is 72.4% when both breeze catcher and courtyard blend houses solace 86.4%. The reactions demonstrate unmistakably that the mix of both wind-catcher cum courtyards and wind-catcher houses are generally higher degree in comfort than the

Table 1: Pilot survey results of courtyard and wind-catcher houses assessed using Cronbach Alpha test.
*Source: Author*

| Reliability Statistics | | |
|---|---|---|
| **No of Items** | **Cronbach Alpha** | **Internal Consistency** |
| 32 | 0.843 | Good |

places of courtyards alone. Additionally, according to principles, those two other than yards fulfil the ASHRAE standard and comparable warm, muggy climatic condition in nearby study zone demonstrates 83% agreeable conventional houses than present day houses (Subramanian, Ramachandran, & Sentamil Kumar, 2017).

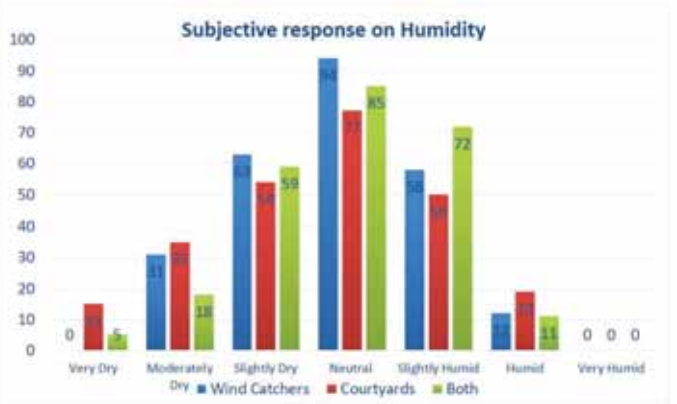


Fig 7: Survey response of users with respect to humidity.
*Source: Authors*

Air movement is often considered an important design constraint. Figure 8 shows the nearly 85.6% of households voted that the air movement from wind-catchers makes them comfortable. 91.2% of households voted air movement from the courtyard makes them feel comfortable. But 78% of modern building households voted that the wind-catcher and courtyard air movement has made them comfortable. These results reveal modern-day households accepted that both elements make them comfortable as shown in figure 8. In previous research in similar region, it was found that traditional buildings are 84% comfortable than modern buildings (Subramanian, Ramachandran, & Sentamil Kumar, 2017).

In combination of all three parameters of indoor comfort - indoor temperature, humidity and air movement are together plotted in figure 9. The user residences with wind-catcher and courtyards cum wind-catcher plot lines are above 200 votes which

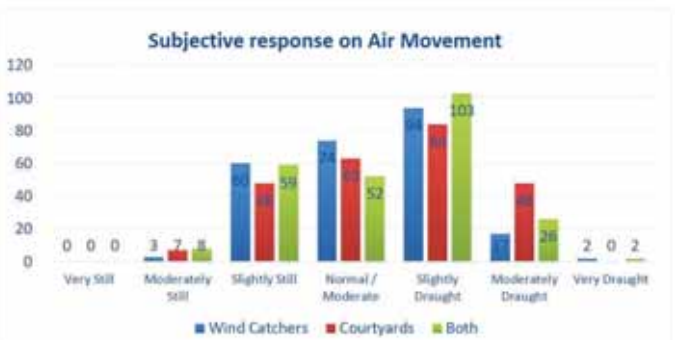


Fig 8: Survey response of users with respect to air movement.
*Source: Authors*

shows clearly it's above 80% (American Society of Heating, Refrigerating, and Air-Conditioning Engineers, 2004). The wind-catcher houses are very comfortable for users. The residences with courtyards alone face a little pressure in maintaining the comfort level in all three comfort categories (temperature, humidity and air movement). Similarly, when we combine these two design elements, comfort level is 87.2%.

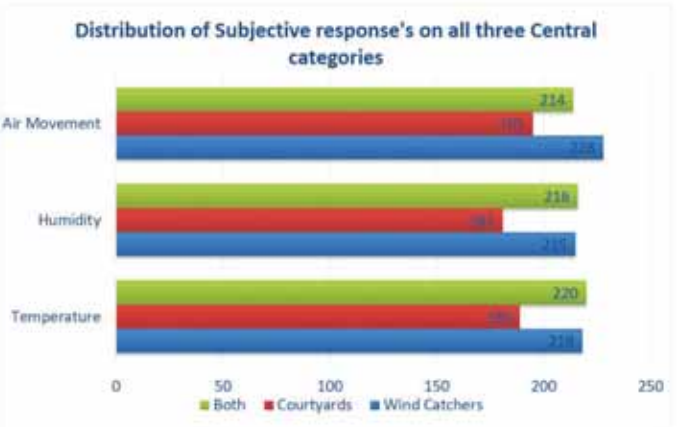


Fig 9: Distribution of survey response of users in all three central categories i.e. - 1, 0 and 1 from the seven point scale for temperature, humidity and air movement.
*Source: Authors*

During peak summer, the residents' choice of indoor comfort to overcome the harsh outdoor conditions is plotted in Figure 10. It shows that in traditional houses, specifically those with wind-catchers, the assessment chart indicates that 32% of users prefer to overcome the heavy heat and humidity of the warm and humid climate through natural ventilation by windows, door openings, and *jalis*. The users preferring fans alone account for 41.6%—fans only increase the flow of air; they do not change the quality of the air and consume very little energy. Hence, even though it is an active system, it can still be considered sustainable. Users preferring air coolers or other modes for comfort account for 0%, and respondents choosing air conditioners are only 4.8%, which is a negligible quantity. Additionally, 22.4% of respondents indicated that, under the present conditions, they do not require any cooling system.

Similarly, in houses with courtyards, 29% of respondents indicated a need for natural ventilation, 44% preferred fans, and 19.2% had no specific expectations. Users generally do not rely on coolers or other systems; even for air conditioning (A/C), only 7.6% of respondents expressed interest, which is very low. In residences featuring both design elements, 22.4% preferred natural ventilation,

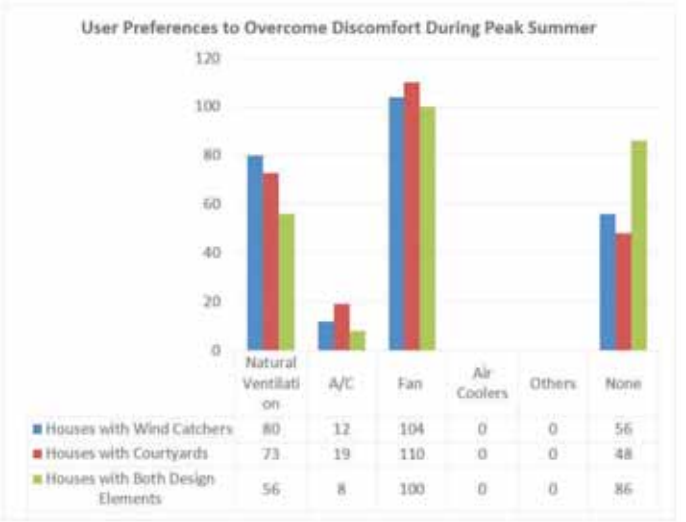


Fig 10: Distribution of survey response by users regarding first choice to overcome summer discomfort in Nagappattinam region.
*Source: Authors*

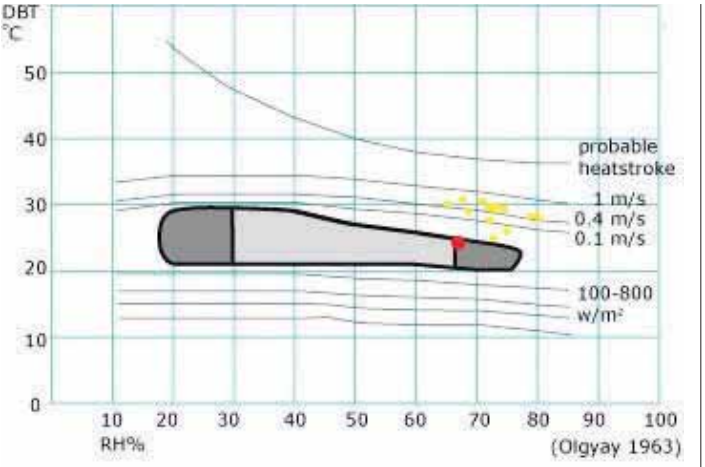


Fig 11 : Victor Olgyay Bio climatic chart (Olgyay, 1973) plotted for Nagapattinam region with 2018 climatic data in yellow dots showing the outdoor condition and red dot shows the measured indoor condition.
*Source: Authors*

40% preferred fans, and only 3.2% preferred A/C, while 34.4% of respondents indicated no particular requirement—relatively higher compared to the other cases individually.

### 3.1 Assessment of Indoor and Outdoor Environment using Olgyay's Bio Climatic Chart

The monthly mean average temperature (DBT) and humidity for the entire year of 2018 are plotted in table 2. This data shows January, February and December are the only comfortable months with average outdoor climatic conditions, and all other months are in absolute discomfort based on Olgyay's chart (Olgyay, 1973) (figure 11). For the survey period in peak April and May summer, measured indoor temperature and humidity in the vernacular buildings are plotted in red dots, which lie within the comfort range of 24 degrees temperature and 67% humidity and the measured air movement with natural ventilation alone is 0.45 m/s. The slightly comfortable months like August, September and October shift from average to not comfortable due to increase in humidity in the coastal region. Meanwhile, March-April electricity bills were gathered of traditional buildings with and without wind-catchers of the same size and orientation. The results show an ultimatum of 40% deviation in cost. Wind-catcher houses are tailored for the warm, humid climatic conditions of the Nagappattinam region.

## 4. Conclusion

The growing rate of population has led to rapid urbanisation and a massive demand for housing. In addressing these mass needs, building professionals have often failed to recall the passive design solutions embedded in our traditions. Technological developments and contemporary design strategies by today's professionals have increased user comfort in indoor environments through active mechanisms, yet these often overlook the significant environmental footprint we leave behind. Numerous studies on traditional architecture around the world suggest that abundant passive solutions exist for reducing energy consumption.

Focusing on the dominant strategy of a particular region—with its specific characteristics and design elements—offers a strong approach for addressing user comfort. In Nagapattinam, where outdoor environmental conditions are harsh for nearly nine months of the year, indoor temperature measurements show that traditional houses with wind catchers and courtyards remain comfortable.

Table 2: Shows the climatic data of year 2018 plotted with the dry-bulb temperature and humidity
*Source: Author*

| MONTH | Jan | Feb | Mar | Apr | May | June | July | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Dry bulb temperature (DBT) °c** | 25 | 26 | 28 | 30 | 31 | 31 | 30 | 29 | 29 | 29 | 27 | 27 |
| **Relative humidity (RH) %** | 74 | 74 | 73 | 73 | 71 | 67 | 65 | 69 | 73 | 74 | 79 | 80 |
| **Existing comfort level outdoors** | AC | AC | NC | NC | NC | NC | NC | NC | NC | NC | NC | AC |
| *A - average AC – average comfort * C – comfortable * NC – not comfortable *2018 data | | | | | | | | | | | | |

Out of 250 samples, 88.1% of respondents felt comfortable in houses with wind catchers, while 86.6% felt comfortable in houses with both wind catchers and courtyards—both satisfying ASHRAE Standard 55. However, houses with only courtyards provided comfort to just 75.3% of users, which falls short of meeting the standard. Overall, wind catchers and courtyards in traditional buildings contribute to indoor thermal comfort nearly 84% of the year. This suggests that wind catchers are a significant design element in the Nagapattinam region for achieving year-round thermal comfort.

Thus, this investigation demonstrates that customary vernacular homes built in this region—with wind catchers or a combination of courtyards and wind catchers—make a significant contribution to energy saving. This may serve as a valuable guide for building professionals in the Nagapattinam area when designing contemporary structures in the future.

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# Dehali – A Transitional Line

**Ar. Shobha Dastapur**

## Introduction

A threshold serves as a transitional line that separates space from the outer world to the inner space. The cultural geography focuses on religions that have risen in the world with their specified forms and rituals based on the personal and practical experiences of their great founder. The features and ornamentation of the threshold allow great opportunities to maintain a connection to vernacular traditions. Vernacular building threshold types and technologies reflect the wealth and status of the family (figures 1a and b). The changes in threshold size, width, depth and height are according to need and comfort. Data in this study has been collected by observation and through case studies to understand the importance of the thresholds from early days to present times. To some extent, in modern generations, respect, responsibilities and tradition values are being restored. All these are to be carried forward for the present and upcoming generations.

Fig 1a: Carved entrance door
*Source: in.pinterest.com*

Fig 1b: Carved entrance door with yellow paint as it indicates haldi (turmeric).
*Source: in.pinterest.com*

## Literature Analysis

A threshold has many synonyms like *naakra, umbar, umara, umbratha, dwarpindi, pratiharbhumi* (*pratihar*-protector, *bhumi*-land). *Sandhi* (junction) crossing over a threshold or boundary is called *antarupati* (in Sanskrit). The word 'threshold' has originated from 'therscvald', an old Anglo-Saxon/ Germanic word that means 'wood' or 'forest'. It has two Hebrew words first pronounced – *sawf* which means limit or boundary and others pronounced *mif-tawn* which means sill. Threshold, or *hostilu* (in Kannada) is important for both *grih-pravesh* (entry ritual) and *grih–niragaman* (exit ritual) to a home, temple, built form or territory. In India, *dehali* has persisted mainly due to the importance given to *Vastu Shastra*. *Dehali* is a Sanskrit word that means 'threshold of the door'. The Sanskrit word *dwara* means 'door'; it comes from the word *dwi* i.e. entry into the darkness (inside) and exit into the light (outside). The door symbolizes transition and metamorphosis which in turn shapes the aesthetic of the entrance (figure 2). A region marking the boundary, a threshold, is a horizontal piece of wood or stone at the bottom of the doorway which also offers support to the door. According to Alexander *et al*. (1977) buildings with a graceful transition between the street and the inside are more tranquil than those that open directly to the street.

Thresholds are carved with stemmed lotus flowers, symbolizing the divinity of the universe and also

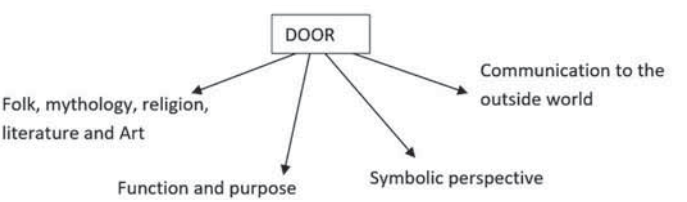


Fig 2: Door threshold functions and connections
*Source: Author*

the emotionless mind necessary to reach divinity. Goddess Laxmi resides in the door threshold. The mythological connection is reinforced through customs and religious ceremonies from birth to death. The priest and the *bhakta* entering the *garbhagriha* of a temple must cross the threshold without treading on it. It is believed in Vastu Shastra that the entrance of the house should not be constructed at the same level as the ground. Superior quality wood should be used for the main entrance door. By adding a stone or wooden threshold for the main door you can prevent the loss of wealth. The slightly raised threshold acts as a barrier to negative energies and they bounce away from the entrance itself. The opening or closing of doors enables the admission of light, circulation of air and control of the temperature in a building. It either admits or blocks access to the building.

**Mythological Glimpse**

In one mythological story of Hiranyakshipu (figure 3), Lord Brahma granted him a boon that would no man, God or animal created by Brahma could kill him. Nobody could kill him at day or night, in heaven or on earth. And no one can kill him with a weapon or kill him inside or outside his house. Hiranyakshipu fought with the *devatas* and became the ruler of heaven. Vishnu took on Narasimha avatar to kill Hiranyakshipu as he troubled all gods and goddesses. He held Hiranyakshipu and dragged him to the threshold of the door which was neither outside nor inside his house. He placed him on his lap, which was neither sky nor the earth, and killed him with his claws at twilight without using any weapons.

**Narration**

Doors have a defensive function; closed doors provide security and safety and offer a feeling of protection, openness and ease. The entry to the house relates to occasions such as new bride, newborn baby, a disciple, and an ill person coming back to home from the hospital. Doors can have an aesthetic, symbolic and ritualistic purposes. Doors and doorways appear in literature and the arts with metaphorical or allegorical meaning of change. A

Fig 3: Vishnu as Narasimha avatar kills Hiranyakshipu at the door's threshold.
*Source: https//www.google.com/images*

threshold may be made of wood, stone, and metal or so on and is placed at the bottom of a doorway, which is crossed when in entering a building or a room. Thresholds can pose a barrier to passage for people with disabilities and are now typically at one level.

**Structural and Cultural Importance**

A door threshold give strength and rigidity to the door frame and shutter and also prevents the entry of insects, dust etc. It also helps in preventing the bending of the vertical members at lower ends during and after construction. The sizes of door threshold is usually of width 9 inch, 6 inch, 5 inch and

Fig 4: Main doors of different threshold sizes in D/W/H
*Source: www.data.naturalscience.org*

Fig 5: Fixing of door and threshold pooja and placing panch dhatu below it.
*Source: Author*

height of 9 inch, 5 inch, 4 inch and 3 inch (figure 4). The disadvantage is that it causes an obstruction in the movement, cleaning and washing of the room. In earlier days it was not the problem but in present times, it is considered an obstruction. In Poland, Ukraine and Russia, it is considered bad luck to shake hands or kiss across the threshold when meeting somebody.

The entry to the house relates to occasions such as a new bride, newborn baby, and a disciple, an ill person coming back home from the hospital, an achievement, and a trip. Vitruvius and Indian Vastu Shastra both prescribe odd steps to the doorway so that crossing the threshold would take place with the right foot. The degree of sophistication and the lavishness of the door decoration depended on the status and wealth of the owner. Most of the beliefs related to door threshold from the ancient to the present scenarios affected more changes in culture as well as in societies. Objects like silver, gold, *panch loha*, pearl and others, making five or nine items put together are placed in a very small bronze pot buried under the main door threshold to protect the home from evil forces (figure 5).

Fig 6: Main entrance door of Dasoha
*Source: Author*

Fig 7: Main doors with brass threshold
*Source: https//www.data.naturalscience.org*

Fig 8: Main door pooja
*Source: https//www.data.naturalscience.org*

Fig 9: Modern entrance door without threshold
*Source: https//www.data.naturalscience.org*

Fig 10: Modern entrance doors with ramp
*Source: https//www.data.naturalscience.org*

Decorating the threshold with beautiful traditional *rangoli,* with turmeric and *kumkum* is a traditional Indian practice (figures 6-8). Many methods can be seen in different states, and there are many of them. Threshold not only refers to a doorway or gate but also means a new beginning and a limitation. As explained by Alexander *et al.* (1977), "all the structures in the town get their identity most clearly from the fact that you pass through a definite gateway to enter - it is this gateway acting as a threshold that creates the unit". The interplay between enclosed and open spaces evokes a sense of transition between arrival and departure. As you move from one room to the next, you become aware of the contrast between movement and stillness.

**Today's Perspective**

Nowadays, only the main door threshold is preferred (figure 9). Our ancestors used door thresholds for the exterior as well as the interior too; for them, it was not an obstruction while moving. The threshold arrangement is not a safe play space for kids, elderly people or the physically challenged. It may also be an inconvenience while cleaning with a vacuum cleaner. The thresholds at entrances often present access problems for wheelchair users and users who have difficulty lifting their feet. A threshold ramp should be used for addressing mobility issues (figure 10). Sometimes the threshold is recessed to zero clearance at floor level for a wheelchair to pass through. Threshold ramps are seen in multiple measurements for a standard door or entryway. Measurements include the height of the threshold, the width of the door opening, and the amount of space on the walkway where the ramp will rest.



**Conclusion**

The necessity and cultural symbolism of the threshold should be incorporated into our lifestyle. It reveals the importance of the door threshold ratio—width, height, and depth accordingly. Culture is a belief that should be supported by our experiences. We nurture our culture through the comfort of shared beliefs and the strength of ancestral wisdom. Trusting in knowledge, experience, and time-honored practices, we preserve our heritage and guide future generations.

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**ARTICLE**

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# Bhutaganas
# Transcending Space and Time

**By Ar Rajshree Rajmohan**

Contemporary architecture in Kerala continues to pose critical questions about aesthetic value and artistic freedom. One encounters banal objects and images, often devoid of artistic finesse. They seem to vacillate between traditionally imbibed aesthetic expressions and the world of kitsch. This is seen in the unassuming presence of images of *drishti bommai* (colloquial Tamil word for a doll /mask that wards off the evil eye) hung prominently at construction sites, houses, and also behind trucks. Commonly dismissed as the face of an '*asura*' (demon), not much is known about its origins. Yet, this practice continues. The critical question is, whose imagery are these drishti bommai masks representing, and why was this specific image chosen for protection from intangible forces? Through an in-depth analysis of the ancient Hindu texts such as *Kalatattvakosa*, *Mayamata*, and *Natyashastram*, and the study of the relief sculptures adorning the temple sanctum, relevant clues to the use of this imagery and the inherent status assigned to the southwest corner of any built space can be decoded.

**Contemporary Kitsch:**

Fig.1 depicts a white pumpkin hung on the front façade of a contemporary white modernist house. The pumpkin has an angry face with a large moustache painted on it. After the housewarming ceremony, the pumpkin is discarded at the nearest crossroad. It is a popular belief, that the pumpkin has absorbed all the negative energy, the onlookers would have cast on the new house. Discarding the pumpkin at the nearest crossroad is believed to ensure a peaceful life for the inhabitants of the newly built house. In its place, a flattened painted plastic mask with a similar face is kept permanently on the front façade. As seen in Fig. 2, similar masks (available in varied sizes) are placed in front of most residential and commercial buildings. Commonly dismissed as the face of an '*asura*'[1](demon), not much is known about its origins.

References of Bhutaganas in ancient Hindu texts such as *Kalatattvakosa*, *Mayamata*, and *Natyashastram*, are seen while representation in the relief sculptures in Mamallapuram, Tamil Nadu and those adorning the temple sanctums in Trichur and Kozhikode in Kerala are found. The sculptural iconography of a bhutagana called *Udharamukhagana* displayed in the Museum of History and Heritage, Thiruvananthapuram shed much-needed light on the understanding of the significance of the Southwest corner in Indian architecture.

**A Quest for Antecedents:**

A passage from the *Natyashastra* describes the construction of a *natya mandapa* (performance space) by Visvakarma. The passage describes how Brahma and other gods inspect the natya mandapa and assign different deities for its protection. The protection of the railings - *Dharani* and the pillars of the two peripheral side corridors of the stage used for actors' entry and exit - *Mattavarani* are assigned to the Bhutaganas. (Ghosh,2016, p. 82-92). The Bhutaganas were also worshipped during the *rangapuja*[2]. Bhutaganas are dwarves endowed with an unusual form, primarily to evoke terror or fear, but at times are also depicted as playful. They are considered to be Shiva's entourage. Their countenances are usually agitated, with eyebrows framing enlarged or engorged eyes and a large gaping mouth with fangs. Serpents adorn their arms and thighs to further enhance the *sthayi bhava*[3] of these characters, which is anger (*krodha*). Among the

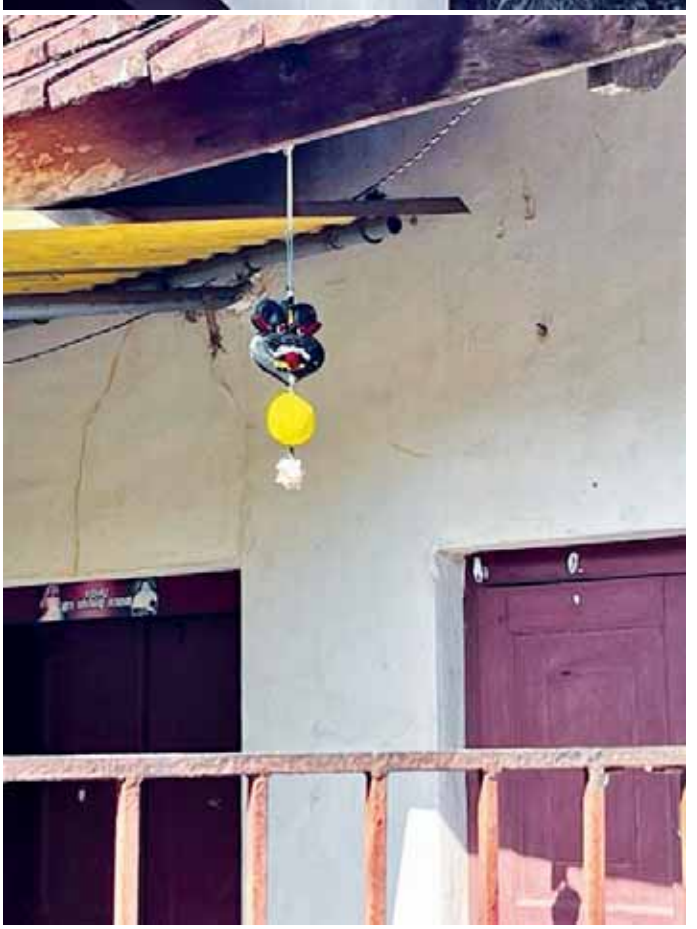

Fig.1 and 2: House front elevation with a painted pumpkin and a house with drishti Bommai

retinue of Bhutaganas, on close inspection, one can usually find a far more ferocious Bhutagana with a face carved on its stomach, called *Udharamukhagana*[4]. Mamallapuram, on the Southeast coast of India, has one of the largest relief sculptures in the world carved during the Pallava dynasty. Fig.3 and 4 presents details of this relief sculpture. To the left of the principal deity Shiva, is an image of a standing *Udharamukhagana* holding a small *trishul* (trident) in his right hand. He stands between Shiva and the mediating ascetic, staring down at us, the audience. The other Bhutaganas on the right, behind Shiva, remain engrossed in their work.

Fig. 3 and 4: Descent of the Ganges, seventh- eighth century, Mamallapuram, Tamil Nadu, India

Bhutaganas are also mentioned in the Puranas, *Srimad- Bhagavatam* (2nd Canto, ch.6),[5] and in other religious texts. In his treatise, 'Elements of Hindu iconography,' Gopinatha Rao refers to Bhutaganas as "host of demons" in service of *Vigneshwara* (son of Parvati and Shiva) and later as "goblins" that attend to one of Shiva's multiple forms, *Kankalamurti*. (Rao, 1914, p. 37, 362, 463). He emphasises their presence in the sculptural composition of the narrative of these venerated gods as protective attendants. Hence, they are usually seen sculpted on plinths of the main temple, on *balipeethas*,[6] and below the main sculptural panels of Shiva temples, as seen in Fig. 5, 6 and 7.

Fig. 5: Band of Bhutaganas faces sculpted on the base above the plinth. Vadakunathan Shiva Shetram, Trichur, Kerala.

Fig. 6: balipeetham, Vadukanthan Shiva Shetram, Trichur, Kerala

Fig. 7: The Southwest outer corner of the sanctum at Thali Shiva Shetram, Kozhikode, Kerala.

Their mere presence was enough to evoke fear among those who arrived at the temple precinct with malicious intent. The *Mayamata* text, specifically states the positioning of these Bhutaganas for all Shaivite temples. "Images of bulls and dwarves should be arranged on the coping of the outer wall." (Dagens, 1985, p.151) Here the outer wall refers to the outer *prakaram*[7]. In all textual references, Bhutaganas are always assigned a protective role on the outer periphery of the sanctum. In the Thali Shiva Shetram, Kozhikode; the main sanctum wall has a band of bhutaganas carved around it in various playful postures. Except for the southwest corner, where a *Udharamukhagana* is carved looking back at those who look up to it. This is a solitary figure looking out in the direction assigned to *Nritti*[8], the deity that personifies death, decay, and sorrow. The schematic diagram seen in Fig. 8 highlights the position of the various deities assigned to the cardinal directions. *Nritti* rules the southwest corner of the temple complex. *Udharamukhagana* is seen, carved on the *balipeetham* placed before the entrance into the inner *prakaram* of Vadakunathan Shiva Shetram in Trichur. The encircling band of the *balipeetham* also has a small *Udharamukhagana* carved on its southwest corner. It is from this Shiva temple, whose

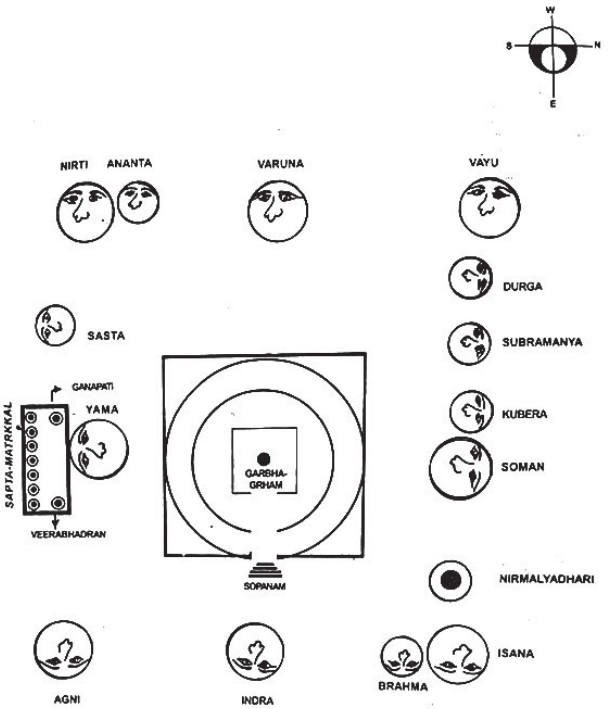


Fig. 8: Position of Balipeethas in the Antara-Mandalam. (Sarkar, 1978, diagram 3,71) © Sarkar H. This schematic diagram shows the southwest position of the deity Nritti within the temple layout.
Source: (Sarkar, 1978, diagram 3,71) © Sarkar H.

antiquity can be traced back to the eleventh century (Sarkar, 1978, p. 204) that an exquisitely sculpted image of an *Udharamukhagana* has been loaned to the Kerala – Museum of History and Heritage in Thiruvananthapuram.

**Udharamukhagana:**

"As the birds spread their sheltering wings let your protection cover us." (*Rig Veda,* hymn XLVII)[9]

This sixteen-century sculpture is an unusual one as the *Udharamukhagana* is rarely depicted in isolation. It measures 45 cm wide and has a height of 90 cm. The seated image has been carved on an independent pedestal and it sits amidst Chola Bronzes and stone sculptures of venerated gods and goddesses. Intricately carved from a single granite block, it features all the attributes of a Bhutagana and much more. As seen in the Fig.10, 11, 12 and 13 it is not only the ferocious face carved on its stomach that gives it a distinctive presence. Unlike other bhutaganas, the Udharamukhagana wears the *Simham kundalam* (Lion ear ornaments) in his elongated- pointed ears. His long-matted hair is embellished with ornaments. He is also sculpted with the *yajnopavitam* (sacred thread) on his torso (left shoulder across the body to the right of the waist). The *Naga Talas* (Serpent arm ornaments) and a *trishul* (trident- Shiva's weapon) serve to enhance the ferocious aspect of his character

Fig. 9: Udharamukhagana. Granite stone. Sixteenth C. Keralam - Museum of History and Heritage, Thiruvananthapuram.

for he wards off all aspects of negative energy brought forward by deity *Nritti*. The second hand has been damaged by ravages of time and neglect. This sculpture must have been placed along the outer perimeter of the Vadakunathan Shiva temple facing the southwestern direction. Protecting the temple from all maleficent aspects that are believed to affect the temple adversely. The *Udharamukhagana* is the most aggressive of all the Bhutaganas symbolising protection from intangible forces.

In the relief sculpture at Mamallapuram, the *Udharamukhagana* stands defiantly as a guardian of the deity Shiva, the destroyer. As seen in Fig. 3, this bhutagana is warding off the effects of the evil eye on the deity, believed to be cast by the onlookers. Its continued presence from the seventh to the sixteenth century in the iconography of South Indian sculptures reveals its enduring presence in the local collective memory.

**Reconfiguring Inferences:**

Bhutaganas and the *Udharamukhagana* were an integral part of Shaivite iconography and folklore. While the bhutaganas watch all the sides of the principal deity Shiva's sanctum, the

Fig. 10 and 11: Side profile of Udharamukhagana showing Trishul and detail of Simham Kundalam.

Fig. 12 and 13: A ferocious face is carved on Udharamukhagana's stomach, which gives it a distinct identity and character.

*Udharamukhagana* guards its southwest corner. He is not depicted guarding any other deity. Vaishnavism[10] gradually influenced the social fabric of the people in south India from the seventh century onwards. Unlike the earlier Vedic ritual of sacrifices, Vaishnavism safeguarded the interests of all the social classes including the lower varnas by permitting the worship of Vishnu. It also assimilated all the local cults into its grand narrative and became popular across the region (Jaiswal, 1967, p.167).

Bhutaganas play no role in the Vaishnava narrative. Instead, one finds that the popular association of deities and their directions retains its relevance. The southwest corner remains associated with the deity *Nritti*. To protect the inhabitants of the built form from the malicious intent of the deity, the southwest area is made the strongest. The eldest and most powerful person in the household is positioned there. In the residential typology, the southwest corner is usually either blocked or has a defined raised plinth as seen in Fig.14. No openings are made in the southwest corner.

Guardians were meticulously placed to ensure that the habitat of gods and man remained safe-havens. *Udharamukhagana* is one of them. Modulations in time, power, and economics in this region seem to have erased this ardent attendant of Shiva from popular culture. They cannot be classified as demons but need to be seen as benefactors.

Today, centuries later, their presence remains merely as a relief image. Reference to the Bhutaganas is seen only in religious and architectural texts and in older temples and museums, where they are not fully understood. They are rarely represented in the temples built after the eighteenth century. Yet the fear of the unknown remains etched in the public psyche. Associations of cardinal directions with various deities and the desire for a favourable, peaceful refuge from adversaries continue.



Today, the *drishti bommai* plays the role of a talisman to ward off any evil gaze or intent that a built form might attract. The painted image of a ferocious countenance on a poorly moulded plastic relief form remains an inferior object when compared to the exquisitely carved image of a *Udharamukhagana*. The rich legacy of infusing every aspect of life with beauty and meaning seems to have dwindled. If the narrative of the role Bhutaganas played in our understanding of the built landscape was made known through our museums and knowledge centres, it might inform the populace of the inherent beauty and aesthetics nurtured in this land and their continuation in public culture. The assimilation of folklore and oral studies can play a contributory role in furthering our understanding of what constitutes the spatial manifestation of architecture in Kerala.

## References


1. The term first appears in the Vedas (1500-1200 BCE) referring to a human or divine leader. Later in Hindu mythology, "it came to designate a class of beings opposed to the Vedic gods". https://www.britannica.com/topic/asura. accessed on 8th Dec 2023.
2. *Rangapuja* – the first offering of prayers to the stage in the evening; includes purification and preparation of the stage for a performance.
3. *Sthayibhava*- an essential concept in Sanskrit drama, attributed to Bharata's Rasa theory in Natyashastra.
4. *Udharamukhagana* means gana with a face on his abdomen.
5. Translation of 2nd Canto, chapter 6, text 13 –16. "Beginning from me [Brahma] down to you and Bhava [Siva], all the great sages who were born before you, the demigods, the demons, the Nagas, the human beings, the birds, the beasts, as well as the reptiles, etc., and all phenomenal manifestations of the universes, namely the planets, stars, asteroids, luminaries, lightning, thunder, and the inhabitants of the different planetary systems, namely the Gandharvas, Apsaras, Yaksas, Raksas, Bhutaganas, Uragas, Pasus, Pitas, Siddhas, Vidyadharas, Caranas, and all other different varieties of living entities, including the birds, beasts, trees and everything that be, are all covered by the universal form of the Lord at all times, namely past, present and future, although He is transcendental to all of them, eternally existing in a form not exceeding nine inches." https://iskcondesiretree.com/ accessed on 8th Dec 2023.
6. sacrificial pedestals are seen between the main entrance and the flagpole of the temple.
7. *Prakaram* refers to the temple compound wall around the sanctum of the Hindu temple. Temples can have one or multiple *prakaram*s.
8. *Nritti* implies lawlessness and disorder. In Vedic texts, it refers to the realm of darkness. (Witzel,1997, p. 501-539).
9. Third stanza from hymn XLVII. *Adityas*, tr. by Ralph T H Griffith,1896. Accessed from sacred-texts.com.
10. "Vaishnavism was a development of Bhagavatism, the cult of Bhagwat Narayana, which through the process of synthesis and absorption became one of the most influential religions of the Gupta age." (Jaiswal, 1967, p. 212)


***Source: All photos except Fig. 8 credits – author***

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**ARTICLE**

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# Colonialism, Social Movements and Creation of Sacred Church Architecture

**By P. Sri Sita Rama Laxmi**

## Introduction

South Asia has been the scene of an extremely complex pattern of cultural interaction. The indigenous Hindu-Buddhist civilisation evolved in semi-isolation. Around the thirteenth century, Muslim conquerors swept across north India and by the mid-fourteenth century gained political control of nearly two-thirds of the subcontinent. Next the British introduced their own version of western civilisation as they gained control of South Asia in the eighteenth and nineteenth centuries. By the nineteenth century, three layers of civilisation interacted and moulded the socio-religious movements of that century. The arrival of the British in south India began in 1620 when they established a small trading centre at Masulipatam. In early nineteenth century, a series of treaties brought one state after another under British indirect control: Hyderabad (1798), Travancore (1805), Cochin (1809) and Mysore (1831). The British had gained dominance of the South giving it a political structure that remained until 1947. On September 1, 1798, Nizam Ali Khan, the then Nizam of Hyderabad, entered into a subsidiary alliance with the English East India Company. This event made Hyderabad the first princely state to officially become a British protectorate. The Subsidiary Alliance was a strategic policy formulated by Lord Wellesley, who served as the Governor-General of India from 1798 to 1895. This policy was essentially a contract of vassalage that curtailed the power of Indian kingdoms while strengthening the British colonial rule.

## British Colonisation of India

The role of Christian missionaries in religious conversion and sociocultural change as well as the development of educational, health and self-improvement schemes in modern India has been widely acknowledged (cf. Frykenberg 2003 and 2008; Oddie 1969 and 1975; Billington Harper 2000; Webster 1992). Deccan Foreign Missionaries came to India in the early 1800s. These were: 1) North- Weslians Sangalu64 2) Western-Methodist Sangalu 3) South-Mennonite Brother Sangalu 4) East Baptist Sangalu. These missions extensively worked among the untouchables. In fact, the education and health conditions of the untouchables improved and they got a sense spiritual freedom by entering into Christianity from feudal relations and caste oppression.

Recent studies on the growth of Christianity in modern India focused on the interconnections between conversion movements, social reform and social change. Christian missionaries were considered to be the institution builders, since they pioneered works relating to social reform, language/ literature/ philology, and the socio-economic development of weaker sections of the society (cf. Frykenberg 2003). The Protestant missionaries came to the Nizam's Dominions during the last decades of the nineteenth century. The first Christians were converted from the Malas. Sir Richard Meade, the British Resident in Hyderabad, supported the missionaries and encouraged their activities in the Telangana region. Many Hindus as well as carpenters and blacksmiths were converted. By 1896, five circuits were established at Karimnagar, Siddipet, Medak, Kundi and Aleru, and a total number of 4,000 conversion were made during the first phase of the missionary work. The church in Hyderabad consisted of the converts from the Malas and the Sudras. From the available data it is clear that the total number of

Christians in the Telangana region of the erstwhile Nizam's State increased from 1,656 in 1879 to 66,570 in 1921 (Census of India 1931: 54). The spread of Christianity in the district towns and villages of the Telangana region during the last quarter of the nineteenth century was significant. The missionaries had undertaken extensive tours outside the twin cities of Hyderabad and Secunderabad and founded many churches in Karimanagar, Siddipet, Aler, Medak and Nizamabad (Lamb 1913: 8).

**Christianity and sacred Church Architecture under British colonialism in Hyderabad and Secunderabad of Telangana region:**

The princely state of Hyderabad Deccan from 1724 to 1948 witnessed significant developments in church architecture during the British Raj period. As British influence grew in the region, Christian missionaries gained the freedom to establish their presence and construct churches. These religious structures often blend European architectural styles with local Deccan elements, resulting in unique fusion. The missionaries, supported by British authorities, introduced Gothic and Neo-Classical designs, incorporating features such as pointed arches, ribbed vaults, and stained-glass windows. However, they have also adapted to the local climate and materials using techniques such as thick walls and high ceilings for better ventilation.

While the arrival of Christianity in the Telugu country cannot be timed correctly, it has been linked to the arrival of the Dutch in the early 16th century, as well as the French in 1735 AD. According to a report, churches existed in the Nizam's kingdom by 1800 AD. Early Christian institutions were confined to Secunderabad. Later, when many Christian families settled down in Chadarghat and Abids areas following the establishment of the British Residency at Koti, churches were built in these areas too. Churches in Secunderabad were Catholic while Protestant Churches were erected during the rule of British Government.

They show the European art and architecture of the late medieval era. These churches are Life Way City Church, Clock Tower, Secunderabad, Fellowship Church, New Life Assembly, Hyderabad, St. Mary's Church, Secunderabad, All Saints Church, Secunderabad, Wesley Church, Secunderabad, All Saints Church, Trimulgherry and many other churches. These churches in Secunderabad have gained the popularity among tourists.

Christianity enjoyed royal patronage and successive Nizams gifted big clocks, bells, teak furniture and decorative pieces to many churches. St John's Church (Marredpally), St Mary's Church (Secunderabad), St Joseph's Cathedral (Gun Foundry) and St John's Church (Abids) are the prominent churches constructed in the city over 100 years ago.

**Holy Trinity Church, Bolarum**

Holy Trinity Church, Bolarum was constructed in 1847. It was personally funded by Queen Victoria on the land donated by Nizam of Hyderabad. It was meant for British army officers and other Indian Christian families. The church is in the Victorian Gothic style. The stained-glass windows are similar to those of country churches in England. In 1983, Queen Elizabeth II visited the church and here she celebrated her 36th wedding anniversary (Figure 1).

Fig 1: Holy Trinity Church, Bolarum, Secunderabad.
*Source: https://www.thehansindia.com/news/cities/hyderabad/churches-gearing-up-for-christmas-590584*

**St George's Church, Abids**

The church is a beautiful structure standing in the St George's Grammar school compound at Abids. The establishment of the British Residency in Koti led to many Christian families settling down in Chadarghat-Abids area. The construction of a church was mooted and permission from the Nizam was obtained. The then British Resident Sir George Yule laid the foundation stone in 1865 and the construction was completed in 1867. The ten-and-a-half-acre premise is full of big trees. Incidents from the life of Jesus are painted on stained glass, and a unique Bible stand are special attractions at the church, which received a big clock, bells and liberal donations from the sixth Nizam. Officials of the British Residency and their families visited the 70-feet towering church, built to resemble a cross(Figures 2 and 3).

**St John's Church, Secunderabad**

Located in East Marredpally, near St Ann's School, this is said to be first church constructed around 1813 AD in Secunderabad. It was set up exclusively for British soldiers. Priests came from Britain and enjoyed the rank of a Major. According to Theodore

Fig 2: St. George's Church view
*Source: Author*

Fig 3: St. George's Church showing stained glass
*Source: Author*

Comfort, from Marredpally, who was associated with the church for the six decades, soldiers and officers in the cantonment area came marching for prayers daily at 7:30 am along with the military band. Diwan Bahadur Seth Ramgopal had donated a large sum for the construction, and he used to visit the church frequently. The church was built in the shape of a cross, and the teakwood furniture made 150 years ago is still in good shape. Nizam Railway officers, who were also British, used to visit the church along with soldiers. The Military Engineering Service maintained the church and electric bulbs and fans were fixed in 1918. There was no electricity till 1914, Comfort says. The building won the HUDA-INTACH Heritage Award in 1998-99 (Figure 4).

**St Mary's Church**

St Mary's church is an imposing landmark and magnificent sight on Sarojini Devi Road,

Fig 4: View from outside
*Source: https://medium.com/@hyderabadhistoryproject/city-monuments-church-of-st-johns-the-baptist-dec0ee7ab1d6*

Secunderabad. In 1939 Father Daniel Murphy found Secunderabad to be the best place for construction of the church and started construction in 1840. It was called St Mary's Cathedral earlier. The church was constructed in Gothic style and it accommodates about 500 people. From a lavish open ground, steps lead up to the entrance. A number of educational institutions are run under the jurisdiction of the church. Two years later, in 1842, Father Murphy took up the construction of St Francis Xavier Church in Bolarum (Figure 5).

Fig 5: St. Mary's Church
*Source: https://archdioceseofhyderabad.org/secunderabad-st-marys-minor-basilica.html*

**St Joseph's Cathedral Church**

The church was built on an elevated rocky terrain at Gun Foundry with the help of Nawab Asman Jah. Rev. Dominic Barbero supervised the construction. The proposal for the church, with a convent and a school on the same premises, was finalised on December 16, 1869. Rev. Peter Kaproti laid the foundation stone on March 19, 1870. Father L Malberti completed the main buildings in 1872 with the help of local Christians and the church was finally opened on Christmas day in 1875. Later the construction of the twin towers was taken up. It took 16 years to complete them. Community elders attribute the delay to the paucity of funds. The massive bells on the towers were

brought from Italy in 1892. The colourful paintings in the church came from Italy, while seventh Nizam Nawab Mir Osman Ali Khan donated the big clock, oil paintings and furniture (Figures 6 and 7).

Fig 6: St. Joseph Cathedral Church
*Source: https://uniquelytelangana.in/st-josephs-cathedral*

Fig 7: St. Joseph Cathedral Church interior view
*Source: https://uniquelytelangana.in/st-josephs-cathedral*

**All Saints Church**

The All Saints Church in Trimulgherry was built in 1860. The stained-glass paintings of Jesus Christ are not only impressive but look like new even today. The church boasts of a number of tools of worship which are still in use (Figure 8).

**Vijaya Mary Church**

Vijaya Mary Church, also known as Our Lady of Health Church, was constructed in 1905 at Chintalbasthi. Later, in view of the growing number of visitors, a new prayer hall was constructed for which the seventh Nizam laid the foundation stone. It was completed in 1959. It is the first octagonal church in the city with the idol of worship placed in the centre (Figures 9 and 10).

Fig 8: All Saints Church, Tirumulgherry
*Source: Author*

Fig 9: Vijay Marie Church
*Source: https://uniquelytelangana.in/st-josephs-cathedral/*

Fig 10: Vijay Marie Church interior view
*Source: https://uniquelytelangana.in/st-josephs-cathedral/*

**LifeWay City Church of Clock Tower**

LifeWay City Church is one of the prominent churches in Secunderabad. This church was built during the time of English East India Company.

**Garrison Wesley Church, Trimulgherry**

This is another garrison church that exists in close proximity to All Saints Church, Secunderabad and Holy Trinity Church, Bolarum. In its initial years, Garrison Wesley Church catered to the spiritual needs of the British officers and soldiers stationed in Secunderabad (Figure 11).

Fig 11: Wesley Garrison Church
*Source: Author*

**Wesley Church and Clock Tower**

Wesley Church, Secunderabad is one of the famous churches here. It is located opposite to the historic Secunderabad Clock Tower. It was built in 1916 by British missionaries Rev. William Burgess and Rev. Benjamin Pratt (Figures 12 and 13).

Fig 12: CSI Wesley church
*Source: Author*

Fig 13: CSI Wesley church interior view
*Source: Author*

**Centenary Baptist Church**

Centenary Baptist Church with a Clock Tower is located in Secunderabad. This church was established in the year 1875. The original older structure and a new centenary structure built in 1991 exist side by side in the same premises. The worship services are only held in the new sanctuary.

**Millennium Methodist Church of Secunderabad**

Millennium Methodist Church of Secunderabad is a prominent Methodist church. A small chapel with a red brick exterior built in 1882 existed in the spot where the current church structure stands. The old church was demolished at the turn of the millennium to make way for a larger structure. The new church was consecrated in the year 2001 and was renamed the Millennium Methodist Church of Secunderabad. It is a modern structure with elegant Gothic styled windows and doors delicately incorporated into the structure (Figure 14).

Fig 14: Methodist chapel
*Source: Author*

**St. Thomas S.P.G. Church, Secunderabad**

St. Thomas (SPG) Cathedral of Secunderabad is one of the oldest churches of Secunderabad. It was built in 1852 by the British missionary society called the Society for the Propagation of the Gospel in Foreign Parts. A prominent structure in close proximity to Secunderabad Railway Station, across which lies the St. Thomas (SPG) Boys' High School, run by the church. The Girls High School is further down the road. The church possessed extensive lands much of which was bought by the British government of Secunderabad in order to build the existing Secunderabad Railway Station (Figure 15).

Fig 15: St. Thomas SPG church
*Source: Author*

**Churches developed in the districts of Telangana due to mass movements:**

After the formation of Church of South India in year 1947, areas from Medak were annexed to the Dornakal Diocese. The Medak church (Figure 16) compound is one of the beautiful and spacious compounds in the Church of South India. The magnificent cathedral is the central point of the compound. The glory of the cathedral is portrayed through the magnificent stained glass windows depicting Nativity, Crucifixion and Ascension of the Lord Jesus Christ, made and presented by Sir Frank O. Salisbury, R.A.C.V.O. With a large arch at the entrance which was built, recently a double road leading to the magnificent and glorious "Pedda Gudi" (Big Church) – today's Cathedral was made - a straight road connecting the Cathedral and the theological school building. It is a place, in the words of Bishop Ananda Rao Samuel, the former Moderator of the CSI, where saints have walked and holiness prevailed. The story of the new creation in Medak is also the story of a new creation in many other places like Ramayampet, Sangareddy, Yellareddy, Kamareddy, Nizamabad, Armoor, Dudgaon, Nirmal, Luxettipett (Figure 17), Bellampalli, Jagtial, Karimnagar, Aler to name a few. In the recent past, many of the evangelist houses as well as the parsonages have been renovated in the Diocese of Karimnagar. Three churches built by the missionaries still exist in Karimnagar Diocese, namely, the Wesley Cathedral (since 1978), Wesley Church Jagtial and Wesley Church Aler.

**Conclusion:**

Due to the caste, conversions and social movements, the cultural scenario of the state was changed. It resulted in the development of new architecture. These built forms offer an opportunity to understand about socio-cultural aspects resulting in the development of the typology of Church spaces.

1. Fusion of Styles: Churches in Hyderabad often blend European architectural styles with local Deccan elements, creating a unique fusion. This mix of Gothic, Neo-Classical, and local designs is particularly notable.
2. Adaptation to Local Climate: The churches were adapted to the local climate, using techniques such as thick walls and high ceilings for better ventilation. This practical approach might have differed from that of the churches in the cooler regions of India.
3. Indo-Saracenic Influence: Some churches, such as St. Joseph's Cathedral, showcase a blend of Gothic and Indo-Saracenic styles. This influence

Fig 16: Medak cathedral
*Source: Author*

Fig 17: Luxettipet church
*Source: Author*

Fig 18: Dornakal church
*Source: Author*

of Islamic architecture was more prominent in Hyderabad because of its history as Muslim ruled state.

4. Byzantine Style: The CSI Wesley Church at Ramkote stands out for its Byzantine style of architecture, which was designed to resemble a mosque from the outside and a temple from within. This level of cultural fusion is unique to the region.

5. Incorporation of Temple and Mosque Elements: The Dornakal Church (Figure 18) is particularly notable for its Indo-Saracenic architecture, which incorporates elements from temples, mosques, and churches. This level of religious architectural fusion is rare in other parts of India.

6. Use of Local Materials: Some churches, like the Luxettipet Church, used local materials such as monolithic pillars from nearby areas, giving them a distinct regional character.

7. Royal Patronage Influence: The involvement of the Nizam rulers in gifting clocks, bells, and furniture to churches might have influenced their design and ornamentation, setting them apart from churches in the British-controlled areas of India.

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STUDENT WORK

# Beyond Commerce: Redefining Marketplaces through Placemaking

## A case of Ambagan market, Rourkela, Odisha

By Arpita Sahoo, Bishal Ranjan Prusty and Nabanita Saha

### 1. Introduction

Markets are more than commercial hubs, they reflect a community's culture, lifestyle and shared identity. Ambagan market in Rourkela, Odisha, has long served this role, blending economic activity with social and cultural significance. However, with the city's rapid growth and smart city aspirations, the market now struggles with outdated infrastructure, reduced accessibility and a fading identity. This redevelopment exercise aims to bridge the gap between tradition and modernity by transforming the market into a vibrant, inclusive urban space through placemaking strategies that enhance connectivity, community engagement and spatial efficiency, reviving its role as a cultural and economic anchor.

### 1.1 History and identity of the market

Rourkela is structured into sectors, with Ambagan located in Sector 19 as shown in Figure 1, strategically positioned along the main ring road that links the entire city. This advantageous location establishes the market as a vital commercial hub, housing approximately 800 shops that range from large-scale businesses to medium and small-scale vendors. The market is predominantly divided into two key sections the historic *Ispat Market*, the oldest in the area and the *Gajapati Market* (Figure 1).


Figure 1: Site location with surrounding sectors and market zones
*Source: Author*

Historically, the market has served as a central hub for traders, artisans and farmers, functioning not only as a commercial center but also as a space for social and cultural exchanges. Over the years, the market became a focal point for community gatherings, seasonal fairs and festive celebrations, fostering a sense of shared tradition and identity. Positioned near iconic landmarks like the Rourkela Steel Plant, Biju Pattanaik Hockey stadium and the National Institute of Technology, the market has been closely tied to the city's industrial development, catering to the neighborhoods and offering livelihoods to countless individuals for decades.

However, with the emergence of modern malls, shopping complexes and the growing preference for online shopping, the market's historical prominence has gradually diminished. Today, the Ambagan market faces challenges such as overcrowding, poor infrastructure and disorganised spaces (Figure 2), making it increasingly difficult to keep up with the demands of urban expansion. To preserve its historic essence while adapting to contemporary needs, the market now requires an architectural intervention that harmonises its heritage with modern urban functionality.

### 2. Mapping the existing scenario of the market

Ambagan market grapples with several interconnected issues that hinder its functionality and subdue its unique identity. Over time the market has been subsumed by the expanding urban sprawl, causing it to lose its distinct character and sense of place. Congestion and inadequate infrastructure are major concerns, with narrow pedestrian pathways, insufficient parking and poorly maintained public


Figure 2: A) Existing condition of Ispat market, B) Existing condition of Gajapati market
*Source: Author*

amenities diminishing its appeal. Despite designated parking areas, vehicles are often parked under tree shades wherever it is available or in unauthorised spots, as the market lacks shaded parking facilities and a proper management system. Vehicular access to even the most congested street markets contributes to traffic snarls, further complicating the situation. Additionally, underutilised voids within the market are left neglected, becoming dumping grounds or makeshift parking areas. Safety and hygiene issues, including exposed electrical wiring, unsanitary conditions and poor lighting, create hazards for vendors and visitors. The market committee's limited resources have prevented much-needed improvements, leaving these challenges unresolved.

While customers shift to online shopping, these traditional markets risk losing their relevance. Hence, to ensure their survival, the market must offer more than just commerce it needs to create immersive experiences, foster social interactions and embrace a vibrant atmosphere that resonates with the city's evolving spirit. Thus, rethinking marketplaces is essential; just as an airport shapes a visitor's first impression of a city; markets serve as cultural gateways, reflecting the local way of life. Through the market's redevelopment, the aim is to transform underutilised and neglected spaces into dynamic hubs that celebrate heritage, promote community engagement and seamlessly integrate tradition with contemporary urban needs.

Before any intervention on the site, an extensive series of mapping and analytical studies were undertaken to gain a comprehensive understanding of the existing conditions (Figure 3). One of the primary objectives was to examine the connectivity of the site in relation to the surrounding urban fabric. This involved identifying the major access routes that lead to and from the market area and determining the principal road spine that facilitates movement within the site. These findings were critical in guiding

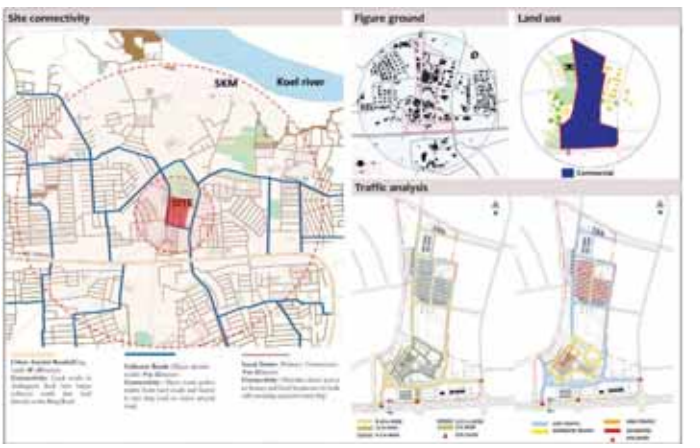


Figure 3: Mapping of existing site context and connectivity
*Source: Author, CDP 2031*

circulation strategies and zoning decisions for the redevelopment. In parallel, land use patterns were analysed with reference to the *Comprehensive Development Plan (CDP) 2031* of Rourkela. This helped contextualise the market in terms of its adjacent land uses whether residential, commercial, institutional, or otherwise and understand how the market functions within the broader urban framework.

A crucial part of the analysis also included studying the existing traffic flow in and around the site. Road widths were measured and classified and the relationship between road hierarchy and shop typology was established. It was observed that many street vendors and informal shops were located along roads as narrow as 3.3 meters, which still allowed vehicular access. This overlap between pedestrian shopping activity and vehicular movement was causing frequent congestion, hampering both user experience and traffic safety. Such conditions are visually represented in Figure 3.

Following the mobility and land use assessment, the next layer of mapping focused on the distribution of

green cover, natural vegetation and available open spaces within the site. This helped in understanding the site's ecological assets and identifying areas that could potentially serve as breathing spaces or be enhanced for public use. Additionally, the study highlighted several underutilised or misused parcels of land, which could be repurposed or integrated more effectively into the new market design. These findings are illustrated in Figure 4 and served as a foundation for proposing environmentally responsive and spatially efficient interventions during the redevelopment planning.

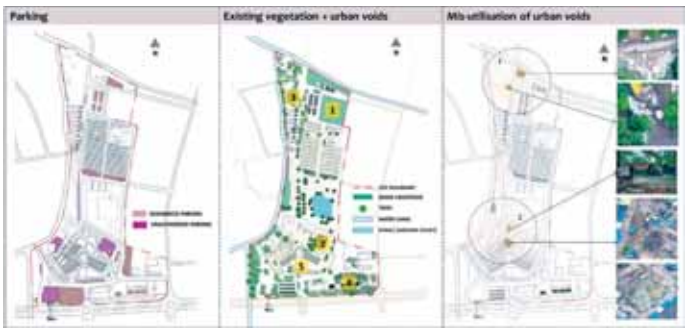


Figure 4: Mapping of existing parking behaviour, green cover and underutilised spaces
*Source: Author*

In Figure 5, an evaluation of current community activities and their nature has been done, helping in recognising strategic locations for new public interactions. These spaces were designed to not only bridge the gap between the two markets but also to provide rest points for visitors, maintaining their engagement throughout their journey.

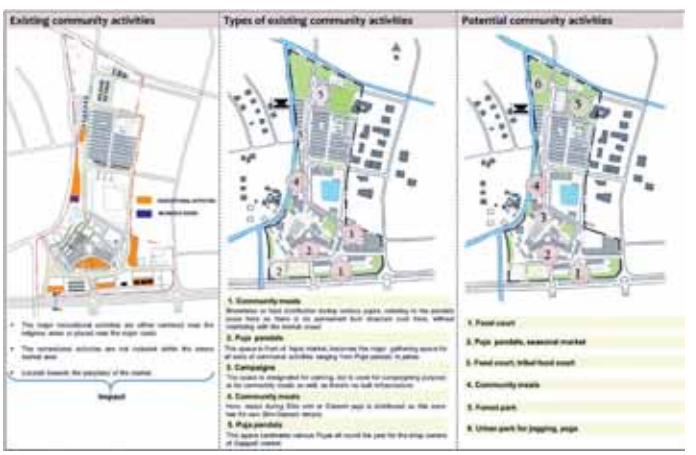


Figure 5: Mapping of existing and potential community activities
*Source: Author*

Prior to initiating the redevelopment proposals, it was vital to thoroughly study and document the various types of shops ranging from permanent, semi-permanent, seasonal and street vendors along with categorising them based on size, such as small, medium and large as shown in Figure 6. This assessment guided the strategic zoning of the marketplace, helping decide the most suitable


Figure 6: Mapping of shop typology and size
*Source: Author*

locations for different clusters and their relocation, ensuring a balanced distribution that maintains the market's diversity and meets the needs of a broad spectrum of users.

### 3. Design conceptulisation

Since Ambagan market is still widely recognised for its food court, food remains a key attraction for visitors. Capitalising this potential, the concept embraces "food as a destination", using it as a catalyst to showcase local cuisine, cater to diverse food preferences, stimulate economic growth, foster social interactions and ultimately establish the market as a landmark. Eventually it will transform the market into a social and sensory hub encouraging people not just to shop, but to linger, connect and participate in the life of the place. This aligns with the core idea of placemaking: creating spaces that promote community well-being, identity and vibrancy. The design proposal revolves around the following central ideas.

i. **Curated zones**: A diverse mix of food courts and culinary experiences encourages a variety of uses and activities, attracting a broad audience and ensuring vibrancy throughout the day.

ii. **Cultural representation**: Highlighting regional and tribal cuisines brings authenticity to the space, supporting cultural continuity while making the market more meaningful and memorable for visitors.

iii. **Relaxation areas**: Integrated informal seating, open-air breakout zones and shaded rest areas promote sociability encouraging people to gather, pause and interact beyond mere consumption.

iv. **Improved circulation and visual connectivity**: The layout is designed to enhance access and linkages by connecting food pockets with key pedestrian routes and shop fronts, increasing footfall and visibility for all vendors.

v. **Comfortable and inviting environment**: Thoughtful design elements such as natural shading, visual landmarks and layered spatial experiences improve comfort and image, creating a place where people feel safe, welcomed and are inclined to spend more time.

**4. Incorporation of placemaking strategies in design proposal**

Placemaking serves as the guiding principle for the market's transformation. By blending commerce, recreation and social engagement, the market becomes more than just a place to shop, it evolves into a hub of experiences that cater to diverse interests and age groups. The design introduces some new uses and activities:

**Tribal market** (new activity): Rourkela's roots lie in its tribal heritage, but industrial expansion has led to some of the displacement of indigenous communities, leaving them feeling detached from their ancestral land. Establishing a dedicated tribal market not only creates economic opportunities for them but also ensures their cultural presence remains prominent. This marketplace will feature an authentic tribal food counter serving traditional cuisine, handcrafted apparel, indigenous textiles and an Ayurveda section offering locally sourced herbs with a stage for periodic cultural performances will enhance the market's vibrancy while celebrating the region's tribal legacy (*Table 1, point 5*).

**Flower market** (relocated activity from vegetable market to temple area): The market is home to two temples that, despite their significance, do not receive much footfall due to their limited frontage. However, local devotees continue to frequent them for daily worship. Setting up a flower market near the temples will increase their visibility while also catering to the consistent demand for flowers for rituals and decorative arrangements. This initiative will not only emphasise the temples' cultural and spiritual importance but will also create a sustainable revenue stream, introducing a fresh dynamic to the market (*Table 1, point 6 and 10*).

**Pet world** (modified existing activity): Observations at Gajapati Market revealed that pet shops were scattered throughout, creating challenges for some visitors who avoided certain lanes due to concerns like strong odors or a general discomfort around animals. By bringing all pet-related businesses into a single, well-planned space equipped with designated areas for pet training, grooming and competitions, the market will improve accessibility, simplify maintenance and encourage greater public engagement through pet-centric events.

**Indoor game and comic zone** (new activity): Managing children while shopping can be difficult, as they often grow restless. Introducing an entertainment hub for kids and teenagers, complete with indoor games, a comic book rental space and a reading lounge, will provide them with a dedicated space to stay engaged. This initiative not only enhances the experience for families visiting the market but also contributes to overall revenue generation while fostering a fun and safe recreational zone.

**Forest park with tree café** (new activity): The name 'Ambagan' is derived from its past as an expansive mango orchard, but today, only a fraction of those trees remains, largely neglected. Revitalising this space with a toy train weaving through the existing greenery will add an element of excitement and nostalgia, preserving the site's historical essence. A tree house café will serve as a peaceful retreat for parents while their children explore, turning the area into a family-friendly attraction. Additionally, introducing a ticketing system for the toy train will generate a steady income stream for market maintenance (*Table 1, point 8*).

**Public park with cycle tracks** (new activity): Gajapati Market contains an area with dense vegetation that remains underutilised. Transforming this space into a recreational zone featuring cycling tracks, yoga spaces and seating areas will create a tranquil environment overlooking the canal. Its proximity to residential areas ensures that both local inhabitants and market visitors can benefit from the new space, promoting relaxation and outdoor activity (*Table 1, point 9*).

**Themed food courts with performance stages** (modified existing activity): In today's digital age, people often become disconnected from their surroundings. Integrating live performance stages within food courts will encourage social engagement, offering visitors an interactive and immersive dining experience. This approach aims to reinvigorate the market's atmosphere, making it more than just a shopping destination but a lively cultural and entertainment hub (*Table 1, point 2*).

**5. Design proposal**

**5.1 New uses and activities**

The newly proposed features and key activity points positioned across the site are outlined in Table 1, showing how they relate to the existing layout. It gives a clear picture of how the new elements blend into the current structure, allowing for smooth transitions between different zones. This mapping also helps reveal how movement patterns and gathering spaces

Table 1: New uses and activities proposed in the Ambagan market
*Source: Author*

| Sl. No. | Location | Node points | Existing infrastructure | New/additional uses and activities |
|---|---|---|---|---|
| 1 | Ispat market | 1 | Parking | Parking |
| 2 | Ispat market | 2 | Food court | Food court + recreational activities |
| 3 | Ispat market | 3 | Parking | Parking + community + recreational activities |
| 4 | Ispat market | 4 | Open space used for community activities (*puja pandals*) | Community activities |
| 5 | Ispat market | 5 | Empty land used for garbage dumping | Tribal market |
| 6 | Vegetable market | 6 | Shiv and Hanuman temple | Flower market |
| 7 | Gajapati market | 7 | vacant land | Food court (local cuisine) |
| 8 | Gajapati market | 8 | Dense green vegetation | Forest Park |
| 9 | Gajapati market | 9 | Empty land used for garbage dumping | Food court + recreational activities |
| 10 | Ispat market | 6 | Shiv temple | Religious activities |

are shaped to improve flow and encourage public interaction. Table 2 outlines the newly introduced programs, detailing their intended user groups, the nature of the spaces and key design elements. These additions aim to cater to diverse needs, ensuring an inclusive and dynamic environment while enhancing the overall functionality of the marketplace.

### 5.2 Zoning and circulation

As shown in Figure 7, the existing zoning followed a segregated layout, intended to regulate traffic and user movement. However, this separation inadvertently led to reduced footfall and lower customer engagement. To address this, a more integrated zoning approach was introduced, blending recreational and community spaces within commercial zones. This strategy not only enhances visitor experience but also revitalises the market by increasing activity and interaction. Additionally, religious spaces were preserved and expanded to maintain their significance.

Circulation issues arose due to inconsistent road widths and the absence of designated pedestrian and vehicular zones, leading to congestion. The revised layout (Figure 7) ensures that existing roads, which range between 9 to 10 meters in width, remain consistent throughout the market, allowing for smooth circulation. Streets have been reconfigured to form smaller, well-defined clusters where shops are grouped based on the type of products they sell like food, apparel, or household goods though shop sizes and structures vary within each group, making the market easier to navigate. Access to


Figure 7: Modified zoning and circulation
*Source: Author*

vehicles is limited in these areas, helping reduce traffic congestion while retaining the lively, informal character typical of traditional street markets.

### 5.3 Transformation of urban void

The transformation of underutilised urban voids through strategic interventions is illustrated in

Table 2: proposed program for Ambagan market development
*Source: Author*

| Program Name | Description | Target User group | Space Type | Key Features |
|---|---|---|---|---|
| **Food Pavilion** | Open food junctions offering local and international cuisines | General public, food enthusiasts | Open plazas with shaded seating | Diverse food stalls, community dining areas, green landscaping |
| **Seasonal Farmers' Market** | Fresh produce market for local farmers | Local residents, visitors | Open market area with covered stalls | Seasonal produce |
| **Farm to table food court** | Live food junction | General public | Temporary modular shops with covered seating | Farm-to-table offerings |
| **Kids' Play Zone** | A designated play area with safe, interactive and educational playground equipment | Families with children | Open park space | Play equipment, sandbox, water features, sensory play zones |
| **Community Garden** | A community-driven garden where visitors can grow herbs and vegetables | Local residents, gardeners | Green spaces near food courts | Raised garden beds, composting areas, educational signage |
| **Cultural Performance Stage** | Open-air stage for local cultural performances and live events | General public, artists | Central plaza or park | Stage with seating, sound system, evening lighting |
| **Street Food Alley** | A dedicated lane for food trucks and street food vendors | Tourists, food lovers | Pedestrian street near the market | Food trucks, seating areas, lively street decor |
| **Recreational Fitness Area** | Outdoor gym with fitness equipment, yoga zones and jogging tracks | Fitness enthusiasts, locals | Open parks, near green zones | Exercise stations, walking/jogging tracks, yoga pavilion |
| **Artisanal Market** | Area for local artisans to sell handmade crafts and products | Tourists, art lovers | Small market lanes with stalls | Craft stalls, interactive workshops, local art exhibits |
| **Food Tasting Pavilion** | A space where visitors can sample seasonal and experimental foods | Food enthusiasts, tourists | Near food pavilions or street food | Sampling booths, chef demonstrations, seating area |
| **Forest Park** | Forest trail with a toy train running around the dense vegetation, incorporating scenic viewpoints and resting spots | Kids, teens, young adults | Recreational park | Wooden trail, tree house, adventure sport infrastructure, toy train, graffiti art |
| **Seasonal Food Festival Plaza** | A large open plaza for hosting seasonal food and cultural festivals | General public, eventgoers | Central plaza or open space | Temporary stalls, live performances, festival-themed decor |

Figure 8. These spaces, previously misused or neglected, have been revitalised by integrating recreational activities in certain areas and enhancing existing amenities in others. For instance, the food court has been upgraded with designated seating areas shaded by photovoltaic panels. These not only generate electricity but also contribute to a lively nighttime ambiance, complemented by live performance stages that enhance the overall experience.

### 5.4 Improvements through design

The planning approach aimed to preserve the vibrant street-market essence while introducing a modernised aesthetic. Given its historical significance, Ispat Market remained largely untouched, honoring its legacy as the oldest section. It continued to function as a street-style market, whereas Gajapati Market, which comprised over 600 shops with narrow lanes, was reimagined as a structured market complex (Figure 9). Due to the challenge of providing centralised amenities for such a vast number of shops, a grid-based layout was adopted. This configuration allocated smaller shops on the ground floor for maximum frontage, while medium and large establishments were accommodated on the upper levels.

Figure 9: Gajapati market as market complex
*Source: Author*

Ispat Market, on the other hand, was reorganised into clusters, ensuring a diverse mix of shop typologies. The zoning strategy integrated shops of varying sizes small, medium and large within defined retail categories such as clothing, fashion, furniture, lifestyle and hardware. Additionally, key nodal points were identified for placemaking interventions, transforming select areas into dynamic food courts. The market previously lacked a dedicated administrative block, which was introduced in the redevelopment proposal. This facility included essential services such as a lost-and-found center, first-aid station, conference room and office spaces



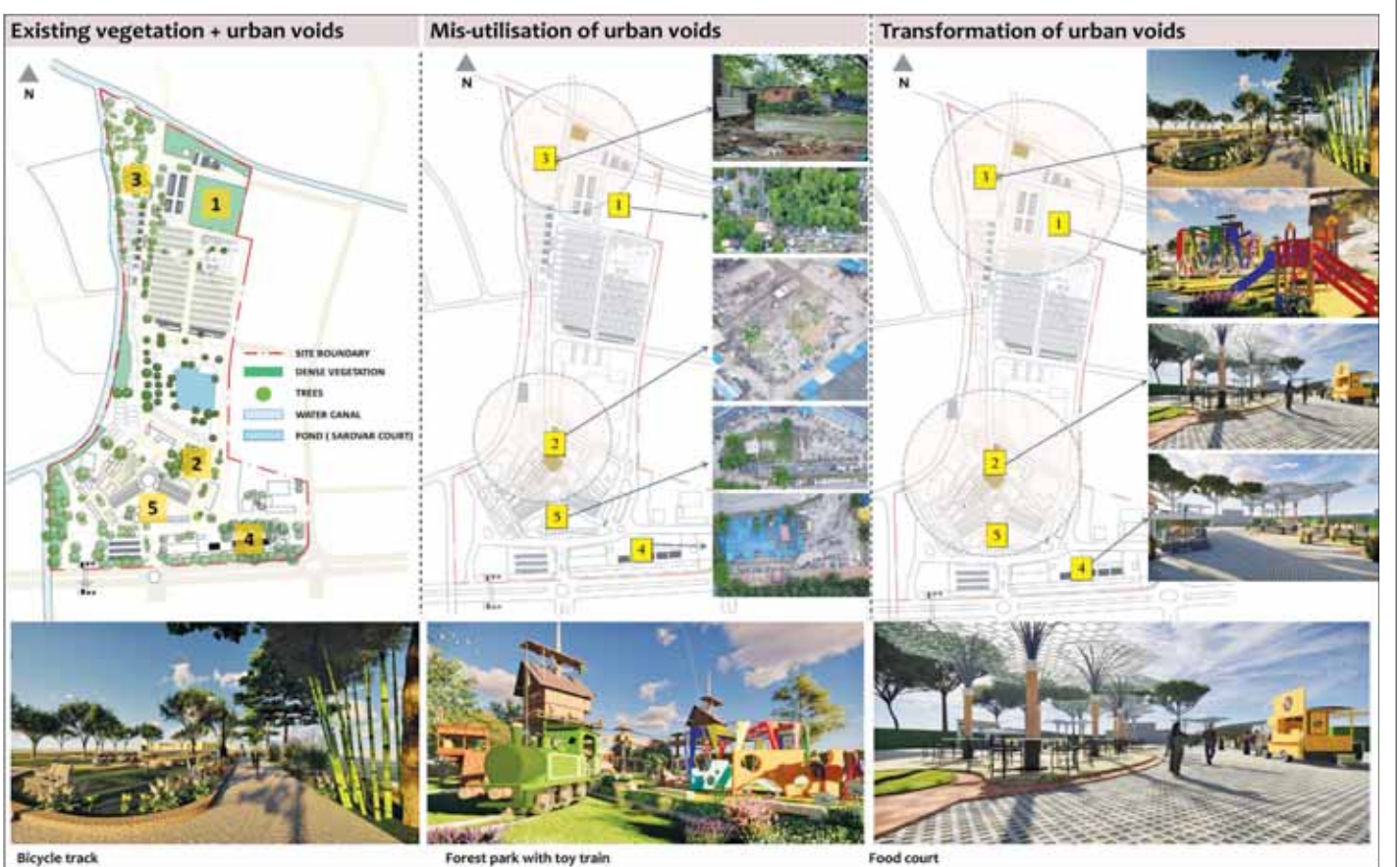


Figure 8: Transformation of urban voids
*Source: Author*

for market administration. Dedicated zones were also allocated for seasonal markets, ensuring flexibility in commercial activities.

Cultural and religious aspects were thoughtfully incorporated as well. A cluster of market near the Ring Road entrance, previously utilised a small space for daily prayers. The redevelopment proposal addressed this need by providing a designated prayer area. Similarly, the temple near the canal, surrounded by vegetable vendors, played a vital role during festivals when its open space was repurposed for community feasts. Since the vegetable market primarily operated in an open setting without rigid infrastructure, the redevelopment proposal retained its adaptability while enhancing functionality. Through these interventions, the entire redevelopment plan was structured to create a cohesive, inclusive and efficient marketplace (Figure 10).

## 6. Conclusion

The redevelopment of Ambagan market aimed to increase footfall, establish a unique identity and enhance user experience through a structured design process involving urban mapping, circulation analysis and placemaking interventions. By integrating diverse market typologies such as the Flower market, Tribal market, Pet world and themed food courts, the redevelopment not only revitalised underutilised spaces but also introduced community and recreational elements, making the marketplace more dynamic and engaging. A mixed-use approach was adopted, blending commercial, social and cultural aspects to create a well-balanced and inclusive urban environment. Pedestrian-friendly circulation, wider roads, designated zones and cluster-based shop groupings helped optimise movement while retaining the vibrant street-market character. Sustainability-driven infrastructure, such as photovoltaic shading and water-efficient systems, was incorporated to ensure long-term adaptability. Recognising the significance of cultural and religious spaces, the design expanded existing religious sites while introducing community-driven interventions. Moving forward, small-town markets in India can benefit from similar contextual urban mapping, flexible zoning, integrated placemaking and scalable

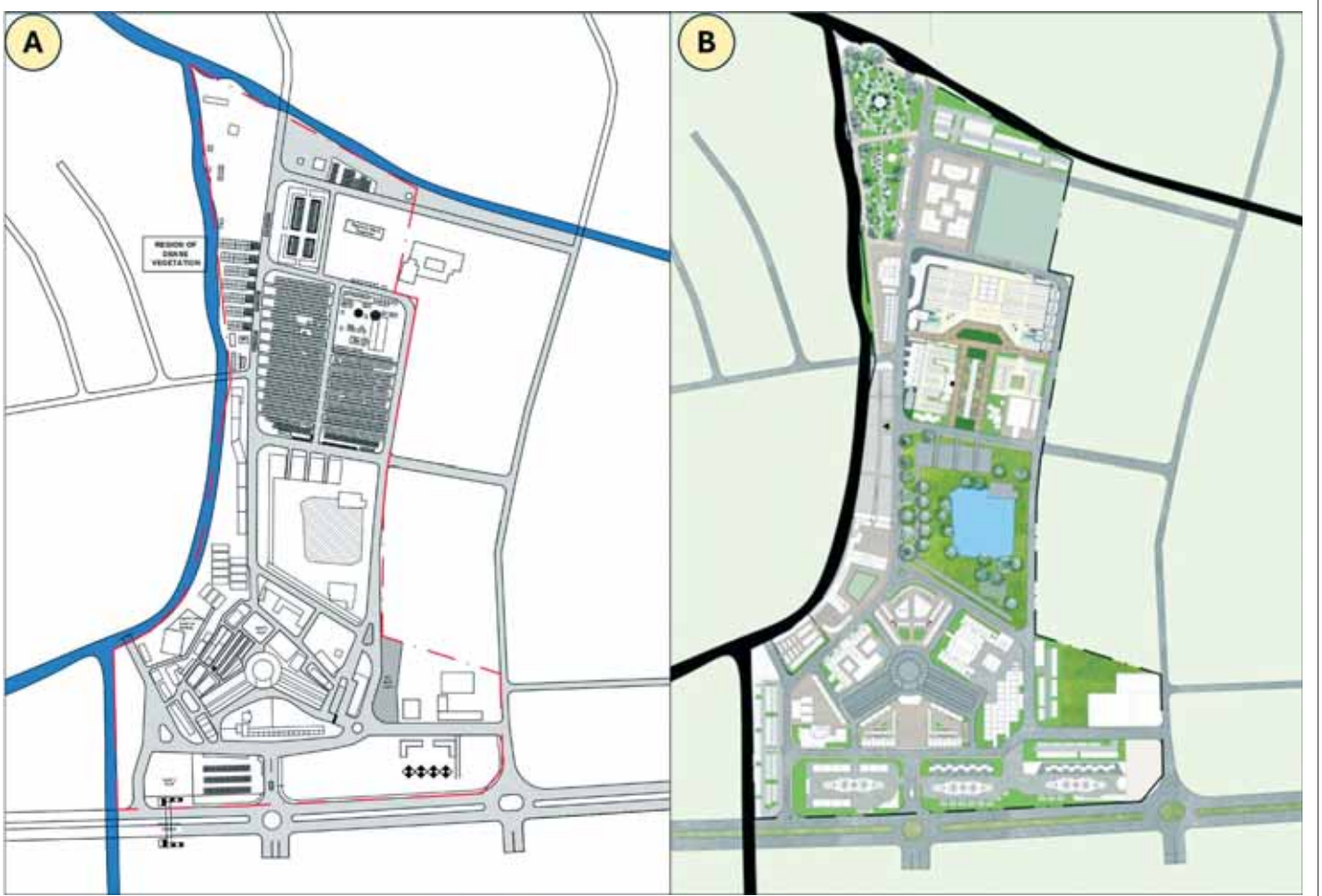


Figure 10: A) Existing plan of Ambagan market, B) Proposed plan of Ambagan market
*Source: Author*

infrastructure, ensuring that traditional marketplaces evolve while maintaining their historical and cultural relevance in an ever-changing urban landscape.

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# Study on Appropriate Site Selection for Astronomical Observatory and Research Centre

By Sarthak Agarwal and Ar. Priya Arora

## 1. Introduction

By their very nature, astronomical observatories contribute wonderfully to the scientific knowledge of the universe. Choosing the best alternative site for such facilities is an involved task that requires careful consideration of environmental, geographical and technological aspects. The study establishes priorities that favour observational clarity over operational efficiency and these criteria will inform the site selection framework for future astronomical observatories (Graham et al., 2005).

### 1.1 Problems and Background of the Study

The site selection of an astronomical observatory is very important for the quality observations. Factors such as atmospheric turbulence, light pollution, climate and access have a bearing on the efficiency of observation (Aksaker et al., 2020). Whereas great observatories like Mauna Kea and Cerro Paranal set the standards, there has not been a universally acknowledged framework that can adapt to geographic conditions (Varela et al., 2008). Traditionally, observatory locations have been high-altitude and remote sites to minimise atmospheric interference (Graham et al., 2005). Existing work, however, has been mainly site-specific, as opposed to a global methodology for the assessment and comparison of multiple sites. This paper is bridging this gap by proposing a systematic methodology for site selection incorporating scientific, environmental and operational parameters to exactly determine the most appropriate sites for future observatories (Frey et al., 2008).

### 1.2 Aim and Objectives

The aim of this study is to establish a framework for selecting the ideal site for an Astronomical Observatory and Research Centre, focusing on optimal environmental and geographical factors to enhance research effectiveness and operational efficiency. Accordingly, the following objectives have been formulated.

- To study the environmental and geographical factors responsible for locating an appropriate site for an Astronomical Observatory and Research Centre.
- To identify the factors influencing the operational efficiency of Astronomical Observatory and Research Centre.
- Examine how different factors are enhancing the observational capability of Astronomical Observatory.
- To develop a framework for the optimal site selection criteria for setting up an Astronomical Observatory and Research Centre.

**Hypothesis:** Optimal site selection criteria for astronomical observatories will enhance its operational efficiency.

## 2. Literature Review

The literature review involves systematically identifying, analysing and synthesising existing research papers, articles and case studies for an overview of key findings and data collection.

### 2.1 Overview of astronomical observatories and their requirements

Observatories require remote locations with minimal light pollution and clear skies, high altitudes to reduce atmospheric interference and stable

climatic conditions. They must also have reliable infrastructure and technology, easy accessibility for researchers and active public engagement programs to promote scientific outreach.

### 2.2 Environmental and geographical factors:

- Cloud Coverage (CC): Clear skies are paramount for better observational data and MODIS satellite data help find possible areas.
- Precipitable Water Vapor (PWV): Lower PWV means low atmospheric perturbation and, hence, better infrared observations. MODIS Satellite used to assess PWV levels.
- Atmospheric Stability: Sites with minimal air turbulence provide better images.
- Wind Speed (WS): Low wind speeds reduce turbulence, enhancing observation stability.
- Digital Elevation Model (DEM): Elevated sites minimise atmospheric interference. DEMs Helps in 3D topography of site.

### 2.3 Operational efficiency and observational capability factors

- Technological Infrastructure: Improvements in technology such as larger telescopes, imaging and automation for highest accuracy and efficiency.
- Human Expertise: Skilled professionals and engineers enhance efficiency.
- Management Practices: Strategic planning and resources help optimises observatory operation.
- Logistical Support: Transport, maintenance and emergency response reduce Observatory downtime.
- Spatial Recognition: Advanced tracking systems helps improving data accuracy.
- Community Impact: Public outreach programs foster public engagement.

### 2.4 Existing Site Selection Frameworks

- Astronomical Site Characterisation: Employs satellite data for environmental analysis.
- GIS Technology: Evaluates altitude, light pollution and various environmental features.
- Multi-Criteria Decision Analysis (MCDA): Contrasts multiple factors to inform site selection.
- Comparative Studies: Reviews successful observatories for refinement of selection criteria.
- Collaborative Networks: Data-sharing collaborations improving selection criteria.

### 2.5 Optimal values

Data on Optimal values have been gathered from literature and have been summarised below-

- Optimal light pollution levels for clear sky conditions should correspond to a Bortle Scale classification of less than Class 2, indicating minimal artificial light interference and near-pristine sky quality (Source: https://skyandtelescope.org/).
- An optimal cloud coverage percentage of less than 20% is recommended to ensure maximum visibility of celestial bodies throughout the year (Qian et al., 2024).
- Sites exhibiting a PWV value below 1.2 mm and a relative humidity percentage lower than 20% are considered highly suitable, as these conditions significantly reduce atmospheric distortion (Source: https://www.aanda.org/).
- Elevated locations are favourable due to the reduced atmospheric density and lower humidity levels. An altitude of 1,524 meters (5,000 feet) or higher is recommended for optimal atmospheric clarity (Cowles, 1989).
- Accessibility to the selected site should be logistically feasible, with well-maintained roads and infrastructure, to facilitate transportation, construction and maintenance of observatory facilities (Source: Hudson, n.d.).

## 3. Methodology

### 3.1 Literature Review

The extensive review of related literature aimed to systematically identify, analyse and synthesise research papers, journal articles, technical reports and case studies on observatory site selection. The outcome of this review summarised the principal findings and best practices while contributing to establishing some data benchmarks for other environmental and operational parameters.

### 3.2 Data Collection

The following different data collection methods have been applied to enhance the reliability and comprehensiveness of the record:

- Expert surveys: Structured surveys and informal interviews were conducted with experts, astronomers and observatory planners to identify priority site selection criteria as a function of practical experience and scientific relevance.

- Satellite Data Analysis: Remote sensing methods were employed to study satellite data concerning measurement parameters such as cloud coverage (CC), precipitable water vapor (PWV), humidity amounts and atmospheric stability. This quantitative data helped in evaluating potential observatory sites.
- Case Studies of established observatories: Case studies detailed some of the best-known observatories worldwide as well as several major regional observatories, including Mauna Kea Observatory (Hawaii), Cerro Paranal Observatory (Chile), ARIES Observatory (Nainital, India) and Udaipur Solar Observatory (India). These case studies served as germane reference points in constructing criteria as well as conditions under which they operated.

### 3.3 Analytical Framework

Analaysis involved comparative evaluation of environmental and geographical conditions and statistical impact assessment on observational performance.

## 4. Parameters identified from literature review

### 4.1 Environmental parameters

Light Pollution: Light pollution severely affects quality of astronomical observations. Locations far from urban areas, like deserts or remote mountains, are ideal. Measures to control light pollution, such as sky glow management, have been implemented in countries like Slovenia. Artificial light sources, including streetlights, should be restricted to reduce light scattering that interferes with telescopic observations.

Sites with Bortles Scale values of Class 2 or lower are optimal, ensuring minimal artificial light interference. The Bortle Scale is often used to measure night sky quality on a scale from 1 (excellent dark-sky conditions) to 9 (urban skies) as shown in Figure 1 and Table 1. One potential good source of data is www.astrogis.org from which provides the global data map on light pollution and www.lightpollutionmap.info for the data on a specific site up to 2023 currently as shown in Figure 2.

Figure 1: Bortle Scale Denotation
*Source: www.telescope.live*

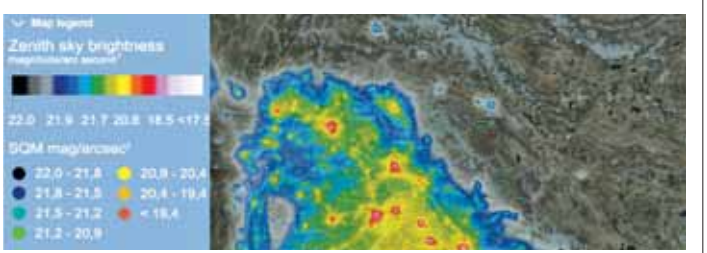


Figure 2: Light Pollution Map of Ladakh
*Source: www.lightpollutionmap.info*

Table 1: Sky Description as per Bortle Scale
*Source: www.telescope.live*

| Class | Colour Key | Naked-Eye limiting magnitude | Sky Description |
|---|---|---|---|
| 1 | | 7.6 – 8.0 | Excellent, Truly Dark-Skies |
| 2 | | 7.1 – 7.5 | Typical, truly dark Skies |
| 3 | | 6.6 – 7.0 | Rural Sky |
| 4 | | 6.1 – 6.5 | Rural / Suburban transition |
| 5 | | 5.6 – 6.0 | Suburban sky |
| 6 | | 5.1 – 5.5 | Bright, Suburban sky |
| 7 | | 4.6 – 5.0 | Suburban / Urban Transition |
| 8 | | 4.1 – 4.5 | City sky |
| 9 | | 4.0 at best | Inner City Sky |

Cloud Cover (CC) and Precipitable Water Vapour (PWV): Locations with clear skies or CC lower than 10 to 20% and PWV below 1.2 mm provide superior conditions for observations. Regions with consistently clear skies are essential. Low PWV levels are critical for infrared and submillimetre observations. Dry climates, such as those found in high-altitude deserts, help minimise PWV, enhancing observational precision. Precipitable water refers to the amount of water vapour in the atmosphere that can be condensed into liquid water. PWV is measured in millimetres (mm) or grams per square centimetre (g/cm2). For Example, the Atacama Desert in Chile has one of the lowest annual cloud coverage percentages, making it an ideal location for world-class observatories like ALMA. CC is measured in Oktas, which are eighths of the sky as shown in Figure 3.

One can manually calculate the CC in Oktas by the method given in Figure 3 and can even use the website www.ventusky.com for appropriate data of CC and PWV for specific site. The site uses satellite and GIS data for combination of data. The Standard Terminology as per Oktas are shown in Table 2.

Atmospheric Stability: Low turbulence and stable air masses enhance 'seeing' conditions, improving image clarity. Sites at high altitudes, like Mauna Kea in Hawaii, reduce atmospheric distortions. The use of adaptive optics can correct for some atmospheric effects, but locations with naturally stable atmospheres are preferred. Atmospheric stability is measured by comparing the temperature lapse rate of an air layer to the adiabatic rate. Weather conditions, such as extreme temperatures, humidity and precipitation, can affect not only the quality of observations but also the operation and maintenance of the facility. Systems need to be in place to handle extreme weather, such as snowstorms or hurricanes, to protect the facility and ensure continuity of operations. Satellite data of precipitation, humidity and air pressure can be obtained from the website www.ventusky.com

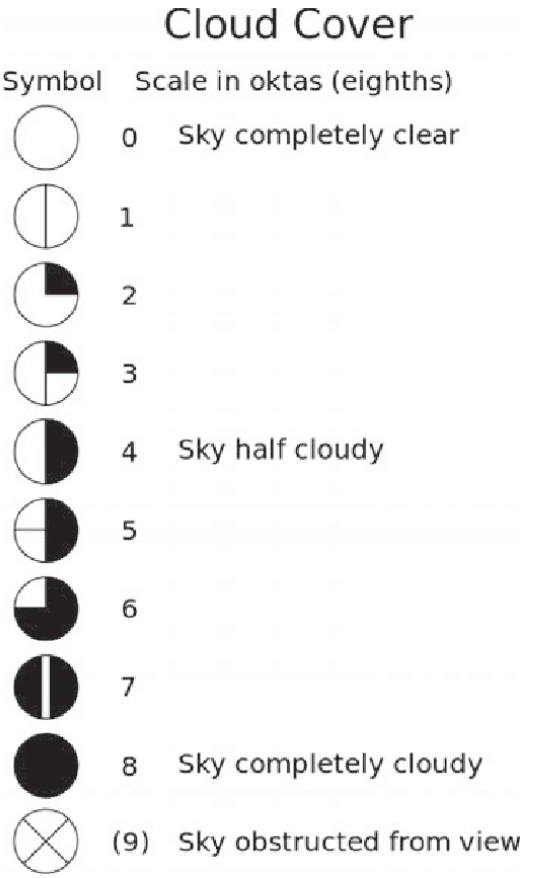


Figure 3: Cloud Cover Manual Calculation Method
*Source: www.researchgate.net uploaded by Drlatief Ahmad*

### 4.2 Geographical considerations

Elevation, terrain and remoteness of the observatory site affect operational efficiency. Higher altitudes may reduce atmospheric disturbances but increase logistical challenges due to the remote and often difficult-to-access nature of these locations. The location's susceptibility to natural disasters like earthquakes or storms also needs to be considered,

Table 2: Cloud Cover Standard
*Source: learn.weatherstem.com*

| Terminology | Percent Sky Cover | Okta Sky Cover |
|---|---|---|
| Cloudy | 90 – 100% | 8/8 |
| Mostly cloudy | 70 – 90% | 3/4 – 7/8 |
| Partly Cloudy / Partly Sunny | 30 – 70% | 3/8 – 5/8 |
| Mostly Sunny / Mostly Clear | 10 – 30% | 1/8 – 1/4 |
| Clear | 0 – 10% | 0/8 |
| Fair | Less than 40% with no Precipitation or Extreme Weather | Less than 3/8, used at Night, with no Precipitation or Extreme Weather |

as these can disrupt operations or cause damage to sensitive equipment.

Elevation: Higher altitudes reduce the impact of atmospheric disturbances like clouds and aerosols. Sites like Mauna Kea and the Atacama Desert are elevated more than 2,500 meters, allowing for clearer skies and better viewing conditions. The thinner atmosphere at high elevations also minimises atmospheric absorption of light. Sites located at elevations above 1,524 meters are more prominent. The website en-in.topographic-map.com can be used to access the elevation data of the site. Figure 4 shows the elevation of different European Southern Observatory (ESO) Observatories

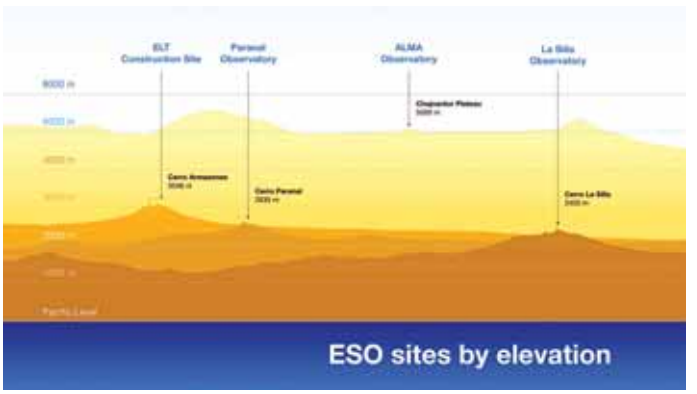


Figure 4: Height profiles of ESO observatories
*Source: www.eso.org*

Topography: The surrounding terrain influences wind patterns, local weather conditions and the overall stability of the site. For example, mountainous areas may block or direct wind flow, affecting turbulence and seeing quality. A detailed topographic survey using Digital Elevation Models (DEM) helps determine suitable locations for observatories based on these factors. The website contourmapcreator.urgr8.ch aids in generating contour data of the site.

### 4.3 Operational criteria

Accessibility: Accessibility to essential infrastructure, including roads, airports and communication networks, is critical for maintaining operational efficiency, essential for logistical support and emergency response. Remote observatories need to balance isolation (for better observational conditions) with accessibility for staff and maintenance personnel. Helicopter or off-road vehicles are often required to access these locations.

Power Supply and Sources: A continuous and reliable power source is essential for astronomical observatories to function efficiently. Observatories need a stable energy supply to power telescopes, computers, cooling systems and other instruments. Many facilities are equipped with backup power generators to mitigate power outages that can disrupt operations. Some observatories also utilise renewable energy sources like solar or wind power to reduce environmental impact.

Technological Advancements: Integration of advanced technologies, such as adaptive optics and high-performance computing (HPC), mitigates limitations posed by environmental factors. Facilities must have well-equipped workshops and trained personnel on-site to ensure quick repairs and avoid disruptions in operations. This also involves regular calibration of sensitive instruments to maintain observational accuracy.

Community Impact: Educational outreach from astronomical observatories helps foster community interest in astronomy and science. Through public lectures, school programs and interactive experiences, these initiatives make complex scientific concepts accessible, promoting science literacy and inspiring future generations in STEM. By engaging diverse audiences, observatories strengthen their role as valuable educational resources within the community.

Spatial Planning: Spatial planning plays a key role in ensuring the observatory site is protected from future urban development, which could lead to increased light pollution or environmental degradation. Zoning laws and land use policies often define observatory buffer zones to restrict nearby construction and human activities.

### 4.4 Case Study Analysis

A. *Cerro Paranal Observatory, Chile:*

- *Light Pollution and Night Sky Quality:* Cerro Paranal Observatory located in Chile has a Bortle Scale value of 'Class 1'. The sky brightness value for Chile is 22 mag./arc sec sq. It has an Excellent Dark Sky Condition and tropical, Mediterranean, temperate and ant borealis climate. This allows for nearly 300 clear nights per year, making an ideal location for uninterrupted observations.
- *Atmospheric Condition:* The site offers exceptional atmospheric conditions due to its high-altitude location (2,635 meters) and remote desert environment. These factors ensure smooth air currents, minimising turbulence and light distortion (seeing). With one of the lowest cloud cover percentages globally, Cerro Paranal allows uninterrupted observations. Extremely low precipitable water vapor (PWV) levels, often below 1mm, make it ideal for infrared astronomy, maximising telescope operational time.

- *Topography and Elevation:* Located on Cerro Paranal in the Atacama Desert in the northern part of Chile and what is believed to be the driest area on Earth. Cerro Paranal is a 2,635-m high mountain, about 120 km south of the town of Antofagasta and 12 km inland from the Pacific Coast.
- *Transportation and Accessibility:* Cerro Paranal Observatory, Chile is in a remote desert but is connected to nearby towns via well-maintained roads for easier access. Observatory is situated in one of the driest and most isolated places on Earth. Far from urban centres, the transport of delicate and bulky astronomical instruments requires careful logistical planning.
- *Community Impact:* Though public access to Paranal is limited, ESO facilitates virtual and occasional in-person tours, showcasing its technology and research. Outreach programs like VLT First Light, Astronomy Online and educational campaigns (e.g., Venus Transit, Science in School) engage the public. The site includes a visitor centre and spaces for interaction, such as workshops and an integration hall, promoting community and scientific engagement.

B. *Mauna Kea Observatory, Hawaii:* Exceptional observational conditions due to its altitude (4,205 m) and consistently low PWV.

C. *ARIES Observatory, Nainital:* Located at 2,450 meters, it provides favourable conditions but faces seasonal challenges such as monsoon-induced cloud cover.

D. *Udaipur Solar Observatory:* Unique island location reduces air turbulence but presents logistical and accessibility challenges.

Table 3 presents the Optimal values of parameters and comparison values for all the cases studied.

## 5. Discussion

It is important for the study to focus on environmental features and geographical elevations while choosing locations for astronomical observatories. Mauna Kea, the most appropriate location based on this model, has the most incredible altitude, complemented by advanced technology and adaptive optics that improve deep-space observations capabilities. Locations like Cerro Paranal give evidence of how altitude and remoteness boost overall performance. However, places like Nainital and Udaipur will require



Table 3: Case Study Comparison sheet with optimal Value
*Source: Survey by Author*

| Sr. No. | Parameters: | Primary Case Study | | Secondary Case Study | | Optimal Range Value |
|---|---|---|---|---|---|---|
| | | Udaipur Solar Observatory, Udaipur | Aryabhatta Research Institute of Observational Sciences (ARIES), Nainital | Cerro Paranal Observatory, Atacama Desert, Chile | Mauna Kea Observatory, Hawaii, U.S.A. | |
| 1 | **Light Pollution:** | Class 5 | Class 4 | Class 1 | Class 2 | < Class 3 |
| 2 | **Cloud Coverage:** | 50% | 50% | 30% | 20% | < 20% |
| 3 | **Precipitable Water Vapour (PWV) (Currently)** | 0mm | 0mm | below 1mm | 0mm | < 1.2mm |
| 4 | **Elevation:** | 600 m | 2450 m | 2635 m | 4205 m | > 1524 m |
| 5 | **Accessibility:** | Located on an island in Fatehpur Lake in Udaipur | Located on hill top but difficult to access because of topography | Located in remote desert area but well connected by roads to nearby towns | Located in remote location on high altitude making difficult to reach | Well maintained road connectivity and easily accessible |
| 6 | **Community Impact:** | Host educational workshops and seminars | Organises workshops, training sessions and public events | Virtual and in-person tours | Community and student programs | Proper educational outreach for public and students |

technology to overcome the hindrances brought by their environment as well as logistics. Hence, developing specific research objectives according to site characteristics would be more advantageous for observational results.

## 6. Conclusion

This study forms a structured framework for site evaluation and selection for astronomical observatories, focusing on the interplay between environmental, geographical and operational factors. In this regard, by comprehensively addressing the criteria, the study is providing actionable insights for researchers and policymakers to ensure the development of facilities that maximise observational precision and operational feasibility.

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# Towards Remodelling Architectural Education

## to Meet the Present-Day Industry (Professional) Challenges

**By Prof. Subodh Shankar**

### 1 Introduction

At present, architectural education in India is highly distressed. During the last 3 years, more than forty institutions imparting degree courses in architecture have closed down and many thriving ones are desperately searching for students to fill their sanctioned strengths. The known reason for non-attraction towards architecture courses is the skimpy and low-paid employability, and to some extent, its longer course duration. The graduating students do not get suitable employment or find lucrative opportunities to establish their practice.

This article, confining only to the employment aspect, studies the reasons for the present perilous state of affairs in the architecture profession, and with this context finds the vast gap between the industry requirements and the architectural education being imparted in the country. The study reveals that for proper employability, the present-day focus has to be on subjects like environmental sustainability, artificial intelligence, 3-D printing, etc. However, these subjects do not find adequate space in the B.Arch. syllabi being largely followed in India. Also, for employment in the endeavour, the Council of Architecture (CoA) has to take the lead by revisiting its *Minimum Standards of Architectural Education,* which have existed since 2000 and provide a statutory guideline to all the architectural institutions across the country.

In India's booming economy, with the highest growth rate in the world, shutting down 47 architectural institutions across the country in a short span of 3 years (Table 1) poses a severe threat and challenge to the architecture profession. As of now, India has just a little over 1.3 lakh architects registered with the Council of Architecture, while the actual requirement is much higher. In the words of Prof. Abhay Purohit, the President of the Council of Architecture:

*In a developing country like India, the ideal number of architects would be in a 1:5000 ratio, and that's how we will be able to make the profession more accessible to people. However, at this point, we are looking at a 1:10000 ratio, and we need about 1500000 (15 lakh) architects.*

In the fast-changing world, unless a profession updates itself to meet the changing aspirations and requirements, its survival may be at stake. Thus, it is of utmost necessity to identify the challenges and threats the profession is facing today and is likely to face in the future.

#### 1.1. Aims and Objectives

This research aims to identify challenges being faced by the architecture profession and suggest certain tenable measures, especially through the education sector to overcome these threats and challenges.

Table 1: Architecture Colleges Closure Data for the Last 3 Years
*Source: COA Website (https://coa.gov.in › images › closure institution)*

| S.No | State | 2020-21 | 2021-22 | 2022-23 | TOTAL |
|---|---|---|---|---|---|
| 1. | Bihar | 00 | 00 | 01 | 01 |
| 2. | Chhattisgarh | 01 | 00 | 00 | 01 |
| 3. | Gujarat | 07 | 00 | 01 | 08 |
| 4. | Haryana | 05 | 02 | 00 | 07 |
| 5. | Kerala | 00 | 01 | 01 | 02 |
| 6. | Madhya Pradesh | 00 | 00 | 01 | 01 |
| 7. | Maharashtra | 04 | 01 | 01 | 06 |
| 8. | Odisha | 01 | 00 | 00 | 01 |
| 9. | Punjab | 01 | 00 | 00 | 01 |
| 10. | Rajasthan | 00 | 00 | 01 | 01 |
| 11. | Tamil Nadu | 04 | 03 | 03 | 10 |
| 12. | Telangana | 01 | 00 | 00 | 01 |
| 13. | Uttar Pradesh | 03 | 01 | 01 | 05 |
| 14. | Uttarakhand | 01 | 00 | 00 | 01 |
| 15. | Ras Al Khaimah (UAE) | 01 | 00 | 00 | 01 |
| **TOTAL** | | **27** | **10** | **10** | **47** |

### 1.2. Methodology

The research is based on analogous literature available online and the author's own varied experience and understanding in the professional field, as well as with academia. No primary surveys have been conducted for this research. The whole study is divided into two major parts:

- The first deals with the challenges being faced in the industry, and in the professional practice of architecture
- The second deals with the education sector, as to how it is dealing with the industry challenges.

In the education part, studies have dwelled on the comparative study of the Indian Council of Architecture's *Minimum Standards of Architectural Education* and that of the world's foremost technology institution, that is, Massachusetts Institute of Technology (MIT). Based on the study, gaps in the Indian education system especially those related to environmental sustainability and modern technology have been identified, to make the Indian education system a better job provider globally and also become a mitigant in the field of climate change and sustainability.

### 1.3. Literature Review

For this study, nine sources, namely, research papers, articles and blogs, have been examined. The summary of these is as follows:

The blog (July 21, 2023) titled *The Council of Architecture, India, Lowers Bar for Entry to Architecture Education* shows its unpleasantness over the Council of Architecture's attitude toward accepting lower standards of architectural education for the sake of facilitating higher intake in architectural institutions in India. The blog also prints the statement of the CoA's President about the requirements of architects in the country.

The website of the *Architecture 2030 Group* is extremely useful for this study as it provides in-depth knowledge about global warming and its impact on the human race. *Zachariah Consultants'* article titled *10 Biggest Challenges in Modern Architecture* nicely elaborates on the real challenges being faced by Indian architects, which directly relate to this article. The CoA's website incorporating the *Minimum Standards of Architectural Education Regulations 2020* provides a thorough insight into the architectural education being imparted in India. Ar. Jit Kumar Gupta pleads for making architectural education more focused, globally acceptable, more qualitative, more supportive, more productive and relevant to the context of sustainability. He feels that the follow-up of these parameters would help and promote the profession, by providing quality professionals in order to create a new order of built environment, which is the need of the hour. The blog by *Indiabizzness* (2023) discusses in detail the *Built Environment of Tomorrow*, providing useful ingredients on the topic of this study. Ar. Benny Kuriakose's article titled *Architectural Education in India* indicates apprehension about

the lack of practical knowledge being imparted in the Indian education system. The article also advocates learning from foreign architects who have straightforward attitudes and follow deadlines. The website of MIT, USA (https://architecture.mit.edu/) provides excellent input on high-tech architectural education incorporating subjects on climate change and sustainability being imparted to undergraduate students out there. Ar. Ranjit Sabikhi (2020), in his article published in *Wire* advocates that due to the high implication of the building sector in enhancing the carbon footprints, architects have to plan and design buildings with great care for issues related to environmental sustainability.

## 2. The Professional (Industry) Challenges

There are several challenges that architects face in the real world, and which need to be addressed in the undergraduate curriculum in order to prepare new architects. Some of these are listed below:

*a) Global Warming and Climate Change*

With climate change becoming a true reality, sustainable and eco-friendly building design has become mandatory and is crucial to all of us. Architects of present times and in the future have to create buildings that minimize carbon footprints and reduce environmental impact or design 'green' buildings. Studies by the *Architecture 2030 Group* indicate that the built environment is responsible for 42% of total global carbon emissions. This is much higher than the transportation and the industrial sectors. As the built environment is the uppermost domain of architects, this fraternity has to take the largest responsibility and undertake adequate measures to mitigate the biggest menace and threat to the entire globe.

To ensure the minimization of carbon footprints and curtailing the environmental impact, the US-based *Architecture 2030 Group* started the *2030 Challenge* in 2006 calling upon the global architecture and building community to adopt the following targets:

i) All new buildings, developments, and major renovations shall be designed to meet a fossil fuel, GHG-emitting, energy consumption performance standard of 70% below the regional (or country) average/ median for that building type.

ii) At a minimum, an equal amount of existing building area shall be renovated annually to meet a fossil fuel, GHG-emitting, energy consumption performance standard of 70% of the regional (or country) average/median for that building type.

iii) The fossil fuel reduction standard for all new buildings and major renovations shall be increased to 80% in 2020 and 90% in 2025, and finally carbon-neutral in 2030 (that is, using no fossil fuel GHG emitting energy to operate).

In the words of Edward Mazria, the founder of the *Architecture-2030 Group*:

*Architects and design professionals have a unique and critical role to play. We directly shape and influence the built environment worldwide. We are the one industry across all political and geographic boundaries with the agency to affect global emissions immediately. In other words, we can decide to design and build to zero carbon today.*

Undoubtedly, architects have a great responsibility and unique challenge to mitigate the climate change effects for which they have to incorporate renewable energy sources like solar panels, wind turbines, etc. Also, rainwater harvesting and greywater recycling for irrigation and non- potable uses need to be compulsorily incorporated into our design statements. Furthermore, energy-efficient materials derived from sustainable sources, like bamboo and recycled plastics, etc need to be given priority over conventional steel and concrete.

According to Prof. Jit Gupta, a noted architect cum urban planner- Buildings are designed to provide the optimum level of operational efficiency besides ensuring a quality indoor environment for end users. Buildings are also known to be large consumers of energy and resources besides generators of waste. When not planned and designed rationally, buildings not only make end-users unhealthy and sick but also create imbalance in the environment and ecology. Considering large energy implications, carbon footprints, adverse impact on use of resources and promoting sustainability, buildings have to be planned, designed and constructed with great care, caution and sensitivity.

*b) Use of Artificial Intelligence (AI) Technology in the Design Process*

The art and science of artificial intelligence (AI) and machine learning have already grabbed all technologies and architecture is no exception. With the adoption of AI and machine-learning algorithms, the architectural design process can be altered drastically. All sorts of designers, including architects, can successfully use AI tools in framing the conceptual designs which would greatly enhance their creativity. AI equips architects with fresh ideas and opens up new opportunities for design concepts. These tools also allow for easier steering of data and the development of innovative solutions to complex

problems especially related to global warming and sustainability issues. Such tools also free human architects from routine tasks like drafting, 3D and building information modelling (BIM) for more conceptual innovative work.

*c) Ultra-High-rise Constructions*

It is well-known that, historically and culturally, India has been largely supporting low-rise constructions. But the scarcity of urban land has forced us to accept the construction of high and ultra-high-rise buildings in the country. This poses the double-faceted challenge to the architects of getting themselves updated with the latest high-rise technology and creating high-rise constructions suiting the socio-cultural ethos of the users. Also, such types of constructions pose a challenge to the adoption of green technologies along with the use of indigenous building materials.

*d) Advanced Building Materials and Construction Techniques*

In a fast-changing world, building materials and construction technologies are also changing rapidly through a lot of innovations and research. To keep pace with these changes, the architecture profession has to continually evolve itself through innovative materials and novel construction methodologies. Keeping pace with these newer-age advancements, along with maintaining the structural integrity and safety protocols, are essential prerequisites for any new venture. Futuristic materials like ultra-lightweight carbon compounds, self-healing bio-concrete, modular bamboo structures, and wool-and-cellulose bricks are some of the thought-provoking possibilities. Furthermore, to boost the efficiency of the construction process, the incorporation of robotic automation, 3D printing, and modular prefabricated components into the construction process is very much required and should be adopted widely.

*e) Innovations in Indigenous Materials and Technology*

Besides using revolutionary new materials and technologies, architects need to innovate on the indigenous materials and technology suitable to Indian conditions. We, in India, have a rich heritage of eco-friendly and sustainable constructions. These could be researched considering present-day requirements based on climate change and economic compulsions.

*f) Urban Renewal*

Post-Independence, massive constructions took place in the country. After 75 years, these constructions either need major renovations or reconstructions, resulting in large-scale urban renewal exercises. Urban renewal involves clearing out blighted areas in inner cities in favour of new housing, businesses and other developments. The urban renewal challenge for architects is to ensure a policy based on 'less on destruction' and 'more on renovation and investment.

*g) Cost-Effective Solutions for Affordable Housing*

Amid skyrocketing construction costs and depleting affordability levels, designing affordable yet high-quality housing remains a pressing challenge for present-day architects. The country is undergoing massive mass housing projects under the Prime Minister's Awas Yojana (PMAY)- urban and rural- in which cost reduction is a major challenge

*h) Universal Design for Inclusivity and Accessibility*

Universal design is designing inclusively, that is, to accommodates diverse experiences and reduces barriers based on culture, gender, age, ability and more. It aims to make products usable for as many people as possible, regardless of differences in income, background, disability, or other factors. Presently, the Indian government is laying a lot of importance upon the *Divyangjan* of our country. Thus, this parameter is becoming quite significant day by day and poses an upbeat challenge to all architects.

*i) Disaster Resistant Construction*

As the menace of climate change intensifies, natural disasters like hurricanes, floods and wildfires are becoming increasingly frequent and severe. In this context, disaster-resistant construction is emerging as a critical aspect of modern building practices and the whole architectural profession needs to develop expertise in this field. By designing and constructing resilient structures, we can protect communities, minimize damage and reduce human and economic losses. All our buildings must withstand floods, earthquakes, wildfires and other environmental calamities. Temperatures going as high as 52 degrees centigrade in Delhi, poses a newer challenge to architects, especially in north and central India, to enhance their design capabilities in the domain of solar passive architecture. Importantly, the challenge is not to compromise on aesthetics, cost-effectiveness, energy efficiency and indoor environmental quality (IEQ).

*j) Talent Crunch in the Profession*

A latent challenge to the architecture profession is the intake of 'lower talented students' in architecture institutions. A study of the Joint Entrance Examination (JEE) cutoff for students to choose the architecture course at various IITs shows a grim picture (See Table 2). According to this study,

our profession stands nowhere near to the course of Computer Science, nor is even close to the neglected branch of Civil Engineering. This indeed is an extremely serious challenge, especially considering the importance of this profession in mitigating the menace of climate change and global warming.

*k) Employability and Salary Structure*

Similar to the medicine and law courses, architecture too, is a professional course, where one is not solely dependent on government or private sector employment. For all these professionals, self-employment, viz., starting their private practice is an evergreen open option. However, this is not an easy option for one and all. Tenacious prerequisites exist for entering into an arena of private practice, including sound financial backing, high-end social connections, excellent managerial capability, etc., which only a few have. Thus, the majority of fresh graduates are wholly dependent on employment either in the government or the private sector, including corporates. As is well-known, job opportunities in the government sector are extremely limited and the corporate sector in India is not yet ripe for this profession. Thus, most of the jobs are available in the small offices, which themselves are thin on the ground. Although no official or authenticated data is available on the salary structure of the fresh graduates, based on mere talk, their starting salary is somewhere between 20- 30 thousand only, which is less than a group -D employee in the government or the corporate sector. This raises an extremely crucial challenge for the architecture profession and needs to be addressed urgently if the profession has to logically deal with complex issues about climate change and sustainability.

*l) Tendering and Bidding Evaluation*

Presently, many architects are undertaking project consultancy and turn-key projects, which, besides core designing, require pursuits relating to project formulation- implementation, tender making, bidding evaluation, etc. As present-day architects have just the bare knowledge of these tasks, they remain highly dependent on the whims and fancies of the project management professionals. Thus, there appears an urgent need for strengthening the scope of modern construction technology incorporating topics like Design Built Tender (DBT)or Engineering Procurement & Construction (EPC) for the architectural fraternity too.

*m) Detailed Project Report of an Architectural Project*

The contemporary architect needs to be well-versed in the preparation of the detailed project report (DPR) of an architectural project. However, the present-day architectural curriculum is almost silent on this important topic. Thus, there appears an urgent need to include the study of the DPR process, having the following components:

i. Project background
ii. Constraints or limitations
iii. Detailed working/ tender drawings for architectural, structural, plumbing and drainage, HVAC, electrical, fire-fighting, waste management, medical gases, landscaping, signages, interior designing, furniture / furnishing, bulk services, HIS, IT Services etc. along with PERT charts
iv. Detail estimate of the project
v. List of equipment and specifications
vi. Manpower requirement
vii. Running, maintenance and operation costs
viii. Budgetary projections

## 3. The Educational Challenges

So far, numerous professional challenges have been studied. Many of these have a direct relationship and impact on architectural education, which already is in a precarious condition. Many architecture colleges are either shutting down or are not able to fill their assigned quota of sanctioned seats. Also, brighter students are refraining from this course. Thus, there appears a need for studying the present pattern of architectural education being broadly followed in the county. For this objective, the course structure as framed by the COA of India is being explored to search the sustainability and upcoming technology content within it. Along with CoA's education structure, a study of the course content of MIT, ranked as the world's number one technology Institution, helps to draw a comparison between the two.

Table 2: JEE Advanced cutoffs for admission to IITs (2023)
*Source: Joint Seat Allocation Authority (JOSSA), Ministry of Education, GoI*

| S.No | IIT | B. Arch | Civil | Computer |
|---|---|---|---|---|
| 1 | IIT Kharagpur | 23337 | 07177 | 00632 |
| 2 | IIT Roorkee | 20728 | 07100 | 00412 |
| 3 | IIT BHU | 23877 | 10232 | 01079 |

### 3.1. Council of Architecture's *Minimum Standards of Architectural Education 2020*

Vide gazette notification of the Government of India dated 11 August 2020, the Council of Architecture has notified Minimum Standards of Architectural Education to be followed by all the architectural institutions across the country. Highlights of the framework for these standards are as follows:

*i) Architectural graphics:* Measured drawing with dimensions and details of an existing heritage building, monument or vernacular. Same with physical models.

*ii) Digital competency:* Through 3 finished projects at three different stages of education:

(a) Modelling and 3D render (b) BIM model with services etc. (c) An original parametric script and construction

*iii) Structure design*: Plan with a full set of drawings. Software such as *Staad-Pro* or equivalent software used in the industry as well as an intuitive understanding of such aspects as shear, bending moment, and slenderness ratio to be encouraged and expected.

*iv) Construction*: Working drawings, BOQ and a portfolio of construction drawings and materials.

*v) Building materials*: Consummate understanding of current building materials as well as emerging ones and traditional ones, e.g. lime or mud *phaska*, etc. Maybe examined in the lower classes through theoretical examinations.

*vi) Building services*: Plumbing, HVAC, acoustics, lighting, must be examined through examination, but also through actual project work.

*vii) Climatology and sustainability*: Understanding sun charts, shadow studies, active and passive energy systems and the rudiments of energy audits as well as the GRIHA and other green systems requirements. Familiarity of energy audit software is mandatory.

*viii) Professional skills I:* This will be first and foremost the bringing together of the 4 S: site, space planning, structure and services. But even at this stage, there must be other larger concerns such as that of climate, culture or building material.

*ix) Professional skills II*: Understanding a complex of buildings with emphasis on the spaces in between buildings and not just within buildings.

*x) Professional skills III*: A large complex that can either emphasize services (and/or sustainability) as in hospitals and hotels, or the city or both. Students may also engage in some of the emerging digital techniques such as *Grasshopper* parametric in the design analyses.

*xi) Professional skills IV:* A consummate thesis project. This must also include a small written document containing case studies, analyses, brief, and a raison d'être for the project.

*xii) Ethical abilities II:* Architect's practice, legal responsibilities, administrative roles as well as other aspects such as project finance and office management.

*xiii) Ethical abilities III*: A sustainable plan for a building, preferably with an understanding of GRIHA and/or a complete energy audit.

*xiv) Urban and landscape:* Ability to work within an urban context and understanding of the basic urban theories of the 20th and 21st century as well as traditional settlements. Also, landscape design, ecology and environment

### 3.2. Massachusetts Institute of Technology's (MIT) Undergraduate Architecture Course Content

As the world is turning into a global village, and with the excessive use of the internet, architecture education is also getting global. Nowadays many Indian students go abroad for higher studies and reciprocally some do come to India. Therefore, it becomes necessary to study the education pattern being followed globally. In this context, the course structure of the world's topmost university, i.e., Massachusetts Institute of Technology (MIT) is being studied. As per its brief mandate, as given below, great emphasis is being given to the computational and technology aspects:

The Computation group inquires into the varied nature and practice of computation in architectural design, and the ways in which design meaning, intentions, and knowledge are constructed through computational thinking, representing, sensing, and making. They focus on the development of innovative computational tools, processes, and theories, and the application of these in creative, socially meaningful responses to challenging design problems. Topics taught cover visualization, digital fabrication, and construction processes and technologies, shape representation and synthesis, building information modelling, generative and parametric design, critical studies of digital and information technologies, digital heritage, and software and hardware development of advanced tools for spatial design and analysis. Students are encouraged to acquire both the technical skills and the theoretical and conceptual foundations to rethink and challenge the limits of current design processes and practices, and to consider the social and cultural implications of their positions.

The details of their course curriculum are as follows:

*a) Building Technology*: Environmental technologies in buildings; modelling urban energy flows for sustainable cities and neighbourhoods; computational structural design and optimization; design computation: art, objects and space.

*b) Computation:* Design computation: art, objects and space; advanced visualization: architecture in motion graphics; introduction to building information modelling in architecture; visual computing

*c) Design Studio:* Information design and visualization, design studio: information design and visualization, elective- designing for the future: earth, sea, and space

*d) Information Technology*: Design studio: information design and visualization; the human factor in innovation and design strategy; visual communication fundamentals; design computation: art, objects and space; advanced visualization: architecture in motion graphics

*e) Visual Computing:* Software design: computer graphics: digital and computational photography: introduction to design thinking and innovation in engineering; interactive data visualization and society; data storytelling studio and digital humanities: topics, techniques, and technologies.



### 3.3. Comparison of Under-graduate Courses of Architecture

Table 3 shows the comparative analysis of undergraduate architecture course content and structure in India and the USA.

The above analysis of the course framework shows that the course structure as proposed by the Council of Architecture is extremely rudimentary and by no means fulfils the architectural professional (industry) requirements for the present and the future. In it, very little is being envisaged to combat the challenges faced by the country's architecture, especially in the domain of climate change and environmental sustainability. For example, there is hardly any mention of modern technologies leading to design optimization relating to climate change, artificial intelligence, computational design, smart cities, etc. Even on sustainability, very little emphasis is being given. Teaching the mud *phaska* technique in the 21st century is simply not desirable. The study of ultra-high-rise constructions is not visible in the framework. On the other hand, the course content at MIT is highly advanced and futuristic-to some extent utopian too.

### 3.4. Longer Course Duration

At the beginning of this study, we noticed that architecture courses generally do not attract bright students. Besides other reasons for limited attraction towards architecture courses, one reason can be attributed to the longer duration of the undergraduate program. While all the engineering and technology courses have a four-year duration, the architecture course runs for five long years. The

Table 3 : Comparative Analysis of Undergraduate Architecture Course Content and structure
*Source: Compiled by Author*

| Indian Course Structure as proposed by the Indian Council of Architecture | UG Course Structure of Massachusetts Institute of Technology (MIT), USA |
|---|---|
| ● The course structure is extremely rudimentary and by no means fulfils the architectural requirements of the present and the future<br>● Very little is being envisaged to combat the challenges being faced by the architecture profession in the country.<br>● For example, there is no mention of modern technologies, artificial intelligence, computational design, urban renewal, Smart Cities, etc. Even on the sustainability front, very little emphasis is being given.<br>● Undue emphasis on teaching of the mud phaska technique in the 21st century may not be desirable.<br>● The study of ultra-high-rise constructions is not visible in the framework | ● The course structure lays extraordinary emphasis on innovation and modern technology especially computational sciences like modelling urban energy flows for sustainable cities and neighbourhoods, computational structural design and optimization<br>● Introduction to design Thinking and Innovation in Engineering, and Design Computation: Art, Objects and Space and Data Storytelling Studio and Digital Humanities etc.<br>● A course on 'Earth Sea and Space' indicates the futuristic thought process of this institution |

excess of one year distracts many bright students from this course. Thus, there appears a need for revisiting this aspect. Countries like Australia and Japan have undergraduate courses with a four-year duration only. If it is possible there, can India also try to think along these lines? Our new education policy (NEP) also advocates for four-year UG courses.

## 4. Conclusions and Recommendations

Through this study, it has been observed that a vast gap exists between the industry (profession) and academia. Also, the course content being followed in India does not take due care of the issues related to global warming, climatic challenges and sustainability at large, the onus of which mostly vests with the architecture profession. Due to this gap, the employability of fresh architects is being badly affected as they are not able to deliver the products desired by society in general. Furthermore, the Indian course structure is not up to global expectations, blocking Indian architects' avenues from competing and providing architectural consultancies the world over. If we update our architectural curricula to global standards, ample opportunities with very high financial returns, quite often in dollars, will be generated within the country. This would encourage brighter students to join the architecture stream in India, who will be capable of resolving complex issues of sustainability and climate change etc. Brighter students will also come out with innovative and cost-effective solutions for gigantic environmental problems being faced in the country. Reduction of course duration from 5 to 4 years may provide a positive vibe to the brighter students to prefer this course vis-a-vis engineering courses. For better employability, the profession needs to upgrade its course content to include more and more high-tech tools like computing, machine learning, AI, etc.


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# IIA ANNUAL AWARDS

| Awards | Nominations | Remarks |
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| IIA Honorary Fellowship Gold Medal 2025 | Dr. Nidhipati Singhania | |
| IIA Honorary Fellowship Gold Medal 2025 | Mr. Pradeep Kumar | |
| IIA Baburao Mhatre Gold Medal 2024 | Ar. C. N. Raghavendran | |
| IIA Madhav Achwal Gold Medal 2024 | Prof. RANJIT T. GHOGALE | |
| IIA Best Chapter Award 2024 | Kerala Chapter | Winner |
| IIA Best Chapter 1st Runner-up Award 2024 | Odisha Chapter | 1st Runner Up |
| IIA Best Chapter 2nd Runner-up Award 2024 | Madhya Pradesh Chapter | 2nd Runner Up |
| IIA Best Centre Award 2024 | Kannur Centre | Winner |
| IIA Best Centre 1st Runner-up Award 2024 | Thane Centre | 1st Runner Up |
| IIA Best Centre 2nd Runner-up Award 2024 | Surat Centre | 2nd Runner Up |
| IIA Outstanding Member Award 2024 | Ar. T R Palaniappan | WINNER |
| IIA Outstanding Member Award 2024 | Ar. Rabi Narayan Das | WINNER |
| IIA Best Chapter Newsletter Award 2024 | IIA Karnataka Chapter | Winner |
| IIA Best Chapter Newsletter Runner-up Award 2024 | IIA Odisha Chapter | Runner Up |
| IIA Best Centre Newsletter Award 2024 | IIA Kollam Centre | Winner |
| IIA Best Centre Newsletter Runner-up Award 2024 | IIA Kolhapur Centre | Runner Up |
| IIA Award for Chapter Membership Growth 2024 (in Nos.) | IIA Kerala Chapter | WINNER |
| IIA Award for Centre Membership Growth 2024 (in Nos.) | IIA Cochin Centre | WINNER |
| IIA Award for Sub Centre Membership Growth 2024 (in Nos.) | IIA Kapurthala Hoshiarpur Sub Centre | WINNER |
| IIA Award for Chapter Membership Growth 2024 (in %) | IIA Jammu & Kashmir Chapter | WINNER |
| IIA Award for Centre Membership Growth 2024 (in %) | IIA Kanpur Centre | WINNER |
| IIA Award for Sub Centre Membership Growth 2024 (in %) | IIA Cuttack Sub Centre | WINNER |

| Presidential Special Recognition Awards | |
|---|---|
| Presidential Special Recognition Award for Organising and Conduct of IIA National Convention in 2024 | Ar. Sandeep Kumar Saraswat |
| Presidential Special Recognition Award for Organising and Conduct of IIA National Awards For Excellence In Architecture 2022 in 2024 | Ar. Nilesh Dholakia |
| IIA Presidential Special Recognition Award for Organisation and Conduct of IIA ANVESHAN – International Research Conference in 2024 | Ar. Jayakrishnan R J |

| | |
|---|---|
| IIA Presidential Special Recognition Award for Organisation and Conduct of IIA International Conference on Women Architects (Pinkprint) in 2024 | Ar. Swopnadutta Mohanty |
| IIA Presidential Special Recognition Award for Organisation and Conduct of IIA Eastern Regional Conference in 2024 | Ar. Atul Saraf |
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| IIA Presidential Special Recognition Award for Organisation and Conduct of Northern Regional Conference in 2025 | Ar. Pritpal Singh Ahluwalia |
| IIA Presidential Special Recognition Award for Organisation and Conduct of Western Regional Conference and MAHACON in 2025 | Ar. Makarand Toraskar |
| IIA Presidential Special Recognition Award for Organising and Conduct of IIA National Awards For Excellence In Architecture 2023 in 2025 | Ar. Mauktik Trivedi |
| IIA Presidential Special Recognition Award for Organising and Conduct of IIA National Convention in 2025 | Ar. Vibha Shrivastava |
| IIA Presidential Special Recognition Award for Organisation and Conduct of Organisation and Conduct of Monsoon Architecture Festival in 2025 | Ar. Sebastian Jose |
| IIA Presidential Special Recognition award for Outstanding Member 2024 | Ar. Sandeep Pandurang Patil |
| IIA Presidential Special Recognition award for Outstanding Member 2024 | Ar. Bhavesh Mehta |
| IIA Presidential Special Recognition award for Outstanding Member 2024 | Ar. Rajesh Nagula |
| IIA Presidential Special Recognition award for Outstanding Member 2024 | Ar. Akshay Selukar |
| IIA Presidential Special Recognition award for Outstanding Member 2024 | Ar. Nitin Ghule |
| IIA Presidential Special Recognition award for Outstanding Member 2024 | Ar. Sanjay Pathe |
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| IIA Presidential Special Recognition award for Outstanding Member 2024 | Ar. Anuradha Tikkas |
| IIA Presidential Special Recognition award for Outstanding Member 2024 | Ar. Naveen Kumar Sahu |
| IIA Presidential Special Recognition award for Outstanding Member 2024 | Ar. Anu Mridul |
| IIA Presidential Special Recognition Award for Registration of Maximum Entries for IIA National Awards For Excellence In Architecture 2023 | IIA Maharashtra Chapter |
| IIA Presidential Special Recognition Award for Best Report Submission by IIA Committee 2024 | Heritage and Conservation Committee of IIA |
| IIA Presidential Special Recognition Award for exceptional performance for the year 2024 | IIA Cultural, Sports & Event committee |
| IIA Presidential Special Recognition Award for exceptional performance for the year 2024 | IIA Board of Architectural Education & Examination |

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| IIA Presidential Special Recognition Award for exceptional performance for the year 2024 | IIA Publication Board |
| IIA Presidential Special Recognition Award for exceptional performance for the year 2024 | Awards Committee of IIA |
| IIA Presidential Special Recognition Award for exceptional performance for the year 2024 | IIA Kalyan-Dombivli Centre |
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# TRANSOM IIA NATCON 2025

## IIA Madhya Pradesh Chapter (IIA Bhopal & IIA Indore Centres)
## 10–13 April, 2025

**Ar. Vibha Shrivastava**

TRANSOM, the IIA National Convention 2025, organized by the IIA Madhya Pradesh Chapter, marked a historic milestone as the Chapter celebrated its 50 glorious years. Hosted across the twin cities of Bhopal and Indore, TRANSOM brought together over 800 architects, industry experts, academicians and cultural ambassadors from across India and abroad.

The convention was themed TRANSOM - *Bridging Makes Sense*, focused on building a future-ready India by fusing vernacular wisdom with cutting-edge technologies, in line with the nation's vision for *Vikasit Bharat 2047*. Delegates engaged in technical sessions, immersive experiences, exhibitions and cultural programs while exploring architecture's expanding role in regenerative, inclusive and adaptive architectural practices.

**Day 1: 10 April 2025 – Bhopal**

The Convention began with the arrival of IIA National Council Members at the Jehan Numa Retreat, Bhopal. The afternoon saw a focused National Council Meeting where key institutional goals and collaborations were discussed. In the evening, a warm Welcome Dinner was hosted by the IIA MP Chapter, offering an informal platform for interaction and reflection, setting the tone for the three-day TRANSOM Convention ahead.

**Day 2: 11 April 2025 – Bhopal**

The Convention began with a grand inaugural ceremony at the iconic Minto Hall, Bhopal, presided over by Hon. Chief Minister Dr. Mohan Yadav. This momentous occasion also witnessed the IIA Honorary Fellowship and Baburao Mhatre Gold Medal Felicitation, awarded to:

- Dr. Nidhipati Singhania
- Mr. Pradeep Kumar
- Ar. C. N. Raghavendran
- Prof. Ranjit T. Ghogale

Technical Sessions followed the ceremony with globally renowned speakers:

- *Bridging Technology with Traditional Artby* Ar. Hassan Ragab
- *Talking to Serenity with* Ar. Palinda Kannangara
- *Evolving Environment with* Ar. Ravindra Kumar

A poignant Charles Correa Memorial Dialogue was moderated by Ar. Milana Maladkar, featuring a stellar panel including Ar. Jose Cortes Delgado, Ar. Amit Sukhtankar, Ar. Tanvi Karia, and Ar. Rajeev Verma.

Subsequent sessions featured:

- Going *Back to the Roots with* Ar. Sangeeta Bais
- *Conservation as Radical Design* - Ar. Sumesh Modi
- *Rethink the Future with* Ar. Lawrence Wong

The Conference that was a part of NATCON 2025 was envisioned with the goal of fostering knowledge exchange and collaboration between architecture students and some of the leading architects in the field. Organized by MANIT, SPA and IIA, the event successfully brought together experts and enthusiasts for an informative and fruitful discussion about the submitted entries.

The Award Ceremony for the Student's Conference @ NATCON 2025 under the theme TRANSOM took place after the Technical Sessions. The Ceremony was hosted by Dr. Rahul Tiwari.

The evening culminated in a soulful *Sufiyat Cultural Night*, blending heritage music and a gala dinner under the starlit lawns of Minto Hall.

**Day 3: 12 April – From Bhopal to Indore**

The day began with a Heritage Walk led by Ar. Hussain, exploring the rich urban fabric of Bhopal. Delegates then embarked on a cross-city journey filled with architectural and ecological experiences. A tree plantation drive was held at VIT Campus, Sehore, creating the TRANSOM Biodiversity Park with over 300 species of flora planted. Along the route, an interactive Transom Quiz and Key Hunt kept delegates intellectually engaged. A cultural stop at Aarany Village marked the Malwa Architecture Festival, featuring the *Chaupal Pe Charcha* with:

- *Dialogues of Wisdom on Malwa with* Ar. Savita Raje
- *Brick by Brick inspiring journey of* Ar. Nipun Prabhakar
- Acclaimed metal artist, Mr. Wajid Khan



A student competition on the design of models- *Waste to Wonders* was planned where students from architectural colleges from Madhya Pradesh displayed their entries.

Upon arrival in Indore, delegates were welcomed at the Brilliant Convention Centre with:

- Exhibition Inaugural
- Cultural Program introducing the legacy of Malwa and Devi Ahilya Bai Holkar
- A stirring *Stotra* Recital

Technical Session-6 featured visionary architect Ar. Mariana Cabugueira, who led the audience to *Walk into the Future.*

The night crescendoed into *The Great Gig* with electrifying inter-Chapter band performances, followed by *VOID*, India's first-ever rock band of architects. Over 150 delegates then journeyed to Ujjain for the Bhasma Aarti held at dawn at the sacred Mahakaleshwar Temple, a spiritual start to the day.

**Day 4: 13 April – Indore**

Day 3 spotlighted community-led architectural efforts, with talks on cultural and landscape heritage by Ar. Udayan Natu and Ar. Anupama Sanjeev.

A power-packed series of Technical Sessions followed:

- *Massing in Rhythm* with Ar. Santosh Shanmugham and Ar. Raja Khrishnan
- *Building with Time: Time as a Resource* by Ar. Anupama Kundoo
- *Timeless Reflections* by Ar. VerendraWakhloo
- Took a *BIG Leap* with Ar. Kai-Uwe Bergmann

A key milestone was the IIA ASR Initiative, with the signing of MoUs with KnowPro Foundation and Prof. Urmila Rajadhyaksh of ISOLA, cementing partnerships for sustainable urbanism and landscape preservation.

During the Valedictory Function, the Organising Committee of NATCON 2025 was felicitated, followed by the National Awards Distribution by the IIA National Council.

The Convention concluded with a high-energy performance by *Raavana Live*, blending traditional storytelling with modern rhythms, accompanied by a lavish gala dinner—a perfect curtain call to a transformative event.

TRANSOM 2025 was not just a convention—it was a confluence of time, technology, tradition, and thought leadership, leaving the architectural fraternity enriched and inspired for the journey toward Developed India 2047.

**Ar. Vibha Shrivastava** (F-12330) is the Chapter Chairperson of the IIA Madhya Pradesh Chapter. She graduated from NIT Raipur (CG) in 1993 and has a Master's Degree In Urban Planning from SPA Delhi (1996). She holds 26 years of experience in professional and teaching at the IEPT, MANIT and SPA Bhopal. She has been active in IIA and ITPI since 1995.
*Email: vibhashri.21@gmail.com*

**PHOTO REPORT**

# TRANSOM IIA NATCON 2025

## IIA Madhya Pradesh Chapter (IIA Bhopal & IIA Indore Centres)
## 10–13 April, 2025

13TH IIA National Council Meeting At Jehan Numa Retreat, Bhopal

13TH IIA National Council Meeting At Jehan Numa Retreat, Bhopal

Delegates for Natcon 2025

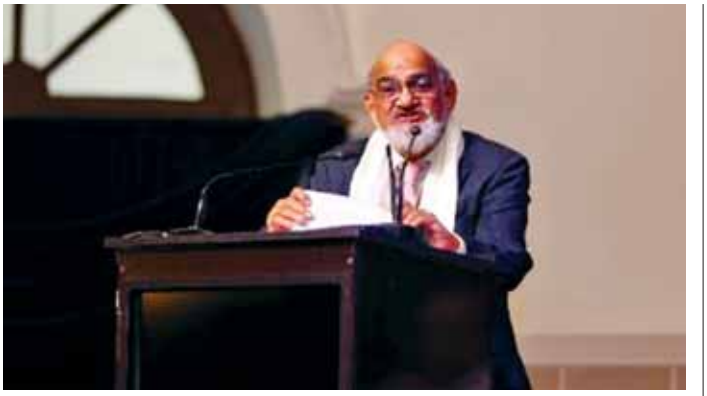
Inauguration of NATCON 2025 by Madhya Pradesh's Chief Minister, Dr. Mohan Yadav

Felicitation of Mr. Kajaria, Chairman of Kajaria Ceramics Ltd and Kerovit Group by Ar. C.R. Raju, Imm. Past President of IIA, Ar. Vilas Avachat, IIA President and Ar. .Jitendra Mehta, Vice President, IIA.

Felicitation of Madhya Pradesh's Chief Minister by IIA President, Ar. Vilas Avachat and IIA Vice President, Ar. Jitendra Mehta.


Welcome Address by Ar. Vibha Shrivastava, Chapter Chairperson of IIA, Madhya Pradesh Chapter


Address by Madhya Pradesh's Chief Minister, Dr. Mohan Yadav



Address by IIA President, Ar. Vilas Avachat

Address by IIA Vice President, Ar. Jitendra Mehta

IIA honorary fellowship to Dr. Nidhipati Singhania



IIA honorary fellowship presented to Mr. Pradeep Kumar

IIA Baburao Mhatre Gold Medal Award presented to Ar. C.N. Raghavendran

IIA Madhav Achwal Gold Medal Award presented to Prof. Ranjit T. Ghogali

The IIA Gold Medal awardees at NATCON 2025

Cultural programs at Minto Hall reflecting the rich heritage of Madhya Pradesh through dance

Participants of special session on Charles Correa with IIA Vice President, Ar. Jitendra Mehta


Team IIA NATCON-2025

Delegates at Brilliant Convention Centre, Indore


Dignitaries on the dais at the NATCON 2025 Valedictory function

Felicitation of speaker Ar. Palinda Kamnangara by Ar. Aneesh Sal Singh and Ar. Abhishek jha

Heritage walk led by Ar. S.M. Hussain

Inauguration of session at Brilliant Convention Centre, Indore

Presentation of by Ar. Anupama Kundoo, Ar. Sumesh Modi, Ar. Lawrence Wong, Ar. Verendra Wakhloo, Ar. Hassan Ragab, Ar. Sangeeta Bais,


Ar. Vibha Shrivastava, Ar. Akshay Selukar and Ar. Nitin Ghule received the award for hosting NATCON 2025 from the IIA President, Ar. Vilas Avachat

Band Raavan


The IIA Best Chapter Runner-up Award presented to IIA Madhya Pradesh Chapter Chairperson, Ar. Vibha Shrivastava

MoU between IIA President, Ar. Vilas Avachat and ISOLA President, Ar. Urmila Rajadhyaksh

Master Speaker Ar. Mariana Cabuguera & Ar. Kai-Uwe Bergmann


The GREAT GIG Inter-Chapter band performances

Cultural Shiva Strotam at Indore


Students' Competition Winners

Students' Competition Winners

Several books were released, authored written by prominent architects and IIA members.

Students' Competition Winners

Tree plantation at Biodiversity Park during TRANSOM NATCON 2025

# IIA MERITORIOUS AWARD

**Ms. Deepa Raju**, Kerala.
Registration No. IV-170283
IIA Examination (Scheme-2014)
(2017 - 2023)

**Mr. Arun Saini**, Punjab
Registration No. IV-170277
IIA Examination (Scheme-2014)
(2017- 2023)

The IIA Meritorious Award was instituted in 2012 by the IIA Board of Examination to recognise outstanding students who successfully clear all parts of the IIA course examinations in their first attempt. The award is presented by the President of the IIA during a national event and includes a Certificate of Merit along with a cash prize of Rs. 10,000.

This year, the IIA Meritorious Award will be presented to Ms. Deepa Raju from Kerala and Mr. Arun Saini from Punjab, both of whom have successfully passed all parts of the IIA Examination (Scheme–2014), held from 2017 to 2023, in their first attempt with first division.

We at IIA extend our heartfelt congratulations to Ms. Deepa Raju and Mr. Arun Saini for their dedication, consistency, and exceptional performance. We wish them continued success and a bright future ahead.

# 13th COUNCIL MEETING OF THE TERM 2023-2025 AT BHOPAL, MADHYA PRADESH ON 10-04-2025.

| Sr. No. | Associate to Fellow | Chapter | Membership No. |
|---|---|---|---|
| 1 | Ar. Kiran Moreshwar Jagtap | Maharashtra | F17393 |
| 2 | Ar. Ganesh Tulshiram Sonawane | Maharashtra | F16197 |
| 3 | Ar. Sachin Krishnarao Patil | Maharashtra | F17219 |
| 4 | Ar. Mohnani Prakash | Rajasthan | F11797 |
| 5 | Ar. Satish Prataprao Jagdale | Maharashtra | F09252 |
| 6 | Ar. Chirag Gupta | Uttar Pradesh | F21988 |
| | | | |
| **Sr. No.** | **Direct Fellow** | **Chapter** | **Membership No.** |
| 1 | Ar. Aditi Sandeep Pagar | Maharashtra | F29914 |
| 2 | Ar. Franklin Maxwell A | Tamil Nadu | F29915 |
| 3 | Ar. A L Ramesh Kumar | Tamil Nadu | F29916 |
| | | | |
| **Sr. No.** | **Associate Members** | **Chapter** | **Membership No.** |
| 1 | Ar. Amruta Atul Khaiwale | Maharashtra | A29917 |
| 2 | Ar. Harshad Balvant Dhanshri Sarvankar | Maharashtra | A29918 |
| 3 | Ar. Heaba Maria Tom | Kerala | A29919 |
| 4 | Ar. Pravin Ruprao Ganer | Maharashtra | A29920 |
| 5 | Ar. Akshay Atul Kaleshwarwar | Maharashtra | A29921 |
| 6 | Ar. Ashish Manikrao Hajare | Maharashtra | A29922 |
| 7 | Ar. Pankaj Nareshchandra Parate | Maharashtra | A29923 |
| 8 | Ar. Wasim Aslam Shaikh | Maharashtra | A29924 |
| 9 | Ar. Vihang Bapusaheb Awachate | Maharashtra | A29925 |
| 10 | Ar. Shreyas Subodh Chinchmalatpure | Maharashtra | A29926 |
| 11 | Ar. Poonam Ram Goyal | Maharashtra | A29927 |
| 12 | Ar. Rifain P V | Kerala | A29928 |
| 13 | Ar. Omkar Madan Shinde | Maharashtra | A29929 |
| 14 | Ar. Prarthana Ritesh Patel | Maharashtra | A29930 |
| 15 | Ar. Anjana Ann George | Kerala | A29931 |
| 16 | Ar. Anchana K R | Kerala | A29932 |
| 17 | Ar. Sanjana Santosh | Kerala | A29933 |
| 18 | Ar. Shilpa Mariea Sebastian | Kerala | A29934 |
| 19 | Ar. Rinu Johnson | Kerala | A29935 |
| 20 | Ar. Shruthi Raghunath | Karnataka | A29936 |
| 21 | Ar.Amy Vini Jakhalu | Nagaland | A29937 |
| 22 | Ar. Asha Rajan | Kerala | A29938 |
| 23 | Ar. Harikrishnan G | Kerala | A29939 |
| 24 | Ar. Ullas K U | Kerala | A29940 |
| 25 | Ar. Dimpi Bharatbhai Kantariya | Gujarat | A29941 |
| 26 | Ar. Shreshth Sengupta | Karnataka | A29942 |
| 27 | Ar. Edel Andrea Dsouza | Karnataka | A29943 |
| 28 | Ar. Janhavi Aniruddha Kashalikar | Maharashtra | A29944 |
| 29 | Ar. Shiuly Roy | Karnataka | A29945 |
| 30 | Ar. Sreyas K M | Kerala | A29946 |
| 31 | Ar. Mathai Varkey K | Kerala | A29947 |
| 32 | Ar. Mahesh Prakash Navaghane | Maharashtra | A29948 |

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|---|---|---|---|
| 33 | Ar. Piyush Uttam Kalwane | Maharashtra | A29949 |
| 34 | Ar. Kaustuba Chandrakant Babar | Maharashtra | A29950 |
| 35 | Ar. Anjali Pavankumar Korke | Maharashtra | A29951 |
| 36 | Ar. Supriya Suresh Abhyankar | Maharashtra | A29952 |
| 37 | Ar. Adhiti Swaati Gautama | Tamil Nadu | A29953 |
| 38 | Ar. Mutthamizharasi A R | Karnataka | A29954 |
| 39 | Ar. Arunima Rane | Madhya Pradesh | A29955 |
| 40 | Ar. Tejas Sanjay Kalaskar | Maharashtra | A29956 |
| 41 | Ar. Manan Deepakrao Bele | Maharashtra | A29957 |
| 42 | Ar. Darshita N Chawda | Maharashtra | A29958 |
| 43 | Ar. Shivani Narendra Nimbalkar | Maharashtra | A29959 |
| 44 | Ar. Dilip Bhawarlal Jangid | Maharashtra | A29960 |
| 45 | Ar. Aditya Shashikant Chintawar | Maharashtra | A29961 |
| 46 | Ar. Amol Narendra Gujrathi | Maharashtra | A29962 |
| 47 | Ar. Imran Siraj Khan | Maharashtra | A29963 |
| 48 | Ar. Kushal Sushil Maloo | Maharashtra | A29964 |
| 49 | Ar. K A Anoop | Telangana | A29965 |
| 50 | Ar. Shreya Rohit Uttarwar | Maharashtra | A29966 |
| 51 | Ar. Vijendra Vijay Danao | Maharashtra | A29967 |
| 52 | Ar. Anand Ghanshyam Mundhada | Maharashtra | A29968 |
| 53 | Ar. Pooja Anand Mundhada | Maharashtra | A29969 |
| 54 | Ar. Sparsh Shyamkumar Kalda | Maharashtra | A29970 |
| 55 | Ar. Shashank Mukund Padgilkar | Maharashtra | A29971 |
| 56 | Ar.Chaitali Sagar Palkritwar | Maharashtra | A29972 |
| 57 | Ar. Devendra Kishor Motwani | Maharashtra | A29973 |
| 58 | Ar. Pratik Dawda | Maharashtra | A29974 |
| 59 | Ar. Shilpa Vinod Kukreja | Maharashtra | A29975 |
| 60 | Ar. Sonal Ashok Gandhi | Maharashtra | A29976 |
| 61 | Ar. Khushbu Soni | Madhya Pradesh | A29977 |
| 62 | Ar. Shailesh Kumar | Uttarakhand | A29978 |
| 63 | Ar. Ashish Barwal | Haryana | A29979 |
| 64 | Ar. Geeta Sunil Wagale | Maharashtra | A29980 |
| 65 | Ar. Gaurav Bandil | Haryana | A29981 |
| 66 | Ar. Ajith A | Tamil Nadu | A29982 |
| 67 | Ar. Priya Mohindru | Rajasthan | A29983 |
| 68 | Ar. Garima Gupta | Punjab | A29984 |
| 69 | Ar. Ketaki Chandrakant Vasudha Joshi | Maharashtra | A29985 |
| 70 | Ar. Sreediya K S | Kerala | A29986 |
| 71 | Ar. Joannas Ashok Kumar | Telangana | A29987 |
| 72 | Ar. Seema Suresh Patil | Maharashtra | A29988 |
| 73 | Ar. Ashishkumar Chandrakant Sompura | Gujarat | A29989 |
| 74 | Ar. Vaibhav Deepak Bhandigare | Maharashtra | A29990 |
| 75 | Ar. Rajeeb Kumar Mohanta | Odisha | A29991 |
| 76 | Ar. Manoj Ranjan Suna | Odisha | A29992 |
| 77 | Ar. Devanshi Hiren Engineer | Gujarat | A29993 |
| 78 | Ar. Soham Malove Divatia | Gujarat | A29994 |
| 79 | Ar. Pranshav Singh | West Bengal | A29995 |
| 80 | Ar. Shijna N P | Kerala | A29996 |
| 81 | Ar. Divyanshu Singh | Rajasthan | A29997 |
| 82 | Ar. Alagappan S | Tamil Nadu | A29998 |

| 83 | Ar. Isha Bansal | Madhya Pradesh | A29999 |
|---|---|---|---|
| 84 | Ar. Sandeep Surendra Sirsat | Maharashtra | A30000 |
| 85 | Ar. Anupama Sanjiv | Madhya Pradesh | A30001 |
| 86 | Ar. Laxmi Bohra | Uttar Pradesh | A30002 |
| 87 | Ar. Praveen Chandra Chaurasia | Madhya Pradesh | A30003 |
| 88 | Ar. Suny Akber | Tamil Nadu | A30004 |
| 89 | Ar. Sarang Anil Yeola | Maharashtra | A30005 |
| 90 | Ar. Adarsh Shivhare | Madhya Pradesh | A30006 |
| 91 | Ar. Akshat Bandi | Madhya Pradesh | A30007 |
| 92 | Ar. Adarsh T G | Kerala | A30008 |
| 93 | Ar. Shraddha Suresh Rathi | Maharashtra | A30009 |
| 94 | Ar. Tushar Balamurugan | Kerala | A30010 |
| 95 | Ar. Nitisha Agrawal | Madhya Pradesh | A30011 |
| 96 | Ar. Sai Sandhiya C | Tamil Nadu | A30012 |
| 97 | Ar. Christina Yesudhas | Tamil Nadu | A30013 |
| 98 | Ar. Hiba C V | Kerala | A30014 |
| 99 | Ar. Kailash Kumaran B H | Tamil Nadu | A30015 |
| 100 | Ar. E V S Kiran Kumar Donthu | Andhra Pradesh | A30016 |
| 101 | Ar. Tanya | Karnataka | A30017 |
| 102 | Ar. Anand Krishna | Kerala | A30018 |
| 103 | Ar. Sumana Basack | Jharkhand | A30019 |
| 104 | Ar. Sreyash Dasgupta | West Bengal | A30020 |
| 105 | Ar. Aman Jain | Madhya Pradesh | A30021 |
| 106 | Ar. Sayoojya Subran | Kerala | A30022 |
| 107 | Ar. V Ashwin | Telangana | A30023 |
| 108 | Ar. Enugula Vinay Kumar Raju | Andhra Pradesh | A30024 |
| 109 | Ar. Abishek Raj V | Tamil Nadu | A30025 |
| 110 | Ar. Jumana Pervin | Kerala | A30026 |
| 111 | Ar. Lakshya Kushwah | Madhya Pradesh | A30027 |
| 112 | Ar. Shubham Choudhary | Rajasthan | A30028 |
| 113 | Ar. Varada Unni | Kerala | A30029 |
| 114 | Ar. Anahita Joshi | Madhya Pradesh | A30030 |
| 115 | Ar. Molshree Purohit | Rajasthan | A30031 |
| 116 | Ar. Amitha Pradeep | Kerala | A30032 |
| 117 | Ar. Sarrah Sethjiwala | Madhya Pradesh | A30033 |
| 118 | Ar. Kishore Kumar Palla | Andhra Pradesh | A30034 |
| 119 | Ar. Sanjiv G | Madhya Pradesh | A30035 |
| 120 | Ar. Naveen K Wadhwani | Madhya Pradesh | A30036 |
| 121 | Ar. Samad Ahmed Husain | Madhya Pradesh | A30037 |
| 122 | Ar. Ananth S Ambattu | Kerala | A30038 |
| 123 | Ar. Sheetal Sachin Patil | Maharashtra | A30039 |
| 124 | Ar. Jothi Mani P | Tamil Nadu | A30040 |
| 125 | Ar. Aman Arora | Madhya Pradesh | A30041 |
| 126 | Ar. Ankit Ahir | Madhya Pradesh | A30042 |
| 127 | Ar. Shalini S Kumar | Kerala | A30043 |
| 128 | Ar. Anooja S | Kerala | A30044 |
| 129 | Ar. Vaishnavya K T | Kerala | A30045 |
| 130 | Ar. Vishnu Nambiar C M | Kerala | A30046 |
| 131 | Ar. Anjali P | Kerala | A30047 |
| 132 | Ar. Tom Jose | Kerala | A30048 |

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| 133 | Ar. Shwetang Rameshchandra Monani | Gujarat | A30049 |
| 134 | Ar. Mudhasani Sudeepya Reddy | Andhra Pradesh | A30050 |
| 135 | Ar. Tanvi Jain | Rajasthan | A30051 |
| 136 | Ar. B Surekha | Andhra Pradesh | A30052 |
| 137 | Ar. Abir Chopra | Delhi | A30053 |
| 138 | Ar. Yatin Khosla | Delhi | A30054 |
| 139 | Ar. Naveen Gupta | Madhya Pradesh | A30055 |
| 140 | Ar. Sheetal Shukla | Gujarat | A30056 |
| 141 | Ar. Namit | Punjab | A30057 |
| 142 | Ar. Anagha Vaidya | Madhya Pradesh | A30058 |
| 143 | Ar. Ishanya Singh Muktawat | Rajasthan | A30059 |
| 144 | Ar. Venkatesh K | Tamil Nadu | A30060 |
| 145 | Ar. Subash C | Tamil Nadu | A30061 |
| 146 | Ar. Ronald Frank | Kerala | A30062 |
| 147 | Ar. Hemavathy T | Tamil Nadu | A30063 |
| 148 | Ar. Sreelakshmy Sajeev | Kerala | A30064 |
| 149 | Ar. Twinkle Saju | Kerala | A30065 |
| 150 | Ar. Annet Sangeeth C | Kerala | A30066 |
| 151 | Ar. Aiswarya T Rajan | Kerala | A30067 |
| 152 | Ar. Thomas Mathew | Kerala | A30068 |
| 153 | Ar. Ashin M G | Kerala | A30069 |
| 154 | Ar. Sulabh Jain | Maharashtra | A30070 |
| 155 | Ar. Khushmeet Rajotya | Rajasthan | A30071 |
| 156 | Ar. Tejal Dilip Gandhi | Rajasthan | A30072 |
| 157 | Ar. Tarun Chandra Prakash Mamta Sankhla | Rajasthan | A30073 |
| 158 | Ar. Deepika R | Tamil Nadu | A30074 |
| 159 | Ar. Shubham Nema | Madhya Pradesh | A30075 |
| 160 | Ar. Vagmeeta Davesh Thakur | Maharashtra | A30076 |
| 161 | Ar. Bela Agrawal | Madhya Pradesh | A30077 |
| 162 | Ar. Aastha Prasad | Bihar | A30078 |
| 164 | Ar. Madhur Gupta | Uttar Pradesh | A30079 |
| 164 | Ar. Kunjan Mahendra Garg | Kerala | A30080 |
| 165 | Ar. Sudarshan A T | Kerala | A30081 |
| 166 | Ar. Mridula Agrawal | Madhya Pradesh | A30082 |
| 167 | Ar. Dharmanshu Chouhan | Rajasthan | A30083 |
| 168 | Ar. Awani Gupta | Madhya Pradesh | A30084 |
| 169 | Ar. Akanksha Patel | Madhya Pradesh | A30085 |
| 170 | Ar. Parag Jain | Rajasthan | A30086 |
| 171 | Ar. Christy Paul | Kerala | A30087 |
| 172 | Ar. Aaron Oommen Alex | Kerala | A30088 |
| 173 | Ar. Parth Singh | Madhya Pradesh | A30089 |
| 174 | Ar. Himanshu Dudwadkar | Madhya Pradesh | A30090 |
| 175 | Ar. Purva Namdeo | Madhya Pradesh | A30091 |
| 176 | Ar. Ajit Sharma | Madhya Pradesh | A30092 |
| 177 | Ar. Simran | Haryana | A30093 |
| 178 | Ar. Ajay Dwivedi | Madhya Pradesh | A30094 |
| 179 | Ar. Anna Joy | Kerala | A30095 |
| 180 | Ar. Shradha Gupta | Madhya Pradesh | A30096 |
| 181 | Ar. Vikram Kumar Jyoti | Madhya Pradesh | A30097 |
| 182 | Ar. Mihika Khare | Madhya Pradesh | A30098 |

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| 183 | Ar. Venkatesh Chandragiri | Andhra Pradesh | A30099 |
| 184 | Ar. Somya Agarwal | Rajasthan | A30100 |
| 185 | Ar. Esther Clifford | Tamil Nadu | A30101 |
| 186 | Ar. Rama Pandey | Madhya Pradesh | A30102 |
| 187 | Ar. Nithin Raj | Kerala | A30103 |
| 188 | Ar. Godwin Loney Alfred | Kerala | A30104 |
| 189 | Ar. Sanket Nitin Jadhav | Maharashtra | A30105 |
| 190 | Ms. Kusum Lata | Delhi | A30106 |
| 191 | Ar. Prakash Gupta | Madhya Pradesh | A30107 |
| 192 | Ar. Aastha Rathi | Rajasthan | A30108 |
| 193 | Ar. Chandni Sewani | Madhya Pradesh | A30109 |
| 194 | Ar. Ravi Panse | Madhya Pradesh | A30110 |
| 195 | Ar. Vaishnavi Soni | Madhya Pradesh | A30111 |
| 196 | Ar. Merin Jacob | Kerala | A30112 |
| 197 | Ar. Sheon Sajji John | Madhya Pradesh | A30113 |
| 198 | Ar. Akash Saxena | Madhya Pradesh | A30114 |
| 199 | Ar. Joseph Cyriac Joe Mattam | Kerala | A30115 |
| 200 | Ar. Alphy Maria Cherian | Kerala | A30116 |
| 201 | Ar. Aradhya Singh | Chhattisgarh | A30117 |
| 202 | Ar. Nandagopal B | Kerala | A30118 |
| 203 | Ar. Shrilakshmi K | Kerala | A30119 |
| 204 | Ar. Rayan Fayaz Sofi | Jammu And Kashmir | A30120 |
| 205 | Ar. Sumiran Takhtani | Madhya Pradesh | A30121 |
| 206 | Ar. Vishakaha Verma | Madhya Pradesh | A30122 |
| 207 | Ar. Greshma Trissa Abraham | Kerala | A30123 |
| 208 | Ar. Raj Kumar | Madhya Pradesh | A30124 |
| 209 | Ar. Udit Goyal | Madhya Pradesh | A30125 |
| 210 | Ar. Kiran Varde | Rajasthan | A30126 |
| 211 | Ar. Anshita Shukla | Madhya Pradesh | A30127 |
| 212 | Ar. Riya Mittal | Rajasthan | A30128 |
| 213 | Ar. Anu Alex | Jharkhand | A30129 |
| 214 | Ar. Mahima Bodana | Madhya Pradesh | A30130 |
| 215 | Ar. Shefali Soni | Madhya Pradesh | A30131 |
| 216 | Ar. Anshul Sagoriya | Madhya Pradesh | A30132 |
| 217 | Ar. Shivam Soni | Madhya Pradesh | A30133 |
| 218 | Ar. Trapti Rathore | Madhya Pradesh | A30134 |
| 219 | Ar. Nadrana K | Kerala | A30135 |
| 220 | Ar. Surajit Sengupta | West Bengal | A30136 |
| 221 | Ar. Kasturi Kundu | West Bengal | A30137 |
| 222 | Ar. Elwin Martin | Kerala | A30138 |
| 223 | Ar. Sanchi Goel | Punjab | A30139 |
| 224 | Ar. Naman Nema | Madhya Pradesh | A30140 |
| 225 | Ar. Afridi Mushtaq | Jammu And Kashmir | A30141 |
| 226 | Ar. Irfan Ahmad Ganai | Jammu And Kashmir | A30142 |
| 227 | Ar. Suhail Shamim | Jammu And Kashmir | A30143 |
| 228 | Ar. Shivam Singhal | Uttar Pradesh | A30144 |
| 229 | Ar. Eklavya | Uttar Pradesh | A30145 |
| 230 | Ar. Bivek Pal | Uttar Pradesh | A30146 |
| 231 | Ar. Manish Kantibhai Jarsania | Gujarat | A30147 |
| 232 | Ar. Krutika Mujumdar | Madhya Pradesh | A30148 |

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| 233 | Ar. Sheena Gupta | Uttar Pradesh | A30149 |
| 234 | Ar. Prerika Garg | Uttar Pradesh | A30150 |
| 235 | Ar. Arpit Saxena | Madhya Pradesh | A30151 |
| 236 | Ar. Ishan Kumar Garg | Uttar Pradesh | A30152 |
| 237 | Ar. Pushkal Varshney | Uttar Pradesh | A30153 |
| 238 | Ar. Abhishek Jain | Uttar Pradesh | A30154 |
| 239 | Ar. Divyansh Jain | Uttar Pradesh | A30155 |
| 240 | Ar. Arjun Agarwal | Uttar Pradesh | A30156 |
| 241 | Ar.Maryam Adil Gurcoo | Jammu And Kashmir | A30157 |
| 242 | Ar. Jaideep Sarkar | West Bengal | A30158 |
| 243 | Ar. Apoorv Agrawal | Uttar Pradesh | A30159 |
| 244 | Ar. Aditya Ajitkumar Ghate | Maharashtra | A30160 |
| 245 | Ar. Bhalchandra Sadashiv Sherekar | Maharashtra | A30161 |

# NEWSLETTER APRIL

## IIA TAMIL NADU CHAPTER

***Inauguration of the IIA Students Centre***

After the recently concluded Young Architects Festival (YAF) 2025 hosted by IIA Tamil Nadu Chapter at Mamallapuram, the importance of IIA has been felt by several academic institutions. As s a result, MEASI Academy of Architecture, with a student capacity around 750, came forward to start its Students Centre. Thanks to the efforts of Ar. Ranee Vedamuthu, Jt. Hon Secretary, IIA and the dedicated staff of the Academy who are also active members of IIA Tamil Nadu Chapter. The inauguration was held on 19 April in the premises of the MEASI Academy of Architecture, Chennai. Ar. Vilas Vasant Avachat, President, IIA, was the Chief Guest of the event and the Chairperson of IIA Tamil Nadu Chapter Ar. P. Chandranesan, Chairperson, was the Guest of Honour. Ar. C.J. Kosalraman, Vice Chairperson of IIA Chennai Centre and Ar. G.M. Muzakkir Bijli, Hon. Treasurer of IIA Chennai Centre organised the event effectively. The following staff of the Academy were felicitated at the ceremony: Prof. Mohamed Khalid M.R., Principal; Prof. Dr. Monsingh David Devadas, Dean; Prof. Dr. Navara A., HOD, B.Arch.; Dr. Priya Sasidharan, HOD, M.Arch. and Prof. S. Kesavalu, HOD, Admin.

***Ar. K. Rajagopalan Memorial Lecture***

Thanks to the initiative of IIA Council, the lecture was held to celebrate architectural wisdom, cultural roots and the rich legacy of a visionary, Ar. K. Rajagopalan, who served as the President of IIA from 1998 to 2000. Ar. Swapnil Bhole and Ar. Neha Raje (Bhole & Associates and Sarahan, Mumbai) presented the lecture *Conserving Traditional Knowledge Systems: A Case of South Eastern Himachal Pradesh*. Prof. Madhav Deobhakta, architect and educationist and a good friend of Ar. K. Rajagopalan gave a moving speech to the gathering about his association with him. Ar. Vilas Vasant Avachat, President, IIA, gave a brief speech on the intent of the Memorial Lecture and also gave away the Ar. K. Rajagopalan Memorial Award to an outgoing graduate with the best Thesis in B.Arch.

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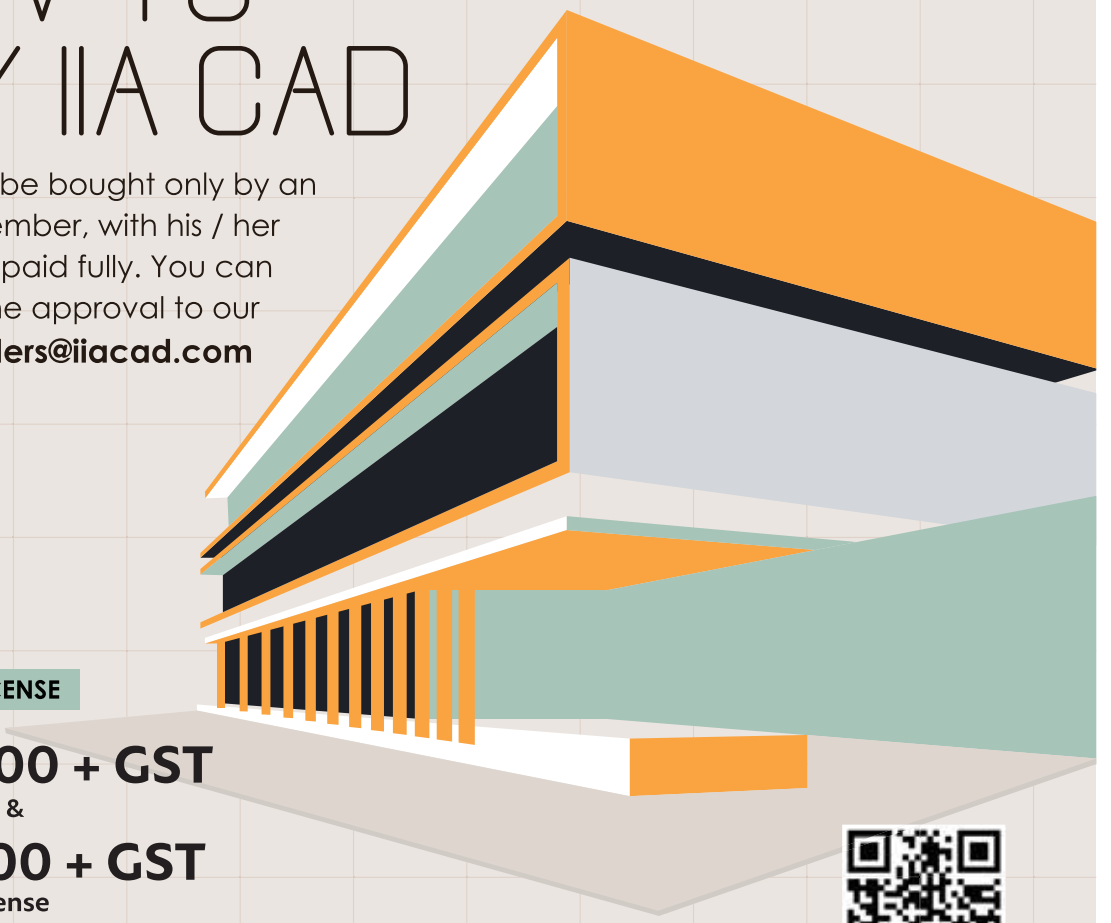

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