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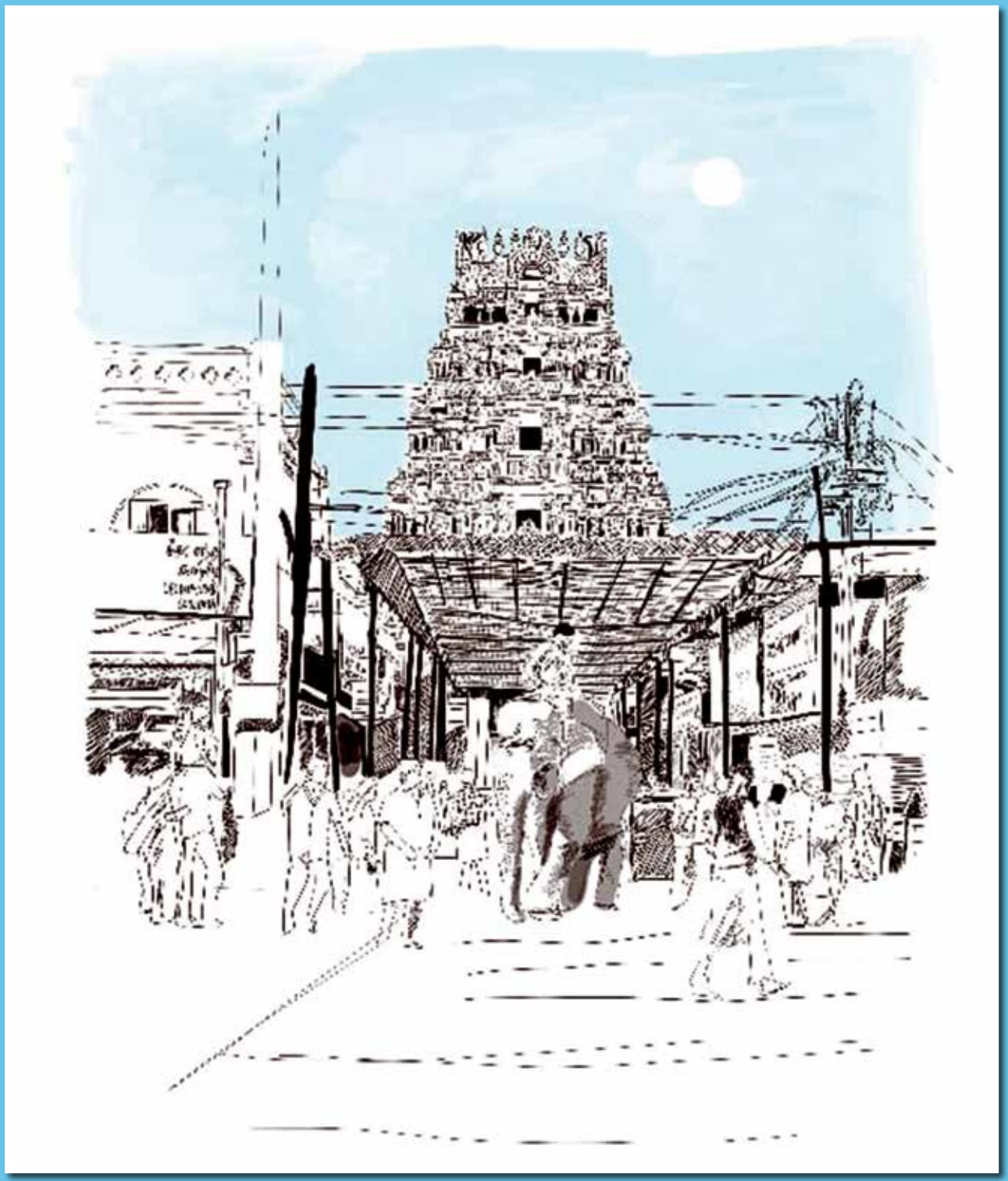

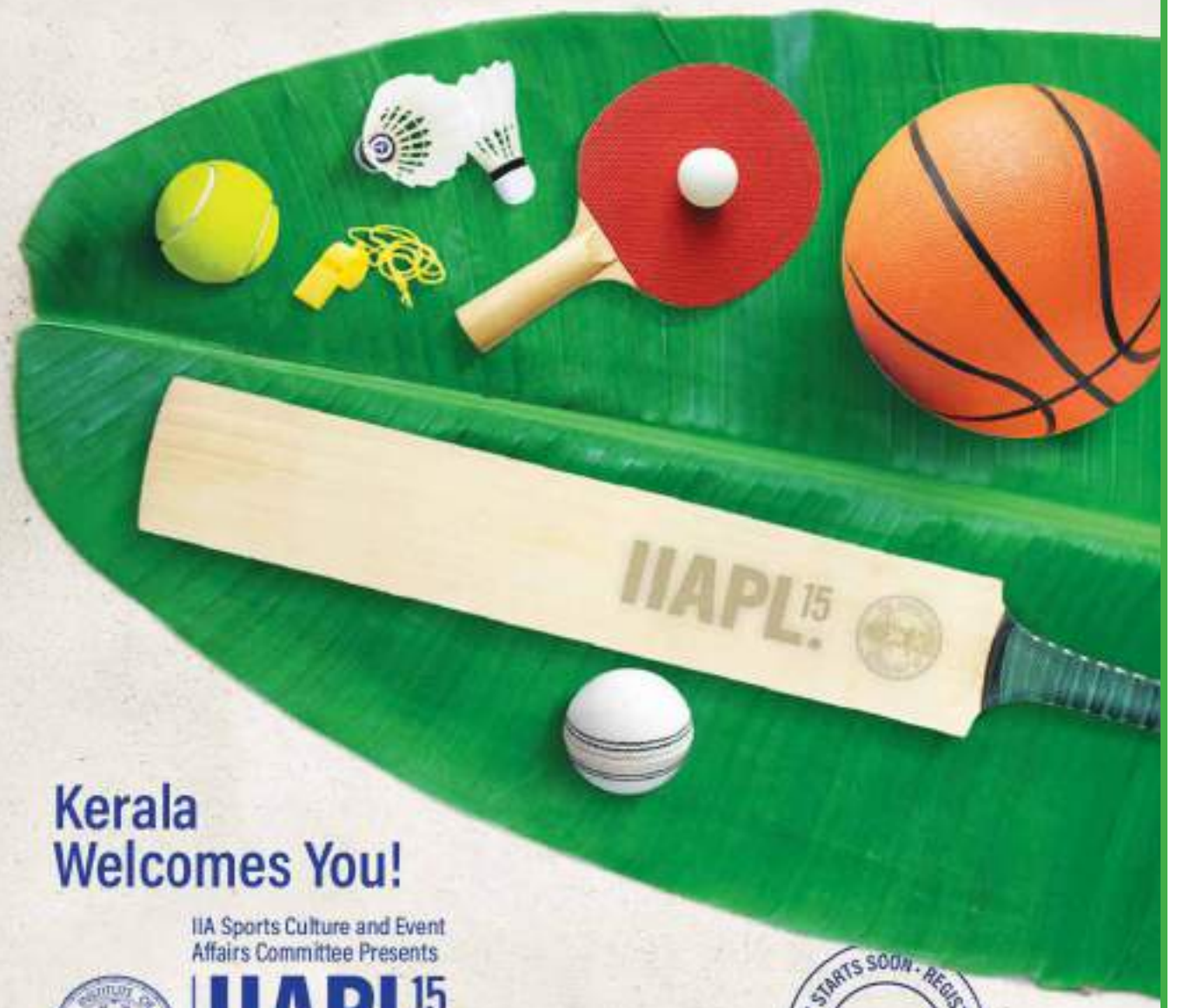

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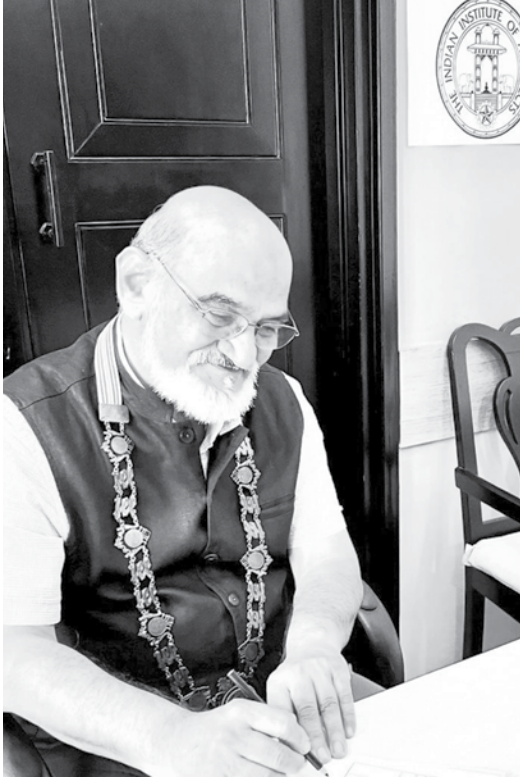
PRESIDENT'S MESSAGE



Dear Members,

Greetings!

In the vibrant month of November, I am pleased to share the exciting activities that lie ahead for our Institute in the coming months.

One of the highlights of the season will be our *IIAPL Golf Tournament*, scheduled to take place at Ghaziabad in **Uttar Pradesh on 13–14 December, 2025, hosted by IIA Uttar Pradesh Chapter**. This prestigious event is a wonderful occasion for players, and members to gather, compete, and celebrate the sport we all cherish.

Looking ahead, we are also preparing for the much-anticipated *Indian Institute of Architects Premier League* (IIAPL), set to be held from 27 to 30 January 2026**, at Kochi will be hosted by IIA Kerala Chapter**. This League has always been a platform for showcasing exceptional talent, fostering team spirit, and strengthening the unity amongst all Chapters of IIA. I am confident this edition will be better than ever.

I extend my heartfelt thanks to all committee members, and participants for their continued dedication and enthusiasm. Together, we will make these upcoming events truly remarkable.

I am also pleased to announce that The Indian Institute of Architects will be collaborating with *Municipalika 2026*, a landmark integrated forum on urban development, architecture, sustainable building materials, innovative construction technologies, public works, and infrastructure. This significant event is scheduled to be held in New Delhi from 25–27 February 2026.

Let us move forward together with enthusiasm and unity as we continue to elevate the spirit and legacy of our Institute.

Wishing you all a wonderful and an exciting season ahead!

Warm regards,

Ar. Vilas Avachat
President
The Indian Institute of Architects

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EDITOR'S NOTE

Greetings to all IIA members.

As we approach the close of the year, the November issue of *The Journal of the Indian Institute of Architects* brings together a rich collection of ideas, reflections, and research that highlight the diversity and depth of contemporary architectural thought in India. This month's contributions remind us that architecture is not only a technical pursuit but a cultural, experiential and ethical one.

The issue opens with an insightful study on the Ranakpur Temples, offering a nuanced perspective into their spatial and symbolic complexity. Such learning reinforces the importance of revisiting our architectural heritage with renewed academic rigor and sensitivity. Complementing this is a phenomenological reflection on gardens, tracing how landscape and memory shape human experience, an especially relevant discourse at a time when cities across the world seek restorative, nature-led design solutions.

Equally compelling are articles addressing the intensifying concern of urban heat islands, underscoring the urgency with which Indian cities must engage with climate-responsive planning. Alongside these studies, the inclusion of sketches illustrating the religious significance embedded in our built traditions, as well as poems capturing emotional and spatial sensibilities, adds a creative and reflective dimension to this edition. Research on contextual sensitivity and traditional wisdom further strengthens the call to integrate local knowledge systems into contemporary practice.

We also take this opportunity to update our members on major upcoming engagements. Preparations for the UIA and ARCASIA Forum continue with active participation from the IIA fraternity, strengthening India's engagement on the global architectural stage. The IIAPL Golf Tournament is scheduled to be held on 13th and 14th December 2025 in Ghaziabad, Uttar Pradesh, offering members a space for professional bonding and fellowship. Looking ahead, the IIAPL Convention will take place from 27th to 30th January 2026 in Kochi, Kerala, and we encourage members across the country to participate wholeheartedly.

We encourage all members to participate actively in these endeavours, strengthening collective dialogue and reinforcing India's presence on both national and international platforms.

Let us continue to build with clarity, collaborate with intent, and uphold the values that have long shaped our architectural practice.

Ar. Vinit Mirkar
Editor
Journal of the Indian Institute of Architects

Srirangam A Living Cultural Heritage

By Ar. M. Prithiviraj

The illustration is a Gopuram, with the image referenced from the Sri Ranganathaswamy Temple, located in Srirangam, Tiruchirappalli, Tamil Nadu, which is the first among the Vaishnavite temples dedicated to Lord Ranganatha. This historic precinct spans over a thousand years, with contributions from various kings, including the Cholas, Pandyas, Hoysalas, Nayaks, and Vijayanagara rulers.

The geographical context of the temple is an island between the two rivers, the Kaveri and the Kollidam. The town itself was built around the shrine. It is a splendid example of Dravidian architecture, containing 21 Gopurams (tower gateways), including the main Rajagopuram, which is the tallest Gopuram in Asia. It comprises seven concentric enclosures.

The temple is nominated for UNESCO World Heritage Status due to its architectural significance and its role as a living heritage site. The streets around the temple act as a traditional residential area and cultural market. It is arranged as an ordered concentric rectangle, where each street serves a specific purpose and reflects community hierarchy: The outer streets display the character of busy trade and daily life, while the inner streets retain the serene houses of vernacular Agraharam style, with socializing spaces like outdoor raised platforms (Thinnai) acting as seating areas where common people take rest. Chithirai streets and bazaars are lined with flower shops, traditional jewellery, brass articles, and handicrafts.

The city becomes vibrant during festivals such as Vaikunta Ekadasi, the Chithirai Festival, and the Car Festival. At all times, the gopurams with their beautiful sculptures and colours dominate the skyline. The street scape during festivals is a visual treat for the people and represents an invaluable aspect of the cultural identity of the country.

Ar. M. Prithiviraj (A-29742) is currently working as an Assistant Professor of Architecture at Sri Manakula Vinayagar Engineering College, Puducherry. Completed UG at Crescent School of Architecture, Chennai, and PG in Urban Design at SPA Vijayawada. He is passionate about observing urban streetscapes, especially in cultural heritage, compact cities and urban identity, etc.
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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

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

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

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

Category 4 : Research Papers

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

Category 5 : 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

This research paper was presented at the IIA ANVESHAN Research Conference held at MCAP, Thiruvananthapuram, Kerala during 29-31 August 2024, under Stream 1: Celebrated Past

Nationalism and Architecture in Postcolonial Bangladesh, 1947-1971

Dr. Mohona Reza

ABSTRACT:
Buildings constructed between 1947 and 1971 played an important role in seeking a national identity during the postcolonial period of Bangladesh, when the country was known as East Pakistan and was unified with West Pakistan. In a decolonised context of rebuilding one nation with two halves of Pakistan, this paper unravels the connections between geopolitical tensions, socio-economic concerns and cultural and religious complexities by investigating three public buildings – the Fine Arts Institute of Dhaka University (1952–53) designed by Muzharul Islam, the Kamalapur Railway Station (1960–63) designed by Daniel C. Dunham and the National Assembly Building (1965–84) designed by Louis I. Kahn. These buildings have been specifically selected to examine the relationship between nationalism and architecture through a study of power and design in the postcolonial context of East Pakistan.

Keywords: Postcolonial network, East Pakistan, Independence, Postcolonial architecture, Nation-building, Geopolitics

1. INTRODUCTION

Architecture of East Pakistan not only depicts spatial transformation but also represents a narrative of awakening from supremacy. In an attempt to gain control in the eastern part, the ruling government of Pakistan sought to appease the subaltern populace by developing the province. Although these buildings introduced an architectural shift in the region, the transitions from colonial to postcolonial architecture were nevertheless overshadowed by the neo-colonial subjugation of Pakistani authority. In the context of political tensions between East and West Pakistan, which ultimately led to a civil war creating two sovereign countries – Bangladesh and Pakistan in 1971 – did architecture play any significant role at all?

In order to answer this question, an evaluation of the historical background is necessary. Despite the continuing political agitation and economic discrepancies, East Pakistan experienced rapid development in both governmental and institutional sectors. These colossal projects were led by the government of Pakistan as part of several nation-building schemes – the First Five-Year Plan, the Second Five-Year Plan and the Basic Democracies programme, which was implemented between 1955 and 1969. Amongst those developments, this paper discusses public structures, arguing that architecture played an ideological and nationalist role that neutralised the dominant administrative and legislative mechanisms of the Pakistani government. Key actors in the analysis are the local and expatriate architects who were commissioned to design and construct the public buildings. The study of the architectural works is examined through the philosophies and design techniques of individual architects and how they perceived their client – the government of Pakistan (mainly Ayub Khan) – during the political turbulence.

The analysis of the buildings includes distinct and at times contradictory interpretations. The two key concepts – nationalism and architecture – serve both as a critical lens for historiography as well as a framework for detailed analysis of the case studies in order to comprehend a deeper meaning related to culture, tradition, ethnicity, religion and politics. The research method is informed by existing literature,

archival materials, oral histories, photographs and architectural drawings in which these buildings have been identified typically as regional architecture. This research challenges traditional ideas that argue for a rational and contextual architecture by connecting a critical understanding of the multi-layered and changing interpretations of nationalism. This occurs through a historiographic analysis of the case studies combined with an intricate architectural reading of the building designs from three perspectives: how they relate to multi-layered nationalism and religious dogmatism; to what extent cultural incorporation was applied in the design and construction techniques; and the relationship between the client and the architect(s) for the individual projects.

By analysing the public and governmental buildings of East Pakistan within a broader historical and global context, this paper explores how nationalism altered meaning to seek ethnic and religious identity and how political events, global funding and design implications interpreted these spaces. This paper attempts to unravel a wider possibility for new research in the history of Bangladeshi architecture as well as to highlight the formation of twentieth-century postcolonial countries and the emergence of nation-states through architecture.

2. Understanding Nationalism and Architecture

The political critique for the historiography of Bangladesh merges with multi-layered nationalism which was realised over different periods of time. Although this paper addresses the events between 1947 and 1971 in order to analyse the ambiguities of nationalism, it is nevertheless important to explore Bengal's continuing struggle in the search for identity before the partition of India and Pakistan. The evolution of nationalism represents a yearning deeply connected to the cultural and religious consciousness of the people of Bengal, propelling their pursuit of dignity and freedom. Scholars of South Asia, especially Bangladeshi academics, have studied the nationalism of Bangladesh, alluding to previous analyses on nationalism and seeking a connection between social and political paradoxical concerns. However, few scholars attempt to connect the first and last stages, focusing rather on the period of decline and loss. Kabir argues that in the case of Bangladesh, nationalism is subject to vicissitude as it demonstrates different grounds of identity changes (Kabir, 2000, p. 9). The history of Bangladeshi nationalism is intertwined with the changing authority of different rulers and their cultural influences over the years. Osmany states, 'Bangladeshi nationalism, like all nationalism, is a product of the history of the people, their physical and cultural environment and above all of their hopes and aspirations (Osmany, 1992, p. 1).' Historical evidence highlights three pivotal phases of nationalism influencing the identity of Bengali Muslims: the partition of Bengal in 1905 and the unification of Bengal in 1912 generated "Bengali Nationalism", the formation of Pakistan in 1947 with two wings introduced "Islamic Nationalism", and the emergence of Bangladesh in 1971 gave rise to "Bangladeshi Nationalism" (Reza, 2023, pp. 32–40).

These layers of nationalism are intertwined with the concepts of the nation-state, national identity and nation building and have been explored through the lens of multidisciplinary subjects. However, it was not until the present century that academic attention became apparent in the study of the links between postcolonial architecture and nationalism. This is not only the case for Bangladesh but also for many postcolonial countries that were 'refracted through the prism of British imperialism (Crinson, 2003).' For example, Stanek investigates how the socialist development scheme adapted to the tropical climate and initiated a contextual architectural solution in Accra, Lagos, Baghdad, Abu Dhabi and Kuwait City (Stanek, 2020). These studies provide an opportunity to inquire how architecture can be a notion of nationalism that reshapes thought and emotion. Pieris explores twentieth-century Sri Lankan domestic spaces and material culture during decolonisation, which witnessed significant political changes leaving 'an indelible cultural imprint and bitter residue (Pieris, 2013).' Judin investigates cultural nationalism conflicted with apartheid ideology through the buildings in Pretoria during the 1960s (Judin, 2021). These research studies reveal some parallels with this paper; however, they do not provide a similar context or the political shifts that led to several nationalist movements in Bangladesh across different time spans. Neither have the buildings selected as case studies been examined in the light of political history dealing with the constant paradoxical concepts of nationalism and the search for identity.

Bangladeshi scholars and architects became aware of archiving their heritage and cultural buildings in literature during the 1980s. In the early stages, the critical lenses of research were limited to descriptive case studies which were perceived in various ways by different authors, such as focusing on chronological timelines or drawing inspiration from ancient structures for design development (Haque et al., 1997; Hussain, 1987; Zahiruddin et al., 1990). However, one argument remains consistent: the architecture sector faced a national crisis beginning

in 1947, further exacerbated by cultural discontinuity and political unrest. As a result, the buildings designed by Muzharul Islam during that period became crucial for scholars studying architectural transition (Ali & Mallick, 2011; Ashraf, 2014; Banerji, 1988; Khan, 2010). The Fine Arts Institute, as the first building designed by Islam, has not only been celebrated as a marker of colonial decline but his design techniques have also been explored with rationale and scrutinised through the wider lens of Bengal's search for identity (Foyez Ullah, 1997; Morshed, 2017).

Decades after Islam started his practice, expatriate architects were commissioned to work in Pakistan. As a result, apart from the Capitol Complex of Bangladesh, other important structures designed by foreign architects remain unexplored. Daniel C. Dunham spent seven years in Dhaka with his family. He came to East Pakistan as the chief architect of Berger Associates and later taught in the first architecture faculty of the region, namely EPUET (East Pakistan University of Engineering and Technology). A chronological account of Dunham's architectural journey in East Pakistan is documented in a five-volume book, which also provides instances of the difficult situations the Dunham family had to face during the political turbulence and how they were transported to India during the civil war (Dunham & Dunham, 2018). The book offers valuable contextual information and photographs; however, the architectural analysis is inadequate. Another research study on Dunham's work in Dhaka is found in Rafique Islam's unpublished writings, in which the analysis is developed by exploring the Kamalapur Station through Western and regional design and construction approaches (Islam, 2015).

Research on Kahn and his architecture has been dominated by American scholars since the 1960s. Bangladeshi scholars meanwhile involved themselves in research after Kahn was particularly engaged in the Dhaka commission. Focusing only on the Capitol Complex, both American and Bangladeshi scholars have nevertheless contributed to the study of Kahn's architectural masterpiece, providing an opportunity to explore the structure from various perspectives. Scholars have researched from two major viewpoints. Firstly, the common theme has been evaluating Kahn's understanding of architecture and how he implemented the ideologies and influences developed throughout his career, concentrating on the Capitol Complex despite the vulnerable context of Pakistan. Despite the critical context, the studies have always focused on Kahn's architectural journey (Banerji, 1980; Curtis, 1983; Langford, 1982; Pamir, 1984; Taylor, 1982). This theme is explored by the majority of Western scholars, in contrast to the second theme initiated by Bangladeshi scholars, who attempted to study the complex within a more vernacular and political environment to define the National Assembly Building as a trajectory for a developing country (Ashraf, 2007; Choudhury, 2015; Choudhury & Bell, April 2011). Although there are exceptions, not all Western scholars explored the building solely from the perspective of Kahn's design ideograms; rather, some scholars examined the edifice from different angles, combining perceptions to demonstrate the Capitol Complex as a functional architectural entity that may—or may not—only be a remarkable structure but also one profoundly intertwined with the modern architectural and political history of Bangladesh (Goldhagen, 2001; Gusheh, 2013; Vale, 1992). The architectural readings of the case studies are informed by either 'marginal' or 'other' types of Modernism within a background study of the theoretical analysis of building styles (Gusheh, 2013, p. 8). The architecture of South Asia during the 1950s and 1960s has been grouped as a product of Regionalism or as buildings of a tropical approach, similar to the recognition of African developments of the same era. Nevertheless, the case for Regionalism loses its meaning when a building is studied through a critical analysis of its surrounding context and the psyche of the people for whom it is built. This paper challenges the commonly perceived notion of pre-independent Bangladeshi architecture as 'Regional' or 'Tropical', which was prevalent during the 1980s and remains largely acceptable today. Rather than agreeing with this perspective, I argue that these buildings were conceived as rational and contextual architecture, ultimately serving as nationalist symbols for the country and reflecting its independence.

3. The Islamic Nation: Development or Conflict?

The buildings reflected the British colonial architectural style, largely overseen by draftsmen trained at the J. J. School of Art in Mumbai and other institutions in Kolkata. Although West Pakistan had some architectural training institutions, East Pakistan had none. This absence of local architects created an 'intellectual blind spot' (Karim, 2020).

The Public Works Department (PWD) and the Communications and Buildings (C&B) Department were the primary agencies involved in construction. In 1948, C&B appointed a British architect, Edward Coleman Hicks, as chief architect, focusing on urban planning and significant projects such as Hotel Shahbag and the New Market. Ronald McConnel,

already working as an assistant architect, eventually took over as chief architect after Hicks left in 1959, and his tenure saw the design of notable buildings such as the Holy Family Hospital and Viqarunnesa Girls' School.

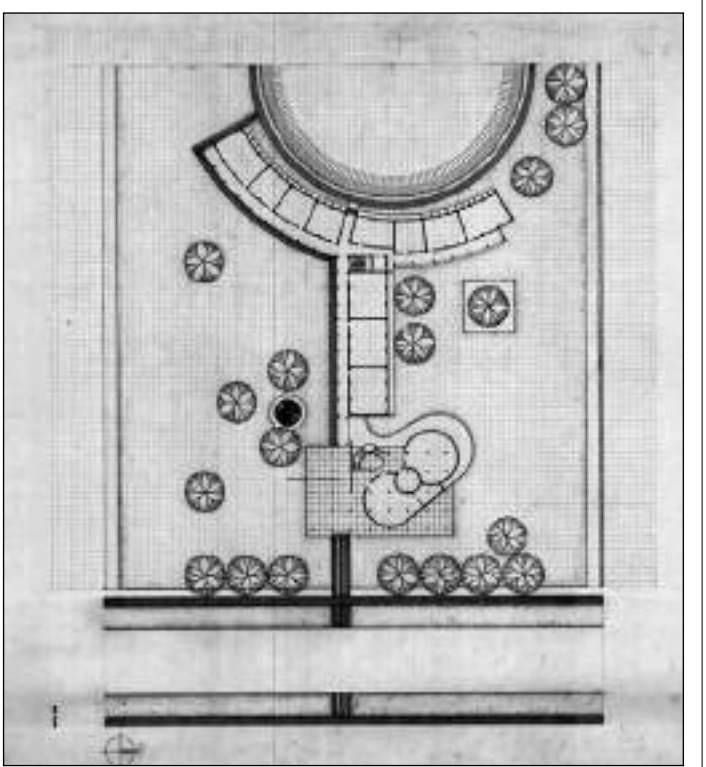
Hicks and McConnel faced multiple challenges during their projects, including financial discrepancies and limitations in materials and labour skills. Due to various constraints, these designs resulted in a 'monotonous array of rooms along corridors with no reflection of modern architecture of the West' (Nilufar, 2007, p. 69). Nilufar criticises the works accomplished by C&B as a 'spate of Islamic Revival' buildings which had neither spatial harmony nor innovation. Such criticism highlights the severe mismanagement within government offices during East Pakistan's early construction history. These challenges also opened avenues for experimenting with new design styles and methods. These opportunities were explored by Muzharul Islam, who began his early architectural career under McConnel at C&B.

4. The Beginning of Resistance

The postcolonial period in East Pakistan marked a significant shift toward creativity through the architectural endeavours of Muzharul Islam, whom many scholars regard as the 'father of Modern Architecture in the Indian subcontinent' (Misra et al., 2018; Rumy & Saadullah, September 2007). His works integrated climatic considerations with an innovative approach to local construction methods. Yet, the question remains whether his buildings embodied the spirit of nation-building amid political instability and the rise of Bangladeshi nationalism. To explore this, we examine Islam's first major work, the Fine Arts Institute (1952–53), which melded Modernism with Bengali characteristics.

After becoming a civil engineer, Islam earned a Bachelor of Architecture from Oregon University, supported by a post-war development scholarship. He joined as an architect in the C&B and produced his early works, the Fine Arts Institute and the Public Library at Dhaka University (1952–53). Although influenced by the International Style, Islam's designs displayed climate-responsive features that marked a transformation in East Pakistan's architectural landscape.

The Fine Arts Institute was developed on a small plot of land in Shahbagh, with its design involving collaboration with noted Bengali artists Zainul Abidin and Quamrul Hassan. Islam aimed to create an ecologically sensitive design that harmonised the building with the existing trees and vegetation, promoting connectivity with the landscape. The building featured a curvilinear gallery and a free-standing staircase, establishing a fluid relationship between indoor and outdoor spaces (fig. 1). The round columns that elevated the upper balcony are reminiscent of Corbusian pilotis. A unique contrast between the free plan of the front block and the semi-circular plan of the rear represented a significant evolution in the region's architectural vocabulary (fig. 2). Islam considered traditional values while adopting a modern expression, seemingly achieving a balance between contemporary architectural norms and the rich cultural heritage of Bengal (Foyez Ullah, 1997, p. 23).



Ground Floor Plan, Fine Arts Institute (1952-1953), Muzharul Islam.
Source: Muzharul Islam Archive

Wooden Louvre of the First Floor, Fine Arts Institute (1952-1953), Muzharul Islam
Source: Muzharul Islam Archive

Islam positioned his edifice to be surrounded by local landscape elements reminiscent of Corbusier's concept of 'building in the park' (Morshed, 2017, p. 539). Additionally, the combination of a rectangular plinth and curvilinear mass provides 'a fluid gateway to an oasis-like urban complex' a rare scenario in the populous city of Dhaka (Morshed, 2017, p. 536). According to Ashraf, Islam's designs evoke an inherent 'Bengaliness', representing a deeply rooted connection to the culture while strategically navigating modern architectural practices (Ashraf, 2011, p. 13).

Islam's architecture exemplifies a nexus of traditional values and modern methodology. Bengali Modernism was likely not a result of deliberate architectural strategy but rather the subconscious integration of his Bengali identity into his work. His innovations not only addressed contemporary needs but also laid the groundwork for future generations of architects in Bangladesh, establishing a legacy that resonates beyond mere building design into the ethos of nationhood.

5. Synergy of Religion and Climate

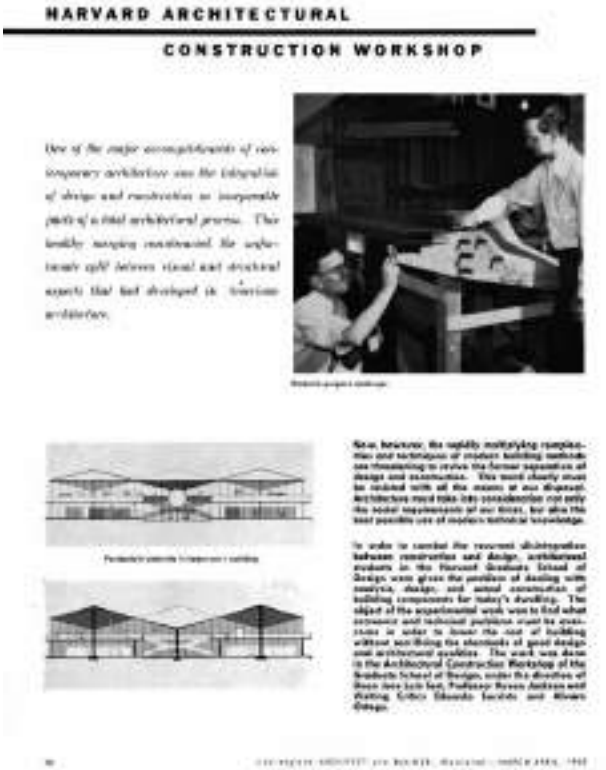
Ayub Khan's economic alliance with the USA in the 1960s established Pakistan as a developing country benefiting from international foreign aid and strategic policies. A significant initiative during this time was Khan's Basic Democracies and the Second Five-Year Plan, which called for substantial institutional efforts to educate and train the workforce in various sectors. Due to a shortage of local architects and engineers, the Government of Pakistan collaborated with foreign aid organisations to bring in American experts. As a result, USAID engaged the private firm Louis Berger Associates & Consulting Engineers to establish a subsidiary in East Pakistan (Dunham & Dunham, 2018). This led to the opening of their first architectural office in Dhaka on Jinnah Avenue, with American architect Daniel Dunham appointed as its chief in 1960.

Dunham and his family spent seven years in Dhaka, where he was involved in numerous projects, notably in the realm of educational institutions and public buildings amidst a backdrop of political turbulence. His most significant achievement was the design of the Kamalapur Railway Station in Dhaka, which marked the culmination of his work with Berger Associates. Intended to serve as a grand gateway to the capital, the project sought to replace an abandoned brick building with a modern transportation hub (fig. 3).

Dunham approached the design of the station by focusing on functional requirements rather than

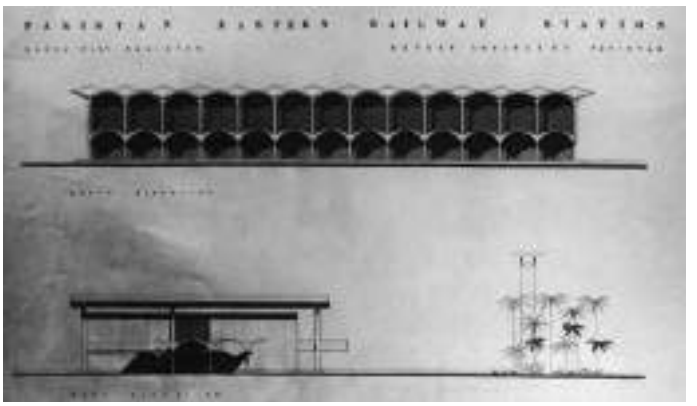
Kamalapur Railway Station, Dhaka, Daniel C. Dunham
Source: Katherine Dunham

imitating historical railway stations such as Mumbai's Victoria Terminus or Kolkata's Howrah Station. While Rafique Islam notes that Dunham's initial proposal was influenced by European designs featuring a two-storey arrival hall and a Victorian-style clock tower, Katherine Dunham disagrees, claiming that he envisioned an open-air structure devoid of exterior walls for enhanced ventilation (Dunham, 2022; Islam, 2015). Ultimately, Dunham's design featured a vast canopied form supported by tall columns arranged in a grid—a technique he was familiar with from his educational experiences at Harvard (fig. 4).



Workshop attended by Dunham in GSD at Harvard University
Source: Katherine Dunham

The railway authorities requested modifications such as vaults and arches to infuse an Islamic identity into the station. Aware of the cultural significance of Islamic architectural motifs in Pakistan, Dunham undertook several revisions. He introduced a roof design shaped as a pointed arch and inspired by Mughal architecture, which he termed the "dome umbrella scheme" (Islam, 2015, p. 86) (fig. 5). The alterations not only respected local architectural traditions but also provided functional benefits, including maximised ventilation in the hot climate and protection from monsoon rains.



Vaulted Roof, Elevation of the Kamalapur Railway Station, Dhaka, Daniel C. Dunham
Source: Katherine Dunham

Following Dunham's departure to teach at EPUET, the project was suggested for modification to reduce costs. However, Boughey, who took over supervision as chief architect, ensured that the signature dome umbrella scheme remained part of the final construction. His dedication was captured in a letter where he expressed his intent to adhere to Dunham's vision while working towards approval from the governor (Dunham, 2022).

The Kamalapur Railway Station ultimately exemplifies how constraints in resources can still yield remarkable architectural outcomes. However, the intervention of railway authorities during supervision compromised certain design elements, leading to issues such as water penetration from heavy rains. Though the design began in 1962, the station was officially opened in 1968 after Dunham had left Dhaka. Despite these challenges, the Kamalapur Railway Station emerged as one of the largest structures in Dhaka during the 1960s and now stands as an iconic representation of pre-independent modern architecture in Bangladesh.

6. Transforming the Nation

The previous sections traced topics related to Modernism, Bengali identity and the tropical influence on architectural buildings. This section examines the architectural discourse within a centralised political framework, focusing on the National Assembly Building of Bangladesh (1962–83) designed by Louis I. Kahn. President Ayub Khan commissioned this project to bolster his political authority, and originally it was intended as a second capital for Pakistan. Most analyses emphasise Kahn's genius or critique the building in a postcolonial context; however, this study investigates multiple interpretations of the National Assembly Building within the frame of its historical and philosophical background.

The construction history of this edifice raises critical questions – how did a monument meant to unify Pakistan's two wings become an emblem of Bangladeshi identity? What seems contradictory is that the complex, initially conceived to support Ayub Khan's regime, was later repurposed by the newly independent Bangladesh as a symbol of autonomy. This investigation seeks to understand the spatial significance of the National Assembly Building, constructed in a culture enduring a duality of identity.

While Kahn's design embodies grandeur, it also symbolises authority and power. The Capitol Complex's construction history intertwines with broader political phenomena. Choudhury and Graham Bell's analysis of Kahn and Khan through Adam Smith's moral theory illustrates the self-interested motivations behind this project (Choudhury & Bell, April 2011). Ayub Khan's agenda was to maintain his grip on power, using the Capitol as a strategy to unify the country. In contrast, Kahn viewed this commission as a chance for international recognition, showcasing his architectural vision on foreign soil.

The Capitol Complex became a turning point in Kahn's career, pushing the boundaries of architecture. He produced over 10,000 sketches and drawings, grappling with the ambitious scale of the project for seventeen years, culminating in its completion posthumously in 1983 (Kahn, 1987). Kahn engaged deeply with local culture, consulted with Muzharul Islam, and as a result, the design of the Capitol Complex echoes the surrounding culture alongside a modernist vision.

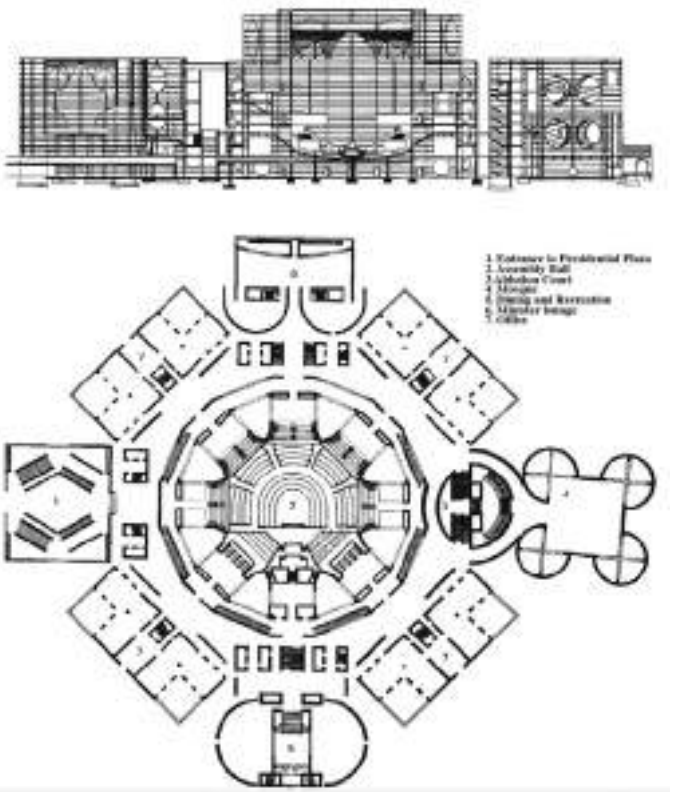
Kahn envisioned the Capitol Complex as a "city within a city", catering to three audiences: the architectural community, the Pakistani government and local citizens (Ksiazek, 1995, p. 332). He divided the complex into two distinct zones: the Citadel of Assembly for legislative functions and the Citadel of Institutions for public services (fig. 6). His design philosophy focused on monumentalism, aspiring

Site plan sketch by Kahn. The sketch shows distance between the Citadel of Assembly (bottom) and Citadel of Institutions (top)
Source: Louis I. Kahn Collection, University of Pennsylvania

to create an assembly that fostered a collective identity. Kahn's approach was inventive; he aimed for a "transcendent" assembly space, contrasting secular governance with spirituality. Significant attention was given to public plazas, one of which remains the largest paved area in Bangladesh. Yet, criticisms arose about the functionality of these spaces, revealing a tension between Kahn's and the government's vision.

Incorporating Western influences and local traditions, Kahn blended modernist forms with Mughal architectural elements, enhancing the built environment. Similar to the Taj Mahal in Agra, the National Assembly Building is elevated centrally on an immense platform reflected in the artificial lake. Kahn included the waterbody to be reminiscent of the river-based landscape of East Bengal. He abstracted his ideas not only from what he already knew but also from what he had learned from Mughal and Bengali vernacular architecture while travelling across the Indian subcontinent (Vale, 1992, p. 242).

Kahn's original plan included a large mosque, reflecting his interpretation of local Islamic culture. Despite the government's vision of building an Islamic nation of Pakistan, this concept faced challenges regarding its appropriateness, as Bengal is known to be a land for all religions. Kahn later modified the zone into a meditation space accessible to all, with the final decision on orienting the mass slightly tilted towards Mecca (Komendant, 1975, p. 79) (fig. 7). This indicates the complexities of integrating religious features within a secular political framework.



Section (above) and plan (below) of the National Assembly Building
Source: Louis I. Kahn Collection, University of Pennsylvania

Following the Bangladesh Liberation War, the National Assembly Building transitioned from a contentious symbol of neocolonial politics to the centrepiece of the new nation's governance. The structure was embraced as a democratic icon and a national landmark. The architectural dialogue surrounding the National Assembly Building remains intricate; it encapsulates the historical struggles of its inception tied to the political narratives of Pakistan and Bangladesh. Although initially intended as a monument to Ayub Khan's regime, it evolved into a representation of Bangladeshi sovereignty and unity. This building's significance has transcended its original purpose, emerging as a lasting icon of

democratic ideals, adaptability and the complex interplay between cultural heritage and modernist aspirations. Today, it serves as a vital public space, underscoring its role in the ongoing narrative of Bangladesh's identity (fig. 8).

The National Parliament Building on Student's Uprising Day (5 August 2024)
Source: Prothom Alo Newspaper, 6 August 2024

7. Towards a New Beginning

The paper explores the interrelated concepts of nationalism and architecture between 1947 and 1971, focusing on East Pakistan's architectural production amid changing political, economic, cultural and religious dynamics. It analyses the perspectives of historians, architects and politicians, using economic and political data and architectural documentation to understand these complexities. Most importantly, it attempts to answer the question of how nationalism was ultimately portrayed within these structures.

In order to answer this question, we must consider the context in which these buildings were constructed — a postcolonial Pakistan that had recently emerged as a nation amidst political turmoil. Additionally, the influence of global politics is significant; the US sought an ally near Russia during the Cold War, while Pakistan aimed to establish an economic balance with India. This mutual interest fostered a decade-long partnership between Pakistan and the USA.

Finally, it is essential to examine the key architects involved, who viewed architecture as a tool for nation-building. While their motives may not have been purely altruistic, the projects provided them with opportunities that significantly shaped the architectural landscape of the nation.

The independence of Bangladesh has an eminent history; however, what is less recognised is the architectural historiography that developed amidst social, political and cultural phenomena. The buildings discussed in this paper are not only portrayed as products of nationalism but also clarify how they were conceived in a capitalist environment and transformed into architecture for national identity.

Islam perceived architecture as a nation-building task integrating global capitalism, Bengal's rich past and the struggling context of domination. Dunham identified the void of local architects and stressed how structural engineers provided designs for buildings lacking proper construction knowledge. Kahn's involvement in the Dhaka commission was particularly intriguing, as he continued to work on the project from Philadelphia during the civil war, despite uncertainties regarding his client's status. Ultimately, each architect approached architecture as a tool to build the nation, applying their expertise to the buildings of East Pakistan.

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RESEARCH PAPER

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Contextual Sensitivity in Traditional Architectural Knowledge Systems

Comparative Analysis in an International Perspective

By Ar. Athira S B, Dr. Amritha P K and Dr. Chithra K

Abstract

The diverse cultural, historical, and environmental contexts of various countries underpin the Traditional Architectural Knowledge Systems (TAKS) within those regions. This study undertakes a comparative analysis of these systems from an international perspective, with a particular emphasis on the Indian context. The primary aim of this research is to explore how TAKS are influenced by and adapt to specific local conditions, thereby enhancing their contextual sensitivity in built form. Employing a qualitative research methodology, this study utilizes a comparative literature review to discern the similarities and differences in the understanding of TAKS across the chosen countries. Drawing on prior research findings from scientific journals, the TAKS of Greece, Japan, India, and China—recognized as enduring and active systems—were selected for analysis. This study contributes to a deeper understanding of the role of context in shaping TAKS and its relevance to contemporary architectural discourse.

Keywords: Traditional Architectural Knowledge Systems (TAKS), Contextual Sensitivity, Comparative Analysis, Sustainability, Cultural Heritage.

1. Introduction

The application of traditional wisdom in fields such as medicine, architecture, alchemy, mathematics, chemistry, agriculture, dyeing, weaving and astronomy has influenced people's lives and led to the development of extensive bodies of knowledge preserved by communities for generations (Ananth, 1998). Numerous researchers and institutions have emphasised the importance of discovering a suitable architectural design approach based on traditional systems (Pillai, 2020). The recent decades have witnessed a significant increase in interest in traditional and vernacular architecture, as well as the art of city-making rooted in tradition (Samalavičius & Traškinaitė, 2021). Athira & et.al (2025) defined Traditional Architectural Knowledge Systems (TAKS) as 'the collective knowledge, practices and beliefs in architecture which is available in ancient texts, historical buildings, traditional craftsmanship and oral tradition of a particular region, evolved over a period based on the context within which it exists'.

Unfortunately, there is currently no literature available that explores the diverse perspectives of TAKS on an international scale or delves into the context-sensitive nature of TAKS. Hence, this study employs a qualitative methodology, incorporating a comparative research design that involves conducting a literature review to identify differences and similarities in comprehending TAKS in the selected countries. This study employs a qualitative methodology, utilizing a comparative literature review, to analyze the contextual sensitivity of TAKS in Greece, Japan, India, and China—countries identified as having the most active and persistent systems, based on prior research. This analysis draws on scholarly sources to examine the traditional

building practices, materials, spatial organization, and design principles in these regions. Additionally, this study seeks to identify common concepts, unique characteristics, and adaptation strategies that highlight the contextual sensitivity of TAKS through a comparative analysis of theories and practices across selected countries, as derived from literary sources. While the study includes a diverse range of regions, it may not fully capture the variety of TAKS present in other parts of the world. Regions with rich architectural traditions, such as Africa, the Middle East, and Latin America, are not covered in the current study but will be included in future research. This broad scope could result in a more generalized understanding rather than an in-depth examination of individual systems.

The study proceeds with the following questions:

a) What are the TAKS in the chosen countries and their characteristics?
b) How did those TAKS acquire contextual sensitivity in the built environment?

By addressing these questions, the contextual sensitivity of the TAKS in the chosen countries and their significance and potential future developments can be understood.

2. Materials and Methods

The methodology adopted in this study follows a comparative analysis approach to explore the Traditional Architectural Knowledge System (TAKS) and the contextual sensitivity of selected regions. As Mwita (2022) states, comparison is an effective method for uncovering insights into the fundamental causes and effects of a phenomenon by examining the factors that contribute to its emergence in research. The study begins by delving into the definitions and interpretations of TAKS and contextual sensitivity, with the aim of establishing a clear understanding of these key concepts. In the second step, we conducted a comparative analysis of the TAKS across the selected regions- China, India, Japan, and Greece. This analysis is facilitated by an examination of theories that illustrate the application and evolution of the TAKS within each cultural context.

The third step focuses on establishing the relationship between TAKS and contextual sensitivity, exploring how cultural, environmental, and historical factors shape architectural practices, and comprehending the preservation and adaptation of traditional knowledge systems. Finally, we synthesized the findings from the previous stages to draw conclusions and recommendations. The conceptual methodology is given in Figure 1.

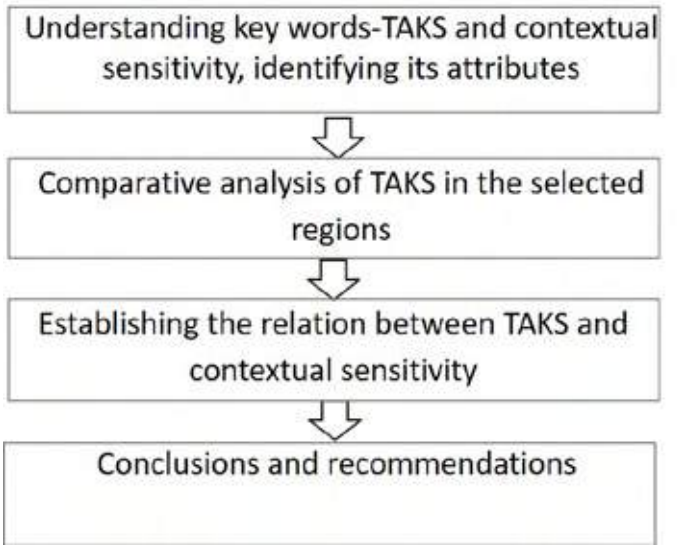

Figure 1: Conceptual Research Methodology
Source: Authors

3. Literature Review

This section examines how TAKS adapts to various local conditions like climate, cultural influences, and socio-economic factors. By examining specific traditional principles in China, India, Japan, and Greece, this study highlights the diversity and adaptability of TAKS. The study commences by understanding the meanings and explanations of essential concepts, including TAKS and context-sensitive design. The advancements in traditional architecture studies can be linked to the work of several other research projects, particularly Rapoport (1969), Guidoni (1987), Oliver (1987), and AlSayyad (1989).

According to Behsh (1993), 'tradition' refers to a cultural practice that is passed down from one generation to the next through inheritance, and involves the unquestioning acceptance of customs, beliefs, and ways of thinking or acting that originated in the past. Rapoport (1989) highlighted that the transmission of something over time can lead to tradition, thereby making it a general and versatile concept that can be used in a broad range of domains. Hamka and Winarni (2021) stated that anything can become a tradition if it is repeatedly performed and passed down from one generation to another, as it is closely linked to both time and location. The industrial revolution led to modernisation, which in turn influenced traditional ways of acquiring and sharing knowledge. This impact was particularly notable after World War II, when numerous countries gained independence and experienced increased connectivity, bringing distant cultures and worlds closer together (Pillai, 2020). 'Systems' and forms of 'knowledge' are as varied

as those of human communities, with indigenous knowledge being one such form. This refers to the unique knowledge that is passed down generations within a specific culture, helping shape human societies' interactions with each other, the cosmos, and their surroundings (Warren, 1987). Nakashima and Rou´e (2002) emphasized that traditional knowledge is rooted in specific settings and unique local circumstances. According to Weiss et al. (2013), traditional knowledge has a more comprehensive and holistic character. As Fathy (1970) stated, traditional architecture not only offers a glimpse of the past but also provides an image of the present and reveals future possibilities. According to him, it was not the inability of individuals to adapt traditional built forms to contemporary conditions that led to their disappearance, but rather the tendency of architects to blindly emulate foreign architecture without considering the context in which form has meaning.

The Oxford dictionary defines 'context' as a circumstance that forms the setting for an event, statement, or an idea from which it can be fully understood. Merriam-Webster dictionary defines "context" as interrelated conditions in which something exists or occurs. Context is not an element of the design. The context of a building encompasses both physical and natural elements, as well as socio-cultural components, which can be analyzed, adapted, and integrated to harmonise with its environment (Athira et. al, 2023). When placed in its proper context, the architecture communicates powerfully with its surroundings. It is neither an extreme invention nor neglect (Ghadiri, 2006). According to Schulz (1980), architecture should be utilised to concretise economic, social, political and cultural intentions while simultaneously respecting the spirit of the place. This means determining the identity of the place and interpreting it in a new manner. Over time, each region developed recognisable features in its built form, making the spaces more comfortable for the intended activities. According to Cook (2001), it is important to acknowledge regional resources, local needs and comparative social values in addition to technical and performance intelligence when making decisions about the built environment. Although a precise definition of contextual sensitivity has not been explicitly established in the literature, it can be interpreted in architecture as the capacity of a design to engage thoughtfully and harmoniously in its physical, cultural, historical, and environmental contexts.

The tradition of heredity is a fundamental aspect of architectural systems in all geographic regions. Long-lasting traditional houses found in various climatic zones worldwide have been designed to accommodate multiple generations of families for many years. The design of these buildings is based on the TAKS in that particular region, which resulted in distinct spatial features that allowed each generation to maintain their own customary habits of living, family, social interactions and way of life, which, in turn, gave society a unique. The ancestors demonstrated supreme value in their quality of life and art. Previously, heredity was a custom that ensured continuity. But in this contemporary era, the lack of continuity in our understanding of the principles adopted by ancestors is striking. Apart from its practical function, the convention of heredity provided skilled artisans with the assurance that their descendants would at least maintain their social status and continue to preserve their skills (Grover, 1980). According to Grover, the customs of heredity play a key role in maintaining continuity. Not only did it serve a practical purpose, but it also ensured that skilled artisans' descendants would retain their social standing and that their knowledge and skills would be passed down to future generations. The next session discusses the TAKS and its contextual sensitivity in China, India, Japan and Greece.

3.1 TAKS in the selected contexts

The TAKS of Greece, Japan, India and China have been chosen for the comparative study. India has a rich history of architectural excellence, with numerous examples dating back several centuries scattered throughout the nation. The traditional texts of India provide extensive information on spatial planning methods, which traditional practitioners continue to employ. The *Vastu Shastra* is an ancient Indian science that connects belief, religion and spirituality to the architectural and design elements of the building sciences. This science has established guidelines and regulations for planning and construction of various designs (Dash & Joshi, 2021). The primary objective in the context of *Vastu* is to harmoniously integrate and blend with the surrounding environment, which includes factors such as neighbouring buildings, terrain, orientation, water table, soil fertility, wind, precipitation and temperature fluctuations. The fundamental principles of design are encompassed in *Vastu*, which covers the entire spectrum of design, ranging from buildings to handicrafts. These principles are rooted in three major components. They are *bhogadyam* (utility), *sukha darsham* (aesthetic appeal) and *ramyam* (a sense of well-being). These are evident in the residential buildings of small towns and villages across the Indian subcontinent (Ananth, 1998).

The *mandala* is a geometric representation of the cosmos, featuring various patterns that lay out the living space (Figure 2). Important locations are designated in the nodes and joints for critical actions. The Vaastu purusha is the body on which all human activity is performed, while the Pada vinyasa method divides a site of land into a uniform grid (Ananth, 1998). The construction of buildings, placement of facilities, direction in which the building faces and components of its structure are all determined based on the principles of the *Vastu Purusha*. In Indian traditions, cosmology has historically had a considerable impact on the development of art forms and the materialisation of forms in space. It is believed that the cosmic form is replicated on Earth for human beings to reside in (Ananth, 1998).

It is noted that the cosmic views of all great civilisations have shown a striking similarity. The south is seen as the direction of the lord of death and spiritual rebirth in the Greek legends. The universe comprises five elements: earth, water, fire, air and space. Our bodies consist of these natural components. These five components are related to our five senses - taste, smell, sight, hearing and touch. The maintenance of harmony among all five components with respect to direction and energy is scientific. *Vastu Shastra* states that there should be an equilibrium and balance between these components both within and outside the body.

Traditional practitioners' contributions remain active in India's rural areas, offering models of

Figure 2: Vastu purusha
Source: mandalahttps://www.indianetzone.com/48/vastu_p urusa. htm#google_vignette

architectural design that reflect optimal sun and wind orientation, with openings tailored to local climate and culture. Within each built form, there is a central point called *brahmasthana*, serving as the physical and spiritual center where the structure's energy converges. Modern architects use these techniques to follow traditional planning principles. Architects like Geoffrey Bawa and Charles Correa have incorporated *Vastu Shastra* principles into their projects (Dash & Joshi, 2021). The following seven compositional arranging standards from *Vastu Sastra* were considered during design:

- examination and site choice *(Bhu Pariksha)*
- determining the orientation *(Dik Nirnaya)*
- building estimation test *(Aayadi Gananam)*
- *Vastu Purush Mandala (Padavinyasa)*
- zoning *(Griha Vinyasa or Sthana Vinyasa)*
- door openings *(Dwara Sthana)*
- proportion of the structure *(Bhulamba Vidhanam)*

Most modern buildings cannot communicate, convey stories, or express themselves and they lack a sense of place (Ananthalwar, 1980). Modern architectural practices and educational curricula have not adequately addressed the regional characteristics of the country, as emphasised by Pillai (2020). Therefore, this is a critical time to create buildings that demonstrate sensitivity to their context.

Feng Shui is embraced in several countries, including China, Korea, Japan, Singapore, Thailand, Vietnam, Malaysia and the Philippines, as indicated by Montenegro (2003). Feng Shui is a method of living harmoniously with nature, with wind and water being the two primary elements. It examines the positive and negative influences on individuals, their homes and their relationships. This practice is based on the principles of Yin and Yang, which require a balance between these two energies. This balance is achieved through the five essential elements -wood, fire, earth, metal and water (Figure 3). Feng Shui focuses on achieving harmony between buildings and their surroundings. It is utilised to evaluate a site and building, as well as to define the use of space in interior design. This was done before the building implementation. Feng Shui regards the Earth as a living entity, with chi serving as its vital force. It transcends cultural beliefs, encompassing elements of psychology, philosophy and architecture (Poulston and Bennett, 2012).

The sources of Feng-Shui can be classified into two categories: popular folklore and ancient texts (Lee & Wei, 2005). Feng Shui provides guidelines for designing buildings that are not only attractive and clutter-free but also safe and comfortable. This is acknowledged as a valuable source of good design principles for practical and aesthetic reasons (Han & Sinha, 1996; Mak & Ng, 2008; Wah, 1998). The implementation of certain Feng Shui techniques can be justified because of their practical benefits, such as enhancing functionality, comfort and safety, rather than being based on superstitious beliefs (Octavia and Tanuwidjaja, 2014). The fundamental principles of Feng Shui encompass holism, circulation, equilibrium and transformation, as defined by the concept of qi circulation, the theory of Yin-Yang, the Five Elements and *Bagua*, as explained by Zhong and Ceranic (2008). Bagua, often referred to as the Eight Trigrams, serves as the foundation for all the design decisions in Feng Shui. It is used to identify Yin-Yang's energy and depict environmental patterns (Spear, 1995). The five essential elements in Feng Shui and the Bagua diagram are illustrated in Figures 3 and 4, respectively.

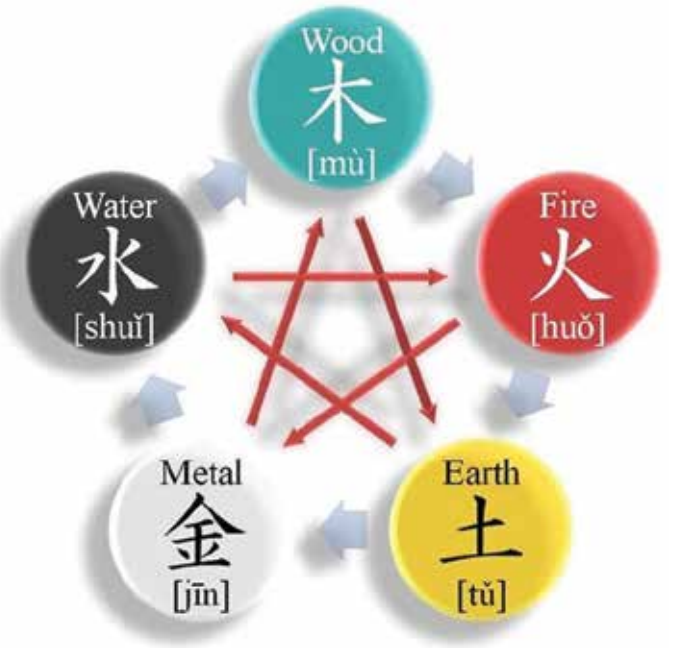

Figure 3: Five essential elements in Feng Shui
Source: https://studycli.org/chinese- culture/what-is-feng-shui/

Figure 4: Bagua diagram
Source: https://www.nationsonline.org/oneworld/Chines e_Customs/feng_shui.htm

Both sciences focus on five fundamental components and their guidelines are determined by their geology and climatic conditions, both of which have a comprehensive methodology. Both rely on natural forces to regulate the flow of qi or Prana Shakti in the structure. These theories are capable of making the structure a living system by combining physical and metaphysical, or substantial and theoretical perspectives. The concepts of Yin and Yang in Feng Shui and *Prakriti* and *Purush* in *Samakhyas* are identical. Yin and yang in Feng Shui represent the positive and negative forces referred to in the Vastu Shastra, which attempts to balance them through its approach and philosophy. Although both aim to create comfortable energy fields within the structure, their techniques are distinct.

The Golden Mean (Figure 5), often denoted by the Greek letter Phi (φ), is an irrational number approximately equal to 1.618. It has had a profound impact on the architecture of numerous significant buildings across time and it is purported to be the source of any "balance" and "harmony" present in these structures (Salingaros, 2018). The term "order" pertains to the Greek and Roman columns in their temples and buildings. The unit of measurement used was the radius of a column section.

The Ken (Figure 6) is a Japanese measuring unit that is used to arrange architectural elements both indoors and outdoors. For instance, the placement of columns determines the size of the panels that form the interior and exterior partitioning. The typical height of a column is 1 Ken, while the distance between columns is usually 3 or 3 ½ Ken. This distance is divided to accommodate four panels, which is the desired proportion in Japan. Another example is the Tatami mat, which is used to determine the structural, modular and wall panels. It is 2 1/8 inches thick, 6 feet long and 3 feet wide. The number of

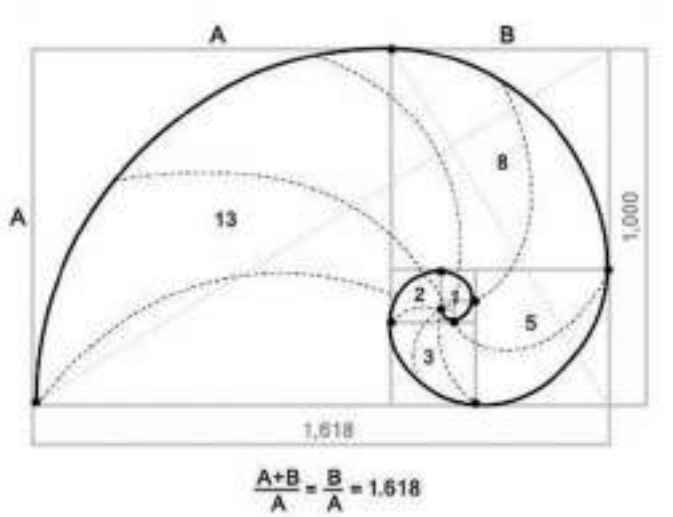

Figure 5: Golden proportion
Source: https://www.researchgate.net/publication/2650357 6_ Proportions_and_Human_Scale_in_Damascene_ Courtyard_Houses

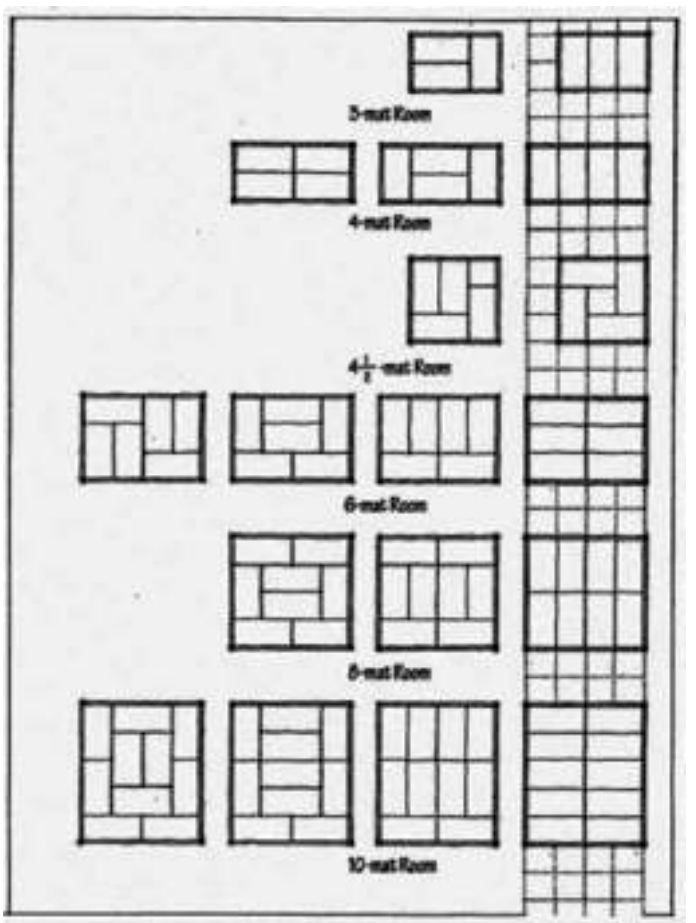

Figure 6: Ken system
Source: https://archi- monarch.com/theory-of-proportion/

mats covering a space determines the dimensions of a room. In fact, one can describe the room by the pattern of the mats. Mats are arranged in different patterns according to the desired functions of the room and the size is typically based on 4 ½, 6, 8, 12, 15 and 18 mat combinations. (Ferwati and Mandour, 2008).

4. Data Analysis and Findings

A comparative analysis of TAKS was conducted based on the following attributes/criteria: design principles, influence of religion and culture, proportioning system, materials used, craftsmanship and ornamentation, residential architecture, climatic considerations and earthquake resilience, aesthetics, community engagement, sustainability, continuity and preservation (Table 1). Analytical studies of TAKS across various regions have revealed the existence of highly instructive and sophisticated design systems that have been developed and refined over multiple generations. From Table 1, it is evident that TAKS in China, India, Japan, and Greece show remarkable sensitivity to their respective contexts, encompassing cultural, environmental, and historical influences. Each region's architectural identity is deeply intertwined with its unique religious and cultural heritage, as seen in design principles, materials, and ornamentation. Moreover, these traditions demonstrate a commitment to sustainability and resilience, with a keen awareness of climatic considerations and a focus on preserving natural resources. From the utilisation of locally available materials to the incorporation of traditional building techniques, architectural practices reflect a harmonious relationship between human habitation and the natural environment.

5. Results and Discussion

The analysis shows that there are numerous initiatives currently underway to keep the TAKS relevant and applicable to modern needs. This underscores the perpetual significance and worth of these systems. Through conservation initiatives and the integration of traditional wisdom into modern design, these architectural legacies continue to serve as sources of inspiration and cultural pride, thereby enriching the global architectural discourses. In essence, the TAKS of China, India, Japan and Greece stand as a testament to the enduring creativity, ingenuity and adaptability of human civilisation, with profound respect for the past while embracing future challenges. Comparative analysis revealed several key insights into the relationship between contextual sensitivity and TAKS. Traditional architecture often utilises indigenous materials that are readily available and suitable for the local climate, showcasing a sustainable approach to building. Cultural beliefs influence architectural design, with symbolic meanings and ritualistic functions reflected in the spatial organisation and ornamentation. The analysis highlights adaptive strategies in traditional architecture, from passive cooling to vernacular forms that optimise ventilation and lighting, demonstrating a deep environmental understanding.

Table 1: Comparative analysis of TAKS in selected regions

Attributes	TAKS in China	TAKS in India	TAKS in Japan	TAKS in Greece
Design Principles	● Based on the Feng-Shui system and Yin-Yang concept ● Elegant integration of symbolism, form, and function. Axial symmetry, hierarchical spatial organisation ● Focus on balance and proportion are essential design principles ● Flexibility and adaptation in design are made possible by the use of standardised building components and modular construction	● Deeply ingrained in Vastu Shastra, emphasising harmony with nature, spatial equilibrium, and directional alignments ● Structures are planned to promote physical and mental well-being, with meticulous attention to light, ventilation, and energy flow within the space ● The architecture harmoniously combines aesthetic beauty with spiritual significance, frequently incorporating symbolic elements that reflect cultural and religious beliefs	● Characterised by simplicity, minimalism, and profound connection with nature. ● Establishing balance and symmetry, harmonising with the surrounding landscape, and modular construction. ● The open-floor design, Tatami mat flooring, and sliding doors (fusuma and shoji) are common elements	● Emphasises harmony, symmetry, and proportion (golden ratio). ● Influenced by classical orders in column design principles ● These ideas of harmony and balance are best shown by the colonnades, pediments, and entablatures seen in Greek temple architecture
Influence of Religion and Culture	● Influenced by Confucian, Taoist, and Buddhist ideologies ● Buildings often epitomise harmony, balance, and symmetry, reflecting the cultural emphasis on order and social hierarchy ● Architectural elements such as pagodas, temples, and courtyard houses are designed to adhere to spiritual and cosmological principles, thereby imbuing cultural values into the physical environment	● Different religious traditions have their own manifestations in architecture. Hindu temple architecture with its tall spires (shikhara), intricate sculptures, and mandala-inspired design ● Mosques, tombs, and forts all around the country feature Islamic architecture, with domes, arches, and elaborate geometric patterns. Sikh gurdwaras, Jain temples, and Buddhist stupas	● Greatly influenced by Buddhism and Shintoism, which have shaped both the secular and sacred buildings ● Shinto shrines and Buddhist temples frequently have unique architectural features, such as torii gates, pagodas, and gardens intended to promote spiritual reflection and a sense of oneness	● Greatly impacted by local customs, mythology, and religion ● God-worshiping temples, like the Parthenon on the Acropolis in Athens, are manifestations of both civic pride and devotion to the gods
Proportioning system	● For millennia, the layout and orientation of buildings have been affected by Feng Shui, an ancient Chinese philosophy of balancing the forces of nature with the built environment ● Buildings are oriented and planned to maximise the flow of qi, or life force energy, and foster prosperity and well-being	● Guided by principles from ancient Indian building science-the Vastu Shastra. ● It provides guidelines for aesthetics, orientation, layout, and proportions. ● Architectural design and spatial organisation are influenced by concepts such as the Panchabhuta (five components) and the Vastu Purusha Mandala	● The seasonal climate and cultural practices in Japan are considered in the construction of buildings. ● Spaces are often flexible and multifunctional, allowing seamless transition between indoor and outdoor areas. ● The principles of hierarchy dictate how rooms and architectural features are arranged, with the most significant areas found closest to the building's centre	● Golden ratio for form generation and design of architectural elements ● 'Orders' for the design of columns
Materials used	● Often uses locally available resources, such as wood, brick, stone, and clay tiles ● An iconic aspect of Chinese architecture is the use of wood, especially in the form of Dougong (interlocking wooden brackets) constructions. Premium wood, such as Chinese fir and cedar, is highly valued for its resilience to decay and long lifespan	● Utilises resources that are readily available locally, such as clay, stone, brick, and wood ● Preferences vary across areas according to availability and climate. (areas with rocky terrain tend to employ stones more often than those with plenty of wood resources, which may favour timber construction)	● Frequently uses natural resources such as bamboo, paper (washi), and wood ● Timber, especially cedar and hinoki (Japanese cypress), is highly valued for its strength, flexibility, and aesthetic qualities	● Stone, marble, wood, clay, and other locally available materials are frequently used in traditional Greek construction ● Particularly valuable in terms of culture and history, marble has been widely employed in famous constructions such as monuments and temples
Craftsmanship and Ornamentation	● Timber frameworks, intricate wood carvings, and elaborately painted brackets are frequently utilised in construction	● Showcases exceptional craftsmanship through intricate stone carvings, ornate woodwork, and detailed frescoes	● The meticulous attention to detail and deep respect for natural materials are demonstrated through the	● Illustrated by the refined carving of marble and complex stonework, the use of the Doric, Ionic, and Corinthian

	● Roofs with sweeping curves and upturned eaves, which are often adorned with glazed tiles and decorative figures that symbolize protection and prosperity ● The ornamentation found in both residential and religious structures reflects the principles of Feng Shui and incorporates motifs such as dragons, phoenixes, and floral patterns, emphasizing harmony, balance, and cultural symbolism	● The ornamentation is deeply symbolic and features motifs such as lotus flowers, geometric patterns, and depictions of deities, reflecting religious and cultural beliefs ● The use of richly decorated domes, pillars, and facades in temples, palaces, and forts is a testament to India's diverse architectural heritage and its emphasis on aesthetics and spirituality.	intricate carved wooden elements, delicate joinery, and the use of natural textures ● Subtle ornamentation is often employed, with an emphasis on harmony and simplicity, reflecting the principles of Zen and Shinto aesthetics	columns exemplifies the Greeks' mastery of proportion and detail ● The decorative elements, such as friezes, metopes, and pediments, are adorned with sculptural reliefs that depict mythological scenes, reflecting the cultural and religious values of the time
Residential architecture	● One of the main characteristics of traditional Chinese domestic architecture is a courtyard house or siheyuan ● These homes, which are centered around a central courtyard, promote a sense of community living and family cohesion, while offering privacy, natural light, and ventilation. ● China has diverse regions, and each has indigenous architecture that reflects local geography, climate, and cultural traditions	● Courtyard houses such as the nalukettu of Kerala, Chettinadu houses of Tamil Nadu, and wada of Maharashtra represent distinct regional traditions of residential architecture	● Numerous regional architectural styles and building techniques have emerged in Japan because of its varied geographic and climatic characteristics ● From the thatched-roof farmhouses of rural areas to the wooden machiya townhouses of urban centers such as Kyoto, each region has its own architectural traditions and aesthetic preferences	● Diverse landscapes and historical influences have led to a variety of regional architectural styles and building techniques. (For example, the Peloponnese region has ancient stone-built tower houses, whereas the Cycladic islands are famous for their whitewashed cubic dwellings with flat roofs).
Sustainability	● Use of locally sourced, renewable, and environmentally friendly materials such as wood, bamboo, and clay ● The design prioritizes energy efficiency, incorporating features like courtyards for natural ventilation and orientations that maximize sunlight from the south ● These structures are often modular, which facilitates easy adaptation, repair, and longevity. This approach demonstrates a deep respect for nature and promotes harmonious living	● Sustainability and resource efficiency are ingrained in traditional practice ● Environmental resilience and sustainability are enhanced by practices such as recycling construction materials, using natural lighting, and rainwater harvesting systems	● Rooted in using natural, locally sourced materials, like wood, bamboo, and paper, which are renewable and biodegradable, the design prioritizes harmony with the environment ● This is achieved through elements such as raised floors for ventilation, sliding doors (shoji) to maximize natural light, and thatched or tiled roofs for insulation. ● The modular construction promotes flexibility and long-term maintenance, reflecting a philosophy of minimalism, resource efficiency, and respect for nature	● Use of indigenous materials like stone, clay, and marble, which offer natural insulation and enduring resilience ● Buildings are designed to blend with the surrounding landscape, frequently incorporating substantial walls and limited windows to manage temperature and optimize energy efficiency ● Arrangement of structures commonly employs natural illumination and ventilation, exhibiting a comprehension of the regional climate and a dedication to ecological accord
Climatic considerations and earthquake Resilience	● The use of Feng Shui principles and design elements like overhanging eaves and courtyards allows for climatic considerations ● This helps to manage temperature and air flow ● Many structures make use of wooden frames and flexible joints, which enable buildings to absorb and dissipate seismic forces ● The use of rammed earth and masonry with careful construction techniques helps to enhance the overall stability of these ancient buildings	● Incorporates climatic considerations by using elements such as thick walls, courtyards, and verandas to manage heat and ventilation, adapting designs to regional climates ● Earthquake resilience is often addressed through the use of locally sourced materials like mud bricks, stone, and timber, which can provide flexibility and durability ● Traditional construction techniques, such as intricate masonry and reinforcement with bamboo or wooden elements, enhance the structural stability of buildings in seismic-prone areas	● Incorporate various design elements, such as wide eaves, sliding doors, and tatami mats, which help to manage seasonal temperature changes and humidity ● These structures are also designed to be earthquake-resilient, with flexible wooden structures and joinery techniques that allow the buildings to sway and absorb seismic energy ● Additionally, elevated wooden foundations and the use of lightweight materials contribute to the stability and durability of traditional Japanese buildings during earthquakes	● Shaded outdoor areas, courtyards, and narrow roadways are just a few features that traditional Greek architecture incorporates to adapt to the Mediterranean environment ● Natural ventilation and temperature control are aided by indigenous building methods such as the use of small windows with wooden shutters and thick stone walls

The importance of designing an architecture that complements its surroundings has gained significant attention in numerous studies. These sources highlight the significance of preserving traditional architecture and incorporating it into modern designs, as well as reviving it. The classical interpretation of the concept mentioned above has only a few variations in the contemporary era. In the contemporary context, it is possible to adapt this principle in various ways that would be suitable for present-day lifestyles. Analytical studies of TAKS in different regions have revealed that they serve as the epitome of a culture's values, fulfilling the requirements for spaces with inherent qualities that cater to the performance of activities corresponding to their way of life and belief systems. Professionally and practically, it is evident that traditional systems can play a role in creating a sustainable built environment in various cultural and climatic contexts through design and execution.

6. Conclusions and Recommendations

This study concludes by emphasising the contextual sensitivity inherent in Traditional Architectural Knowledge Systems (TAKS). Through a comparative analysis, it is evident that TAKS are not static entities, but rather dynamic responses to local contexts, evolving while maintaining cultural continuity. The comparative studies highlight the complex interactions that shape architectural forms and practices in relation to culture, climate and community. TAKS's contextual sensitivity has significant implications for modern architectural practices.

This study highlights how local climates, cultural values, and socio-economic conditions shape architectural solutions that are uniquely suited to their environments. By understanding and respecting these contextual factors, modern architectural practices can integrate traditional wisdom with contemporary needs to promote culturally enriched, environmentally sustainable, and socially inclusive development. This synthesis not only preserves heritage but also inspires innovative design approaches that are responsive to global challenges. This study does not seek to replicate the TAKS for the needs of the contemporary era. Instead, its objective is to urge society to treat our precious natural and cultural resources with greater care and to promote the exploration of innovative design and construction techniques based on the TAKS. TAKS's contextual sensitivity has significant implications for modern architectural practices. Architects can create more culturally relevant and sustainable design solutions that tackle the intricate problems of the twenty-first century by taking cues from traditional wisdom. In light of the need to preserve the contextual sensitivity of the built environment for future generations, this research emphasises the significance of incorporating the TAKS into architectural education and practice.

Conflict of Interest

We confirm that there are no known conflicts of interest associated with this publication and that there have been no significant financial supports for this work that could have influenced its outcome.

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ARTICLE

Comparative Analysis of Ancient Hindu and Egyptian Temple Architecture

A Study of Lingaraja Temple, Bhubaneswar, Odisha, India and Temple of Khons, Karnak, Luxor, Egypt

By Ashwini Nagesh Katgaonkar

1. Introduction

Hindu and Egyptian temple architectures reflect the spiritual and social ethos of their respective cultures. The Lingaraja Temple, a masterpiece of Kalinga architecture, symbolises devotion to Lord Shiva and reflects the grandeur of medieval Indian craftsmanship. The Temple of Khons, dedicated to the moon god Khonsu, exemplifies the monumental and ritualistic architectural style of ancient Egypt. This study compares these two temples, highlighting their architectural features, construction techniques and cultural contexts.

1.2 Aim and Objectives

The study aims to analyse and compare the architectural, cultural and symbolic elements of the Lingaraja Temple in Bhubaneshwar, India, and the Temple of Khons in Karnak, Luxor, Egypt. The objective is to identify the similarities and differences in their design, construction techniques and cultural significance to understand the architectural philosophies of ancient Hindu and Egyptian civilisations.

2. Literature Review

Relevant literature highlights the significance of both Hindu and Egyptian temples in their respective cultural landscapes. Fergusson (1910) explores the evolution of Indian temple architecture, while Wilkinson (2000) provides insights into Egyptian temple design. Comparative analyses of global architectural traditions reveal commonalities in symbolic representation and religious functions.

3. Methodology

This comparative study employs a multidisciplinary approach, combining architectural analysis, historical research and cultural anthropology. Primary data is drawn from field studies, architectural drawings and historical texts, while secondary data includes scholarly articles, books and previous research on temple architecture.

3.1. Cultural and Religious Context

Lingaraja Temple: The temple served as a centre for devotion, rituals and festivals, embodying the concept of divinity as an integral part of daily life. Oriented along cardinal directions, the temple's architecture aligns with cosmic principles, integrating seamlessly with its natural surroundings.

Temple of Khons: As part of the Karnak complex, the temple played a crucial role in processions, ceremonies and state-sponsored religious practices. Situated within a sacred precinct, its orientation and alignment reflect the ancient Egyptian cosmological worldview.

3.2 Architectural Features

3.2.1 Design and Layout

Lingaraja Temple: The temple follows the Kalinga architectural style, comprising four main components: the *vimana* (sanctum tower), *jagamohana* (assembly hall), *natamandira* (dancing hall), and *bhogamandapa* (hall of offerings). The towering *vimana* is crowned with an *amalaka* and *kalasha*.

Temple of Khons: The temple is part of the Karnak complex and follows a linear axial layout. Key elements include a massive pylon gateway, open court, hypostyle hall and the sanctum. The use of massive columns and lintels defines the spatial hierarchy.

3.2.2 Symmetry and Axial Planning

Lingaraja Temple: The temple's design reflects a strict adherence to symmetry, with a linear and axial plan leading from the entrance through successive halls to the sanctum. This arrangement symbolises the spiritual journey towards enlightenment.

Temple of Khons: The axial planning of the temple is equally significant, with the layout emphasising a ceremonial path from the monumental gateway through the hypostyle hall to the sanctum. This design reinforces the importance of processional rituals in Egyptian religious practices.

3.3.3 Material and Construction Techniques

Lingaraja Temple: Constructed from chlorite and sandstone, the temple showcases intricate carvings and sculptural details. Traditional dry masonry techniques were employed, emphasising precision and durability. Temple of Khons: Built using sandstone blocks, the temple features large-scale relief carvings and hieroglyphs. Techniques such as corbelling and post-and-lintel construction were integral to its design.

3.3.4 Ornamentation and Symbolism

Lingaraja Temple: Richly adorned with depictions of deities, celestial beings and mythological stories. The carvings symbolise cosmic harmony and spiritual ascension. Temple of Khons: Reliefs and inscriptions narrate royal exploits, religious rituals and cosmic symbolism, emphasising the divine authority of the pharaohs.

3.3.5 Components in Plan

Lingaraja Temple: The components of the Lingaraja Temple are clearly demarcated in both plan and elevation. The structure exhibits a vertical progression, with the height increasing toward the towering *shikhara* (tower), symbolising Mount Meru, the cosmic axis. The temple follows a linear axial plan, with distinct sections:

- Lion Gate (*simhadwara*): The main entrance to the temple complex, flanked by sculptures of lions.
- *Bhogamandapa*: The hall of offerings, used for rituals and sacred food preparation.
- *Natamandira*: The dancing hall, where religious dances and musical performances were conducted.
- *Jagamohana*: The assembly hall or prayer hall, where devotees gather.
- *Garbhagriha* (sanctum sanctorum): The innermost chamber, housing the Shiva Linga, which is the spiritual and architectural focal point of the temple.

This progressive arrangement not only emphasises the spiritual journey from the mundane to the divine but also creates a physical ascent, culminating in the *shikhara*, which represents cosmic transcendence.

Temple of Khons: The architectural progression in the Temple of Khons follows a horizontal axial plan, with the height gradually decreasing towards the sanctuary, emphasising the inward journey into sacredness. Key components from the entrance to the sanctum include:

- Pylon gateway: A monumental gateway flanked by sloping walls that lead into the temple, symbolising the threshold between the earthly and divine realms.
- Open court: A large, open space used for ceremonies, surrounded by colonnades.
- Hypostyle hall: A covered hall filled with massive columns, carved with lotus and papyrus capitals, representing the primeval swamp of creation.
- Vestibule: A transitional chamber leading to the sanctuary, adorned with reliefs depicting the moon god Khonsu and ritualistic themes.
- Naos (sanctuary): The innermost sacred chamber, housing the shrine or pedestal of Khonsu. This secluded space was accessible only to priests, emphasising its sacred exclusivity.

3.3.6 Components in Elevation

Lingaraja Temple: The elevation of the Lingaraja Temple exhibits a vertical progression, symbolising the spiritual journey towards the divine. The height increases gradually towards the *garbhagriha* (sanctum sanctorum), culminating in the *shikhara*, which rises majestically above all other structures and dominates the skyline. This upward movement embodies the aspirational nature of Hindu temple architecture— a metaphor for spiritual ascent and cosmic connection.

Each component in elevation is carefully designed to enhance both aesthetic appeal and symbolic significance:

- *Bada* (base): The lowest portion, consisting of a plinth with decorative mouldings, representing the earthly realm.
- *Gandi* (tower or superstructure): The main body of the *shikhara*, tapering upward in a curvilinear form with intricate carvings of deities, mythical figures and floral motifs—symbolising the cosmic hierarchy.
- *Amalaka*: A large, circular, ribbed stone disc placed atop the *shikhara*, representing the celestial sphere and cosmic completeness.
- *Kalasha*: The finial at the very top, symbolising the nectar of immortality and the cosmic axis connecting heaven and earth.

In addition to the *shikhara*, as seen in figure 1, the elevation includes the *jagamohana* and other halls with stepped pyramidal roofs (*Piha Deula* style), adorned with miniature replicas of the main tower—creating a rhythmic ascent that visually reinforces the temple's spiritual hierarchy.

Temple of Khons: In contrast, the Temple of Khons demonstrates a horizontal progression of elevation. Here, the height decreases progressively towards the sanctuary, emphasising spatial inwardness and seclusion rather than vertical ascension, as seen in figure 2. This descending order symbolises the gradual transition from the grand public realm to the intimate sacred core, reflecting the Egyptian conception of the divine as hidden and internal.

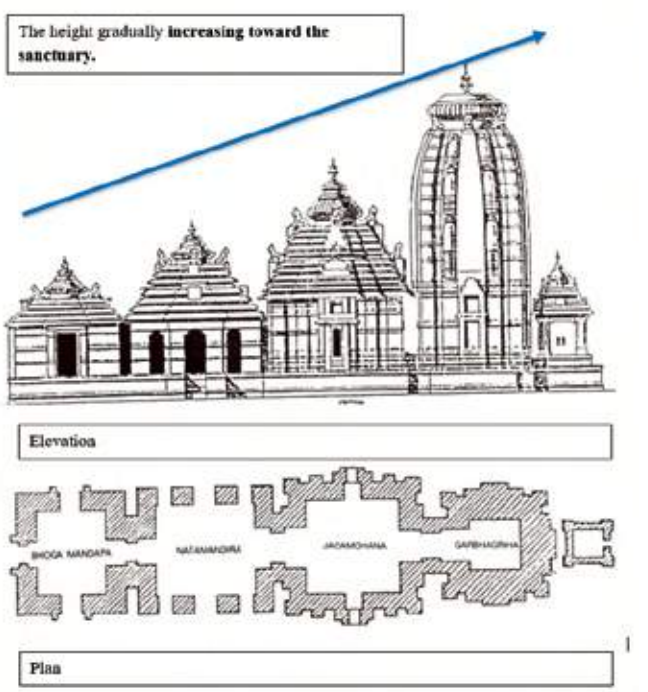

Figure 1: Plan and section of Lingaraja temple, Bhubaneshwar, Odisha India
Source: Author

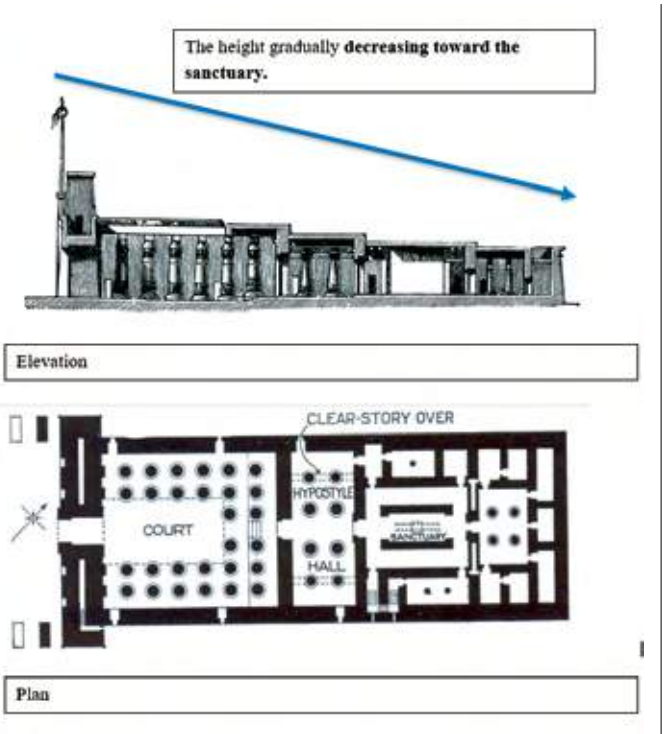

Figure 2: Plan and section of the Temple of Khons in Karnak, Egypt
Source: Author

Key elevation components include:

- Pylon gateway: The tallest and most imposing feature with sloping walls, richly carved with reliefs of pharaohs making offerings to the gods, signifying the grandeur of divine approach.
- Open court columns: Surrounding colonnades of moderate height, creating a sense of openness and light.
- Hypostyle hall columns: Taller, elaborately carved columns with lotus and papyrus capitals that support a heavy stone roof, creating a forest-like sacred enclosure.
- Sanctuary roofline: The lowest and simplest part of the elevation, flat and understated, emphasising sacred exclusivity and divine mystery.

Thus, while the Indian temple's elevation rises dramatically toward the sanctum, symbolising spiritual ascent and divine revelation, the Egyptian temple's height diminishes toward the sanctuary, expressing spiritual inwardness and sacred concealment—two distinct yet profound approaches to representing the journey toward the divine.

In the Lingaraja Temple, the height of the architectural elements increases from the entrance towards the sanctum, symbolising an ascent towards the divine and emphasising the spiritual axis of the temple. In Khons temples, the height of the structure gradually

decreases from the entrance towards the sanctuary, creating a sense of progression into a more confined and sacred space.

3.3.7 Interior Features

Lingaraja Temple: The sanctum (*garbhagriha*) houses a Shiva Linga, fostering intimacy and reverence. Intricate carvings of deities and celestial motifs adorn the walls and ceilings. The interior transitions through smaller, darker spaces, symbolising spiritual enlightenment. The *natamandira*, with polished stone floors and pillars, serves for religious performances.

Temple of Khons: The temple features progressively smaller chambers, culminating in the naos. The hypostyle hall's massive columns bear lotus and papyrus motifs. Reliefs and hieroglyphs narrate rituals and divine connections. Limited openings create a dramatic interplay of light and shadow, enhancing the sacred ambiance. The inner sanctuary enshrines Khonsu, emphasising seclusion and mystery.

3.3.8 Exterior Features

Lingaraja Temple (see figure 3): The exterior of the Lingaraja Temple is adorned with intricate carvings that depict a variety of motifs, including mythological scenes, floral patterns and geometric designs. The outer walls of the temple feature sculptural panels that showcase gods, goddesses, dancers, musicians and celestial beings. These carvings are not merely decorative but also serve as narratives of Hindu mythology, symbolising cosmic harmony and spiritual themes. The temple is surrounded by a high stone boundary wall with a single-entry gateway, further emphasising its sanctity.

Temple of Khons (see figure 4): The exterior of the Temple of Khons is monumental and imposing, with massive stone pylons that form the gateway

Figure 3: View of Lingaraja temple, Bhubaneshwar, Odisha India
Source: http://www.kamit.jp/08_fergusson/xbhu_eng.htm

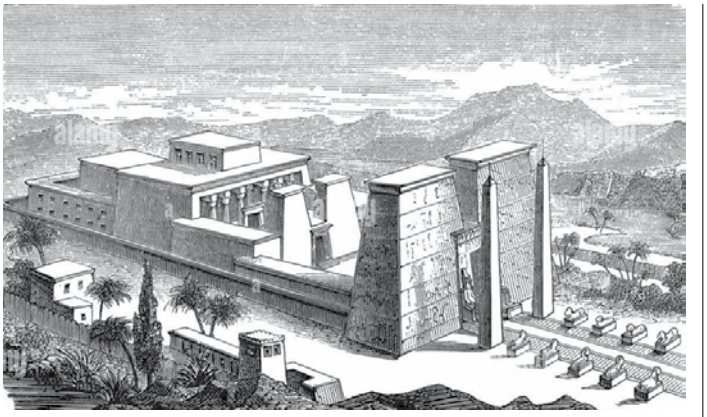

Figure 4: View of the Temple of Khons in Karnak, Egypt
Source: https://www.istockphoto.com

to the temple complex. These pylons are decorated with large-scale relief carvings and hieroglyphic inscriptions, portraying the pharaoh's divine authority and religious ceremonies. The walls are smooth and solid, creating a sense of permanence and grandeur. The temple also features large colonnades and open courtyards, which complement its austere yet powerful design. The exterior design aligns with the Egyptian belief in creating structures that symbolise stability and eternal life.

3.3.9 Religious Significance and Urban impact

Lingaraja Temple: Located in Bhubaneswar, often referred to as the "city of temples," the Lingaraja Temple is a major pilgrimage centre for Shaivites. Its location is deeply rooted in Hindu cosmology, representing an axis mundi connecting the heavens, earth and underworld. The temple not only serves as a spiritual hub but also significantly influenced the development of Bhubaneswar's urban fabric. The city evolved around the temple, with its layout and infrastructure designed to accommodate the influx of pilgrims and support religious activities. Markets, residential areas and public spaces grew in proximity to the temple, shaping Bhubaneswar as a vibrant cultural and economic centre. Even today, the temple remains a living heritage site, hosting daily rituals, festivals and religious events that attract devotees from across the country, preserving its spiritual and cultural relevance while continuing to shape the city's identity.

Temple of Khons: Situated within the Karnak Temple complex in Luxor, the Temple of Khons occupies a significant place in ancient Egyptian religious practices. Its location along the Nile symbolises the connection between the river's life-giving properties and the divine, underscoring its importance in agricultural and spiritual life. The construction of the Karnak complex, including the Temple of Khons,

Aspect	Lingaraja Temple	Temple of Khons
Architectural style	Kalinga architecture	Egyptian monumental architecture
Construction material	Sandstone and chlorite	Sandstone
Primary element	Towering vimana	Massive pylon and hypostyle hall
Ornamentation	Intricate carvings	Reliefs and hieroglyphs
Symbolism	Cosmic and spiritual themes	Royal and cosmic authority
Height progression	Increasing towards shikhara	Decreasing towards sanctuary
Light and shadow	Progressively darker towards sanctum	Progressively darker towards sanctum
Symmetry and axis	Strict symmetry and axial planning	Linear axial plan emphasising rituals
Plan layout	Linear	Linear
Function	Religious and social centre	Ritual and ceremonial space
Living heritage	Active site of worship and festivals	Preserved as an archaeological site

played a pivotal role in the development of Luxor as a religious and administrative hub. The temple's monumental presence influenced the city's urban design, with roads, processional pathways and supporting infrastructure aligning with the temple's axial plan. Luxor's urban fabric was shaped by the temple's ceremonial significance, as the city became a focal point for festivals, rituals and state-sponsored religious activities. While primarily an archaeological site today, the temple's cultural heritage is celebrated as part of Egypt's rich historical legacy, with ongoing preservation efforts ensuring its status as a monument of global significance and a cornerstone of Luxor's identity.

4. Results and Findings (Comparative Analysis)

The study highlights that while the Lingaraja Temple and Temple of Khons belong to distinct cultural contexts, they share commonalities in their symbolic and functional aspects. Both temples serve as conduits for spiritual connection, emphasising cosmic order and divine authority. The Lingaraja Temple's intricate carvings reflect a narrative approach to spirituality, while the Temple of Khons' monumental reliefs emphasise the pharaoh's role as a divine intermediary.

5. Conclusion and Recommendations

Temples are places of worship and are revered as manifestations of the divine, serving as vital links between humanity and the spiritual realm. Their significance extends beyond their original construction, as they continue to hold profound religious, cultural and social importance even today, thousands of years after their creation. These sacred spaces remain active centres of devotion and heritage, embodying timeless traditions and beliefs that inspire millions across generations.

Despite differences in geography, culture and religious practices, the Lingaraja Temple and Temple of Khons share commonalities in their role as canters of spirituality and social life. Their architectural grandeur and symbolic richness reflect the universal human quest for the divine. Understanding these structures not only enhances appreciation of ancient architectural traditions but also underscores the cultural connections between civilisations. By examining their enduring legacy, we recognise the ability of these monumental creations to transcend time and preserve the essence of human spirituality.

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ARTICLE

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Home Gardens of North India

Phenomenological Reflection on Home Garden Systems and Practices

By Ar. Juhi Prasad Singh

1. Introduction

Gardens have represented a relationship between people and nature, through societies and timelines; they transcend culture, space and time. They are the richest forms of expression tying together culture and landscape. The residential garden has been a seminal and symbolic space, over the ages, where we strive to keep nature close to our daily and social life. The appreciation and need to look at the construct of specifically home gardens is the focus of this project proposal.

In this study, we will be focusing on the Himalayan Mountain region and the great plains of North India through 40 houses and gardens. It is important to know the physiography of a region in order to understand architecture, landscape architecture and its physical manifestations. Due to the variety of physiographic features in these areas, the architecture and landscape architecture are diverse. Also, due to the variety of lifestyles of the people, practices and rituals of home gardening involved in these regions are also diverse.

The ideas of residential gardens of various scales have always been an important part of landscape architecture. There are a variety of houses in North Indian regions like the single-family houses in agrarian villages, private apartments of 70s and 80s, mass- housing, bungalows, *Badis*, *Havelis* and many more. While various publications have looked into the typology of houses from the perspective of built spaces, they have not been seen from the perspective of gardens. There understanding, analysis and inference typologies of home gardens in India can be a great learning for modern day residential typologies, especially in urban context.

The house is comprised of the built spaces and the open/ semi open spaces. A simple pursuit of a healthy, comfortable and, in many cases, sustainable living environment can be seen in the physical manifestation of a home garden. Home gardens can:

- Ensure healthy lives and promote well-being for all at all ages
- Promote sustainable agriculture and achieve food security
- Promote peaceful and inclusive societies for sustainable development at a domestic level and eventually at a city level.

Phenomenology

Phenomenology brackets out the third-person, objectivising and explanatory attitude together with its theoretical and metaphysical prejudices, in order to return to a richer and more faithful description of phenomena as experienced. This process involves recovering things in their perspectival character, in their different modes of manifestation and givenness from and to first-person perspectives. The return to the first person does not relapse into subjectivism; rather, it is an attempt to understand different ways in which the world can encounter and co-constitute us as subjects. The phenomenological concept of experience hence encompasses entities encountered not only as natural, but also aesthetic, moral, usable and social objects. Studying its typologies will give us an organised methodology to apply learnings to practice in landscape architecture.

2. Literature Review

Indian architecture is not an object in space; instead, it integrates space within the object, where the built and the un-built become counterpoints to vitalise each other. The alchemy of the two sustains the space and the life within. (Pandya, 2022). There are various dwelling types across India and the book reviews the variations within the diverse climatic, cultural as well as geographic zones of India. The Haveli typology from Delhi, Brahmin residences of Banaras and Buddhist residences of Leh are studied with respect to its spatial configuration and hierarchy of spaces. The author elaborated the geographic and climatic conditions of these places and the manner in which the courtyard is manifested. My interest lay in the environmental management and socio-cultural milieu offered by these open spaces in the houses. Courtyards also serve as home gardens in many places and are an expression of cultural needs.

"A true telling of garden histories of the Indian subcontinent will take decades of research, much of which has not been initiated as yet. From a typological perspective, we know little of the home gardens across the vast ecological variety found in the country or for example, the way that parks expressed themselves in our towns and cities, or how were gardens made, and who made them; the list of what we do not know or at best known fleetingly is immense." (Foundation, 2017)

"Paradise is a garden; not a mansion, or a palace, but a garden. And this is amplified in most of the religions." The book strongly advocates the appreciation and the need for relooking at the idea of gardens, which they define as a space that had a circumscribed territory, its limits notional or clearly marked, but at times discernible and finite, within which would exist a certain prescribed or evolved ritual that allowed many ideas of nature to be experienced in an articulated manner. It talks about etymology of certain typologies in India like *Paridaya, Paliz, Bustan, Golestan, Bag, Baga, Aangan, Upvan, Badi, Goli, Weda* and many more.

Role of traditional home garden systems in Northeast India by Sumpam Tangjang and Ayyanadar Arunachalam articulates extensively about traditional home gardens as part of rural survival over generations with a complex vegetational structure with multiple functions. It looks into traditional beliefs and day to day requirements of farming communities of *Nyishis, Apatanis* and *Kalitas*. These home gardens are great examples of preservation and management of traditional values, faith and indigenous knowledge system. (Arunachalam)

Architects have been looking at garden typologies from the perspective of spatial organisation and form; but other fields like anthropology looks into the typologies of home gardens with the perspective of phenomenology. It is essential for architects to articulate gardens with the aspect of knowledge systems, beliefs and aspirations.

"The built world is conceived here in a way that is not limited to its formal representation as an objective order of things, but includes a broader sense of the built as a space and time fashioned in accordance with a living understanding of what it is for human beings to exist in the world." The paper by James Jodd, "Introduction" in Phenomenology, Architecture, and the Built World.

There is a need for a phenomenological reflection on home gardens and typologies. It cannot be derived merely with the perspective of spatial configurations. India is rich with its own open space typologies. Traditional knowledge systems play a significant role in garden making and its manifestations.

3. Methodology

The significance of open, semi open and unbuilt spaces at a residential level has been discussed and proven by multiple scholars. This project studies these home gardens from two additional perspectives - phenomenological and cultural representative.

The methodology of the study overall will look into 5 stages of work

1. **Capture** and **understand** the home gardens from the perspective of phenomenology after basic physical mapping (live cases and surveys are conducted for approximately 40 houses)
2. **Understand** the home gardens from the perspective of phenomenology (intentionality method)
3. **Derive** the typologies of the home gardens by clustering
4. **Communicate** the learning in methods understandable to a variety of audience
5. **Suggest** guidelines for incorporating home gardens typologies in current housing practice

CAPTURE: PHYSICAL MAPPING and PHENOMENOLOGY SURVEY

Considering home gardens in conjunction with architecture of these houses, the mapping will cover the aspects such as:

1. Immediate Setting of houses – Built and natural
2. Philosophy and style of design of home garden
3. Purpose and program
4. Material palette: civil work and plant material

Documentation of 40 houses has been done of houses in various geographical context of North India through surveys and photo documentation by my personal visits.

The regions chosen are as follows:

1. Plains of North: Lucknow, Agra, Banaras (Uttar Pradesh), Delhi
2. Himalayan region of plains: Una, Santokhgarh, Tahliwal (Himachal Pradesh), Ludhiana (Punjab)
3. Himalayan region of hills: Yusra's house (Jammu and Kashmir), Hamirpur (Himachal Pradesh)

Some of the documented home gardens are mentioned and illustrated in the paper to infer the derived typologies.

UNDERSTAND: CLASSIFICATION

Phenomenological approach will be a qualitative understanding of the home gardens. It will

concentrate on the human experience, and like Douglas Adams states "Human beings, who are almost unique in having the ability to learn from the experience of others, are also remarkable for their apparent disinclination to do so." (Image 1)

DERIVE, COMMUNICATE AND IMPLEMENT

Visual research

I believe much can be learnt in considering the various stakeholders of architecture. Since these home gardens concern the society, it is important to develop visual methods to extract information to give back the study to society. This project thus proposes to be more of visual research. This stage will look into developing new methods of communication and drawings to convey the understandings of home gardens. The derived typologies will help suggest guidelines where home gardens can more often become part of housing practices today.

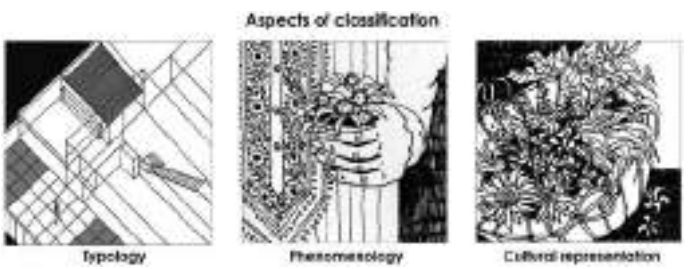

Figure1: Aspects of classification
Source : Within the Gardens We Walk by LEAF Publication

Method of data collection

For about 2 years, I have been conducting surveys and collected narratives of various home gardens in India. As a part of my illustration works, I had started an initiative called 'Indian Home Gardens' and set up a system of people sharing their gardens and their gardening narratives in return of customised illustrations of their home. I got a good response and I was able to document about 40 houses across North India. This method of public participation, I feel, is necessary to understand space and design of home gardens, as many others play roles in their manifestation. (Image 2, 3) (Image 4)

Figure 2 : Narrative drawing view
Source: Within the Gardens We Walk by LEAF Publication

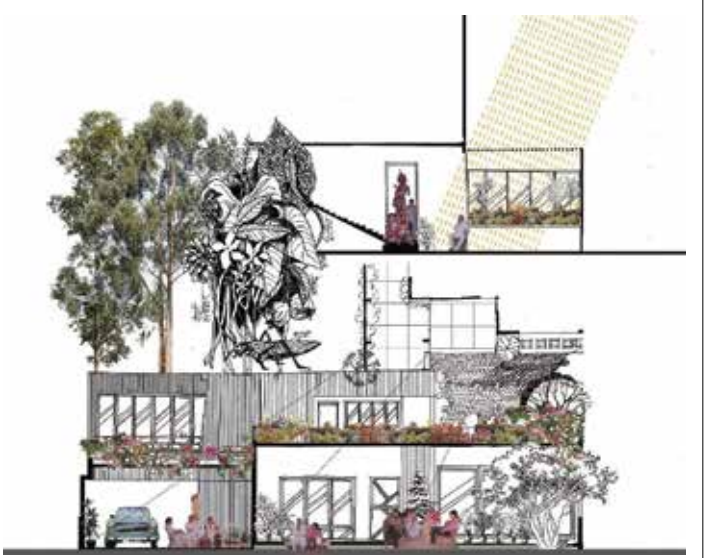

Figure 3 L Narrative drawing section
Source: Within the Gardens We Walk by LEAF Publication

Figure 4 : House in Una
Source: Author

4. Data Analysis and Findings

Documented house 1: (Example of the sample survey)

a. Owner: Mr. S.K.L Srivastava

b. Location: Lucknow, Uttar Pradesh

Spatial organisation: The garden is distributed in *Baramda* (Porch and gallery), *Bagicha* (The front yard garden), *Chhota chhat* and *bada chhat* (The Terrace Garden), *Aangan* (Courtyard). Each division had specific character of softscape and hardscape and also served for different purposes. A winter garden and a summer garden is a characteristic.

C. Plant palette: Collection of winter flowering plants such as *chrysanthemum* and *dahlias***.** Other plants of the winter garden are *Alyssum, Antirrhinum, Aster, Calendula, Dianthus, pansy, carnation, lilies, verbena, sweet pea, cosmos, zinnia, Impatiens, Nasturtium, tuberose, rose, Salvia, petunia, poppy, daisy and many more.*

Productive landscape: Chilies, tomatoes, capsicum, brinjal, spinach, herbs etc.

Tropical and shade loving plants such as Coleus, Canna, Begonias, Monstera, Maranta, Aglaonema, Alocasia, Anthurium, Alpinia, Asparagus, Caladium, Calathea, Cyperus, Dieffenbachia, Dracaena, Ficus, Homalomena, Ophiopogon, Oxalis, Pelargonium, Peperomia, Philodendron, Pilea, Sansevieria, Spathiphyllum, Nephrolepi.

*Fruit and flowering trees: Tabernaemontana, Guava, Mango, Lemon, Pomegranate Flowering creepers: Bougainvillea***,** *Combretum species*

e. Idea of memories associated: Background of the owner with agriculture in his family, trying to collect all memories of his travels in other places of India in the form of a garden

f. Idea of Habit/ ritual of gardening: Ritual of nurturing plant**s**, tilling, transferring saplings, watering plants, cutting, trimming had become part of lifestyle and daily routine

g. Idea of belief system: Owner had the rational belief of plants surrounding his family participating in habits of planting will lead to their wellbeing

h. Idea of traditional ecological knowledge: No specific traditional knowledge of planting

i. Idea of religious belief: Flowers used for worship on daily basis were grown in the garden and also specific plants associated with Hinduism beliefs were grown in the garden.

j. Idea of aspiration: To be able to have a huge collection of plants of diverse variety especially the ones not available easily

k. Idea of sacredness: Particular about the quality of maintenance of plants

l. Idea of health and well-being: Including gardening as daily habit. Suffered from diabetes and blood pressure problems and gardening provided peaceful time to manage stress. Productive landscape and home-grown vegetables/herbs in the garden provided healthy option for food.

m. Idea of emotions: Some plants associated with specific recipes of the family were grown. Favourite flowers and fruits of all family members were grown in the garden.

5. Results and Discussion

The survey is conducted across North India. Out of 40 case studies, 15 of the houses are chosen from the 3 regions - Plains of North, Himalayan region of plains and Himalayan region of hills and mountains.

The phenomenological aspect of the houses has been studied in the method of *intentionality.*

The rating of the factors considered are on the basis of survey of the owners and family members of the houses. The rating is High, Medium and Low. The tables below show results of the dominating phenomenological factors of the home gardens. The driving forces of the garden making process and manifestation give us new ways of looking at gardens which are not limited to spatial organisation and visual composition. (Table1, Table 2, Table 3)

From the survey and the results of the study, specific phenomenological aspects / determinants can be derived. With the help of these determinants, we can cluster gardens as "Gardens of rituals and habits" or "Garden of well-being" or "Garden of aspiration" etc. For instance, the "*Beda"* which is a courtyard typology in many parts of Himachal Pradesh and Punjab can be related to dominant intentions of productivity and well-being /health and the *"Bagicha"* and *"Aangan"* of Banaras are dominant to the intention of beliefs and religion.

It is important to look at phenomenology as the human intention as to what really makes a garden. With documenting more home gardens, we can learn about local typologies of gardens in India. The typologies of gardens are based on the Western philosophy of nature and design - styles, visual composition, layout or planning elements. Beyond these aspects, there are factors that make a garden - a living, dynamic design.

Table 1 : Plains of North
Source: Author

House No.	**1**	**2**	**3**	**4**	**5**
Place	Lucknow	Agra	Kannauj	Banaras	Delhi
Idea of associated memory	High	High	Medium	Medium	Medium
Idea of Habit/ ritual of gardening	High	High	Medium	Medium	High
Idea of belief system	High	Medium	Medium	High	Medium
Idea of traditional ecological knowledge	Medium	Medium	Medium	Medium	Low
Idea of religious belief	Medium	Medium	High	High	Low
Idea of aspiration	High	Medium	Medium	Medium	High
Idea of sacredness	Medium	Medium	Medium	High	Medium
Idea of health and well being	High	High	Medium	High	High

Table 2 : Himalayan region of Plains
Source: Author

House No.	**6**	**7**	**8**	**9**	**10**
Place	Una	Tahliwal	Santokhgarh	Jalandhar	Ludhiana
Idea of associated memory	Medium	High	High	Medium	Medium
Idea of Habit/ ritual o gardening	High	High	High	High	High
Idea of belief system	Medium	High	Medium	Low	Low
Idea of traditional ecological knowledge	Medium	High	Medium	High	Medium
Idea of religious belief	Medium	Medium	Medium	Low	Low
Idea of aspiration	Low	Medium	Medium	High	High
Idea of sacredness	Medium	High	Medium	Medium	Medium
Idea of health and well being	Medium	High	High	High	High

Table 3 : Himalayan region of Hills and Mountains
Source: Author

House No.	**11**	**12**	**13**	**14**	**15**
Place	Nainital	Brahmodi	Peerbagh	Shrinagar	Leh
Idea of associated memory	High	Medium	High	High	High
Idea of Habit/ ritual of gardening	High	Medium	High	High	Medium
Idea of belief system	Medium	Medium	Medium	Medium	Medium
Idea of traditional ecologica knowledge	High	High	Medium	Medium	High
Idea of religious belief	Low	High	Medium	Low	Medium
Idea of aspiration	High	Medium	Medium	High	Medium
Idea of sacredness	High	High	Medium	Medium	High
Idea of health and well being	High	High	High	High	High

6. Conclusions and Recommendations

In conclusion, the typologies of home gardens can be categorised keeping in consideration intentionality in the field of Phenomenology. Intentionality is the most effective method to analyse home garden and can be used in interpreting architecture. Along with method of spatial organisation typology, it is necessary to study home gardens through a qualitative lens.

Further to this study, there can be more types of gardens documented and also in more regions of India. A comprehensive comparative analysis of home gardens can lead to typology identification and can be applied to contemporary landscape design practice.

All Images Courtesy: Author

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Urban Heat Island Amplification by Air-Conditioning

A Narrative-Based Assessment and Policy Perspective

By Aravinth A.

Introduction

Rapid urbanisation in Indian cities, particularly in warm and semi-arid regions such as Coimbatore, has significantly intensified the Urban Heat Island (UHI) effect. One of the major contributors to this warming trend is the widespread dependence on mechanical air-conditioning. While air-conditioning offers immediate thermal comfort, the heat expelled outdoors contributes directly to rising ambient temperatures. This study reinterprets earlier findings into a narrative, non-numerical format, emphasising how heat discharged from thousands of air-conditioning units creates localised hotspots and reinforces a cycle of rising temperatures and increasing cooling demand. Field observations, thermal behaviour patterns and citizen responses form the core of this assessment. This study further proposes integrated policy and design interventions that align with national sustainability objectives, including cooling licences, green-space compensation and passive cooling strategies. It highlights the urgent need to consider urban cooling as a multi-scalar environmental challenge.

As Indian cities continue to expand, the UHI effect has emerged as a key environmental challenge. The combination of extensive built-up surfaces, a significant decline in vegetation and increasing reliance on mechanical air-conditioning has collectively contributed to elevated ambient temperatures in dense urban cores. Air-conditioning systems operate by extracting heat from indoor spaces and releasing it outdoors, which cools indoor environments but warms the surrounding microclimate. In densely built regions filled with commercial shops, apartment complexes and institutional buildings, hundreds of units may operate simultaneously, creating concentrated pockets of warm air. Figure 1 shows how cities have higher temperatures than suburban areas due to urban heat island effect.

This process not only elevates outdoor temperatures but also influences human behaviour. As heat levels rise in the surroundings, people tend to use air-conditioners more frequently and for longer durations. This increased dependence on cooling systems results in additional heat expelled into

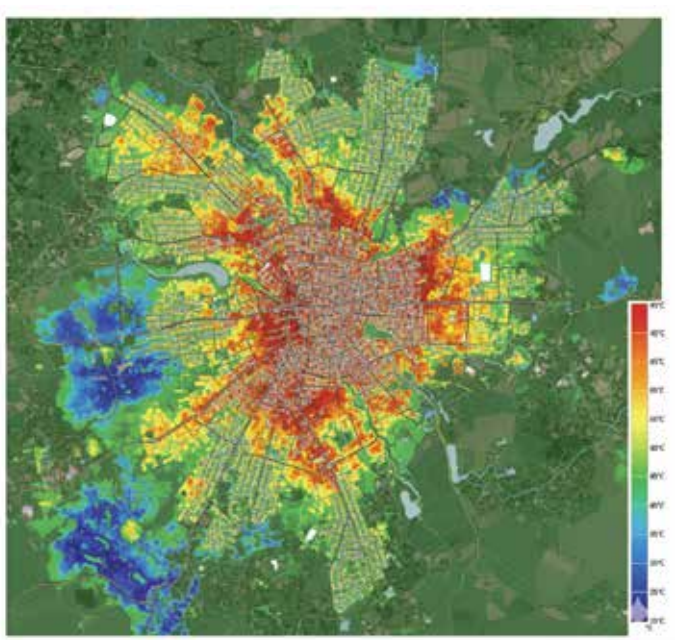

Figure 1: Urban Heat Island thermal map of Coimbatore, India
Source: Author

the urban environment, reinforcing the warming trend. This self-amplifying cycle poses significant implications for energy infrastructure, public health, architectural design and climate resilience.

Methodology

In this narrative methodology, the analysis avoids mathematical formulae and instead focuses on qualitative assessment, field-based observations, stakeholder interactions and literature insights. Observations from Coimbatore's central zones show significant thermal differences between streets dominated by air-conditioning exhaust and areas with natural shading and vegetation. Streets lined with restaurants, retail outlets and office buildings exhibited a persistent build-up of warm air. Similarly, balconies and narrow service lanes filled with outdoor condenser units created warm corridors that felt uncomfortable even during the early evening.

Interviews with residents and shopkeepers provided valuable insights into behavioural changes linked to rising temperatures. Many expressed that their cooling needs have increased steadily over the past several years, with some reporting seasonal use of air-conditioning in the past. This shift in behaviour indicates that increasing urban heat driven by mechanical systems is indirectly influencing the energy demand patterns of households and businesses. The presence of heat-intensive zones was further verified through visual documentation and comparisons with shaded streets, which consistently felt cooler. If everyone starts using air conditioners, figure 2 shows a visualisation of how the terrace would look like in an urban area.

Figure 2: Visualisation of outdoor AC condenser units in a dense urban setting
Source: AI generated image

Results and Discussion

Field observations across various locations revealed that air discharged from outdoor AC units creates concentrated warm zones. This was particularly noticeable in confined spaces where air movement was limited, causing warm air to linger and accumulate. Commercial streets, urban canyons and building service alleys showed distinctly warmer conditions than open landscapes or tree-lined residential neighbourhoods. The contrast between areas influenced by AC exhaust and spaces with natural shading highlights the direct relationship between cooling systems and microclimate conditions.

A consistent observation was the persistence of elevated temperatures even after sunset. Materials such as concrete, stone and asphalt absorb heat throughout the day and release it gradually after dark. When AC units continue to expel warm air during the evening, these materials retain the additional thermal load, contributing to warmer nights. This behaviour aligns with well-established global findings on UHI dynamics, especially in cities with high cooling dependency. Figure 3 shows how the use of AC impacts the urban area.

Another critical insight is the identification of a reinforcing thermal feedback loop. Rising temperatures caused by expelled heat trigger higher indoor cooling demand. This in turn increases the

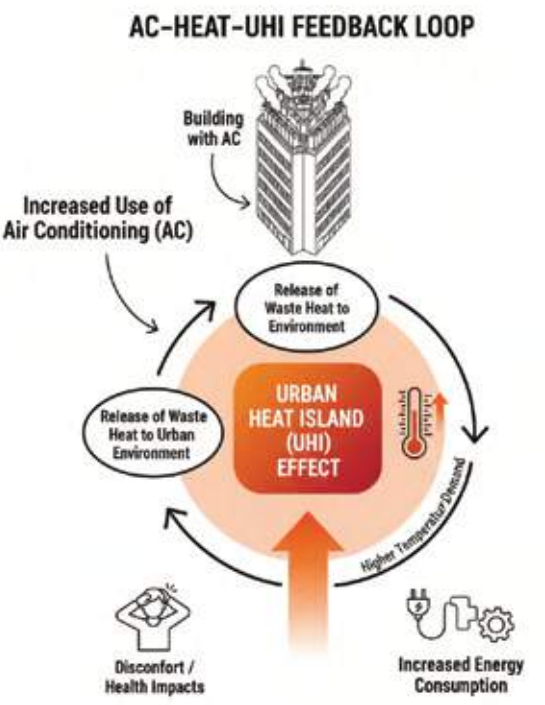

Figure 3: Conceptual diagram of AC–Heat–UHI feedback loop
Source: AI generated image

heat released to the outdoors, further warming the surroundings. Over time, the cycle becomes self-perpetuating, contributing to a rise in the overall baseline temperature of the city. This cycle not only stresses electricity infrastructure but also increases carbon emissions, thereby linking microclimate warming to broader climate change concerns.

Policy Recommendations

To address the intensifying urban warming tied to mechanical cooling, a multi-layered policy strategy is essential. A Cooling Licence Framework can regulate how much heat a development is permitted to discharge outdoors. New large-scale developments may be required to incorporate cooling audits, heat-dissipation strategies or compensatory environmental measures.

A Green-Space Compensation Ratio (GSCR) can ensure that developments contributing significantly to cooling demand provide adequate greenery to naturally offset heat emissions. Measures such as green roofs, shaded courtyards, extensive tree planting and vertical gardens can improve urban cooling at a local scale.

Differential electricity tariffs, especially during peak hours, can encourage more responsible cooling behaviour, reducing undue pressure on electricity grids. District cooling networks offer another promising solution, centralising cooling and reducing the scatter of heat emissions. Finally, passive cooling strategies such as natural ventilation, shading devices, high-reflectance roofs and architectural orientation must be incorporated into building design guidelines to reduce dependence on mechanical cooling.

Conclusion

This expanded narrative assessment reinforces the understanding that mechanical air-conditioning significantly contributes to urban warming by releasing heat continuously into the outdoor environment. The observations from Coimbatore highlight the need to consider cooling as an environmental issue that affects entire neighbourhoods and cities, rather than merely a building-level convenience. By implementing regulatory frameworks, expanding green infrastructure and prioritising passive design solutions, Indian cities can work towards more climate-resilient and thermally comfortable environments. The findings stress the importance of collaborative action among architects, planners, policymakers and communities in mitigating the Urban Heat Island effect and promoting sustainable cooling futures.

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ARTICLE

The Facade Story in the Emergence of Dubai as the International City

By Ar. Dhiraj Salhotra, Dr. Niraj Shah

Introduction

The story of Dubai is a great journey of transformation starting from 1990s as a small trading port city, that relied on pearl diving, fishing and trade, to its emergence, as the city with diversified economy, investment in infrastructure, attracting tourism and witnessing the earliest rise of the real estate development by 2000. The era that followed post 2000 has witnessed Dubai emerge as the global hub of business-friendly environment, marked by greater rise in tourism, logistics and driven by its world class infrastructure.

Largely the credit of this development is to the visionary leadership particularly of Sheik Rashid bin Saeed Al Maktoum and Sheikh Mohammed bin Rashid Al Maktoum, that played a crucial role in shaping the emergence of the city on their international map. The strategic investments on infrastructure projects including airports, seaports and efficient transport networks lubricated this transformation. The attractive international trade policies, continues to draw foreign investments, such as tax-free zones. The streamlined regulations with stringent implementation, as well as conducive environment for fair and competitive business added to its attractiveness.

As a result, Dubai today presents a diversified economy and continues to maintain its focus on tourism, real estate and its world class transportation system. It continues to attract businesses and is a testament of powerful visionary leadership, strategic planning and futuristic developments.

Importance of architecture and facades in shaping the city's identity

In this immaculate journey of transformation, the emerging architecture and the play of facades had a significant impact on creating the identity of the city as an iconic international venue with its own unique identity. The collage of emerging skyline through series of transformations, though happened in stages ensured that the identity of the city and the overall character maintained the innate culture as well as the value systems of the place (genius loci). The urban aesthetics and the corresponding language of architecture enhanced the visual appeal, presenting it, as the city of dreams and futuristic living, much as the fabled cities of Arabian nights.

Urban Character and Architectural features on residential facades at the Jumeirah Avenue.

The innate character of facades continued the historic legacy and curated as a response to the cultural heritage generated an architectural order, that was indeed a pioneering step towards critical regionalism in architecture. This unique Emirati style, that was rooted in the historic past in terms of aesthetic order, the emerging iconic buildings and facades offered the city the symbolic quotient that truly represented its inimitably unique values and aspirations. The building facades though belonged to the international style allowed for the imbued sense of place and continued to foster a sense of community and belonging. The features of urban design and planning must be credited for their locale adaptations of culture harmoniously with the most contemporary insertions. Impactful and locally embossed/ embellished facades made attractive architectural fabric that added real estate value, while provided the city with its economic vitality. The blending of traditional techniques and methods while the buildings soared to mark their global presence offered an ideal combination of sustainability and functionality with use of energy efficient facade systems and sustainable design techniques.

Dubai is a city that can claim more than one or few, if not many, as the iconic landmarks that creates the image of the city such as the Burj Khalifa, the Frame, Museum of the Future and more. They all are engineering marvels and an outcome of amazing architectural conception that brings ambitions to design reality.

The Facade: A Reflection of Dubai's Cultural Heritage

Dubai's facades are a vibrant reflection of the city's rich cultural heritage, blending traditional and modern elements. The city's architectural landscape showcases a unique fusion of Islamic, Arabic, and contemporary influences, creating a distinct visual identity. The overall Architectural fabric of Dubai is often found enlivened with the traditional elements of mashrabiya (that has inspired shading devices, arches) and geometric patterns, arches, geometric patterns that reflects the essence of Dubai's Islamic and Arabic heritage. The facades here stand as testimonial evidence of the canvas for cultural expression and in many ways as a showcase of city values, history and identity. The blend of contemporary facades that are in one and many ways reincarnation of the traditional elements in modern materials and vocabulary have created a challenging yet unique tapestry of unmatched innovative aesthetics that cannot be complimented to a single source but as a comprehensive city unison. The facades of Dubai state the complete story of its past, present and future, providing a cursory glimpse in to the transformation from a trading port to global hub.

Contemporary Residential apartments with adaptive features of traditional elements.

Features particularly at street view level depicting stepped ornamentation as part of architectural featuring on facades.

The Dubai City holds in itself gems from the past such as the Al Fahidi, Um Al Sheif, Al Wasl are examples of historical neighborhood, the sensitive restoration of the historic district features the traditional Emirati Architecture, providing a peek in to the past. historic district showcases traditional Emirati architecture and provides a glimpse into the city's past.

The Jumeriah Mosque and the Islamic Affairs and Charitable Activities Department building are perfect examples of interpretation that blends Arabic and Islamic influences. The buildings like Burj Khalifa, Dubai Frame and the Museum of the Future incorporate traditional elements in a contemporary language that depicts the cultural heritage and innovative spirit of Dubai. These buildings have fused

Traditional shaded Streets of conserved Al Hamriya district.

the features of mashrabiya inspired designs, into their modern facades. By blending traditional and modern elements, Dubai's architecture reflects the city's rich cultural heritage while embracing innovation and progress. It is this cross historic reference that plays a significant role in shaping the identity of the city creating a unique sense of place by making them as an integral part of the city's architectural landscape.

Traditional Emirati architecture and its influence on modern facades

Traditional Emirati architecture is characterised by the use of Geometric patterns, arches and domes that reflect Islamic features. Wind towers (bajreels) are used for natural ventilation and cooling. The feature of Mashrabiya that comprises of the lattice work windows provides for shade (light diffusion and cut down the dust), privacy and ventilation. The promotion and use of local materials such as coral stone, gypsum and palm wood is also part of the vernacular architecture. The harsh climate is responded with the use of thick walls, small windows and shaded courtyards. The facades are also varied to create a tactile surface that offers a self shade to certain extent subduing the harsh direct sunlight.

The modern buildings of Dubai have shown great improvisation in utilising the local features like the mashrabiya and also promoted the use of local materials such as limestone or sandstone for their tactile and visual and thermal qualities that connects with the regional heritage. The appropriate use of Shading devices, promotion and use of natural ventilation through shaded courtyards that allow the buildings to breathe energy efficient systems inspired from the traditional Emirati Architecture are a great way to respond climatically while remaining regionally and contextually relevant.

Distinct Feature of blending colours from the traditional landscape in to contemporary facade of trade centre.

Modern Facade Trends in Dubai

Even as the features and facades are imbued in the spirit of the place and perform in reflection of the genius loci, the use of innovative materials such as glass, solar panels, composite materials that are applied in a manner that are revolutionising the facade design of Dubai. The perfect blend of aesthetics, sustainability and functionality is the hall mark of the projects built.

The buildings in Dubai showcase the epitome of energy efficiency through use of high-performance materials such as glass and solar panels that help reduce energy consumption while minimising heat

Embellishment on Dubai Frame as geometric pattern as an adaptation of Islamic feature.

The Intricate pattern of Jali work as a part of facade ornamentation.

transfer while generating renewable energy. With the use of sustainable and locally recycled metal panels, plastics, composite panels and green roofs they set a trend in reducing the overall carbon footprints associated with manufacturing and transportation. The glorious image of high aesthetic international facades with the use of glass, composite materials and other innovative techniques offer the versatility that sets an example for contemporary architectural designs.

The use of Building integrated photovoltaic's that seamlessly integrate the solar panels in to the complex building facades contribute in generating the renewable energy while maintaining the architectural integrity of the building. The use of high-performance glass with enhanced insulation and energy efficiency reduces the overall energy consumption while providing day lighting suitable for office buildings, residential complexes and commercial spaces. The effective use of composite materials, offers durability, weather resistance and aesthetic versatility, making them ideal for various building types and are effectively explored in the facades of projects in Dubai.

Dubai's Architectural Diversity

As an outcome Architecture of Dubai is a vibrant reflection of its cultural evolution, economic growth and spirit to innovate. While on one side is the Traditional Influences: Buildings like the Jumeirah

The Skylight in the Burjaman Mall indicating the tectonic facade development that uses geometric patterns as structural detail.

Towers at the Business Bay that combine the use of screen and glass on the facades creating unique tapestry of design.

Mosque and Al Fahidi, Historical Neighbourhood showcase traditional Arabic and Islamic architectural styles, featuring elements like arches, domes, and intricate geometric patterns, on the other is its Contemporary Minimalism. The buildings at the Dubai Marina and Downtown Dubai feature sleek, minimalist designs, often incorporating glass, steel, and other modern materials. It also showcases the - Futuristic Designs as witnessed in the iconic structures like the Burj Khalifa, Museum of the Future, and Dubai Frame that push the boundaries of architectural innovation, incorporating cutting-edge technology and sustainable design principles. Some of the path breaking projects also include Belmore Residences inspired by the elegance of flamingos.

The real heroes of the development:

Dubai's iconic facades and architecture are a testament to the city's vision and expertise. Behind these marvels is a skilled workforce that has played a crucial role in shaping the built environment of the city. Dubai has been a testing ground and a haven for the professionals from the field of Design and Planning. The contribution by Architects, Engineers, and Designers have brought the most innovative

Museum of the Future sits as a jewel in the cityscape adorned with Arabesque inscriptions.

concepts and ideas that have been hallmark of excellence with the expertise to design and planning the facades for the buildings and facades in Dubai. The army of skilled labourers, including masons, carpenters, glass installation experts have worked tirelessly and contributed in bringing these buildings to life. The contracting teams that left the comfort of their homelands and took the challenging assignments of building the mammoth projects on distant lands with very little knowledge and experience of working in the challenging terrain, climate and resources have made a significant contribution in shaping them. The amazing craftsmanship and detailing that we witness are a contribution of skilled craftsmen and artisans that have added intricate details and immaculate

finishes. These founding teams of experts are now global consultants and contributing significantly in transforming the developing cities today.

Conclusion

Dubai's facades are more than just architectural elements; they are a reflection of the city's rich cultural heritage, innovative spirit, and ambitious vision. By blending traditional and modern elements, Dubai's buildings tell a story of a city that honors its past while embracing the future. As iconic landmarks continue to shape the city's skyline, they not only attract visitors but also symbolise Dubai's identity as a global hub of innovation, diversity, and progress. Through its facades, Dubai's architecture stands as a testament to the city's enduring legacy and its commitment to pushing the boundaries of design and sustainability. As we view upon the facades and amazing skyline of the City of Dubai, as they always continue to inspire an awe, the emergence of the new world order of things in terms of city design and development shall be its hall mark achievement.

All images courtesy: Authors

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ARTICLE

When War Strikes

Architecture Falls First, Lives Follow

By Ar. Sarbjit Singh Bahga

When war strikes, architecture—buildings, homes, and cultural landmarks—falls first before human lives become the grim focus. This relentless destruction tears societies apart, turning vibrant cities into desolate wastelands. The loss of architecture is not just physical; it is a symbolic assault, erasing a society's heritage. As ruins accumulate, human lives follow as the next casualty, with civilians killed, displaced, or traumatised amid the wreckage. These scarred landscapes and populations leave building remnants as unintended archives of trauma, resilience, and memory.

Architecture as the first casualty

Architecture often falls first in War, whether deliberately targeted or caught in the crossfire. Iconic landmarks, religious sites, and civilian homes are bombed, shelled, or abandoned, transforming vibrant cities into desolate wastelands. This destruction serves a dual purpose: it cripples physical infrastructure and strikes at a society's cultural core. Targeting architecture is often strategic, aimed at dismantling a community's identity and morale.

Recent conflicts illustrate this pattern, though their impacts vary. In the Iran-Israel-USA conflict, attacks focused on military and nuclear sites, sparing most culturally significant buildings. Conversely, the Ukraine-Russia war has wrought widespread devastation on cultural and historical sites, reflecting the brutality of prolonged conflict. The Mariupol Drama Theatre, a cultural hub, was bombed in March 2022 despite being marked as a civilian shelter, killing hundreds, including children, and symbolising the War's cruelty. In Kharkiv, Freedom Square's elegant 20th-century buildings were heavily damaged by missile strikes, targeting not just infrastructure but Ukrainian identity itself.

The Gulf War 1991 left Kuwait City and Baghdad with significant architectural losses. In Kuwait,

Figure 1: Hiroshima Peace Memorial - the sole surviving & damaged building in 1945 atomic bombing
Source: Oilstreet, Wikipedia

Figure 2: Damaged buildings in Israel in Iran-Israel War (2025)
Source: Ronen Zvulun

extensive looting and destruction damaged cultural and economic structures, with the Kuwait Towers bearing visible scars. In Baghdad, cultural treasures like the Baghdad National Museum, government hubs like the Central Bank, and civilian shelters like Al-Amiriya were devastated, disrupting Iraq's cultural, economic, and administrative fabric. The Al-Amiriya bombing remains a tragic emblem of civilian suffering.

In the Syrian Civil War, Aleppo's ancient heritage suffered catastrophic losses. The 8th-century Great Mosque of Aleppo, a UNESCO World Heritage Site, was severely damaged between 2012 and 2016, and its iconic minaret was reduced to rubble in 2013. Aleppo's historic souks, once vibrant marketplaces, were gutted by fire and shelling, stripping the city of its cultural heartbeat. In Yemen, the Old City of Sanaa, another UNESCO site, has been ravaged by airstrikes and neglect, damaging its unique mud-brick towers and intricate mosques, underscoring how War spares neither sacred nor mundane.

From rubble to human suffering

As architecture crumbles, human lives become the next casualty. Destroyed homes, schools, and hospitals force mass displacement, leaving millions homeless and vulnerable. Civilians die in bombings, endure sieges, or flee with the trauma of loss. Collapsing infrastructure exacerbates suffering, cutting access to shelter, food, and medical care. Families from vibrant neighbourhoods end up in makeshift camps, their homes reduced to debris, compounding the psychological weight of displacement and community erasure.

In the Gaza Strip, repeated conflicts, including escalations in 2023, have levelled thousands of homes, schools, and medical facilities. The densely populated Al-Shati refugee camp saw entire neighbourhoods destroyed, leaving families without shelter and worsening an already dire humanitarian crisis.

Ruins as archives of trauma and resilience

War ruins are more than debris; they are unintended archives of trauma, resilience, and memory. Damaged buildings stand as stark reminders of loss, both in stone and lives, while serving as focal points for rebuilding and remembrance. In Aleppo, the partially restored Great Mosque symbolises resilience, with efforts to rebuild its minaret and souks reflecting a determination to reclaim heritage. In Ukraine, plans to restore Mariupol's Drama Theatre spark debates about honouring victims while preserving the site's tragic memory.

Figure 3: Damaged Freedom Square in Kharkiv, Ukraine (2022).
Source: Jérôme Sessini.

Figure 4: Damaged Mariupol Drama Theatre, Ukraine (2022).
Source: ui.org.ua.

Figure 5: Damaged Great Mosque of Aleppo, Syria- a UNESCO World Heritage Site (2012-16).
Source: thenationalnews.com

Some ruins remain untouched as memorials. Japan's Hiroshima Peace Memorial, preserved after the 1945 atomic bombing, stands as a global call for peace. In Bosnia, Sarajevo's scarred buildings from the 1992–1995 siege endure as reminders of conflict, some left unrestored to preserve their historical weight.

Figure 6: Damaged building in Mosul (2018).
Source: Khalid Al-Mousily.

Figure 7: Damaged Church building in Bohorodychne, Ukraine (2022).
Source: Volodymyr Kutsenk

Figure 8: Damaged City of Mosul, Iraq (2017).
Source: thenationalnews.com.

Figure 9: Damaged Al-Askari Mosque in Samarra, Iraq (2006).
Source: Khalid Mohammed.

Figure 10: Damaged Old City of Sanaa, Yemen -a UNESCO World Heritage Site (2015).
Source: carnegieendowment.org

Rebuilding and moving forward

The loss of architecture and human lives reshapes societies long after the fighting ceases. Rebuilding is physical and emotional, as communities strive to restore homes and identity. However, the focus often shifts from beauty to survival, with emergency shelters replacing grand landmarks. In post-conflict Iraq, Mosul's reconstruction after 2017 prioritised basic infrastructure, though the Al-Nuri Mosque's ongoing restoration signals hope. As of 2025, Ukraine's rebuilding costs are estimated to exceed $500 billion, straining a nation still at War.

In War, architecture falls first, its destruction heralding the unravelling of stability and identity. The loss of buildings—historic landmarks or humble homes—strikes communities' hearts, erasing their past and destabilising their present. Human lives follow, with civilians enduring displacement, death, and trauma. The ruins left behind stand as archives of suffering and resilience, guiding efforts to rebuild

structures and the human spirit. War's scars, etched in stone and flesh, endure as testaments to conflict's cost and the enduring hope for renewal. As the Indian poet Sahir Ludhianvi wrote:

"Jang to khud hi ek masla hai, Jang kya maslon ka hal degi?"

("War itself is the problem, what solution can it provide?")

If people at the helm of affairs understood this couplet, this earth would be a peaceful place to live.

Sarbjit Singh Bahga (A11822) is a Chandigarh-based architect and author. He has 44 years of experience designing various types of buildings, complexes, and large campuses. A monograph on his selected works, "MODERN REGIONALISM: The Architecture of Sarbjit Bahga" has been published. Bahga is also a keen researcher and a prolific architectural writer, having 12 books to his credit.
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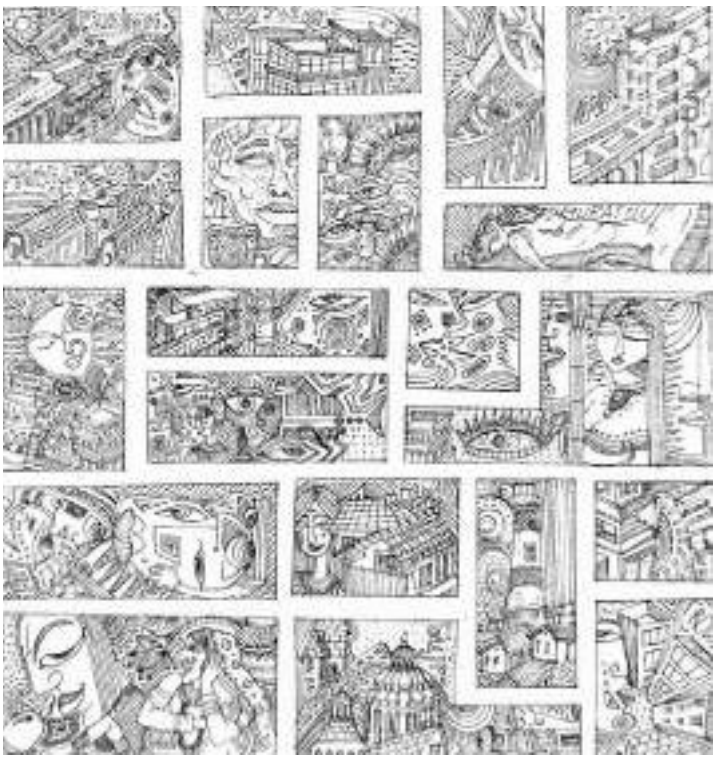
POEM

EVERY WINDOW HAS A DIFFERENT STORY!

By Ayesha Tisekar



गाँव की गलियों से निकली मैं,
वहाँ तारे पास थे और हवा धीमी थी।
ज़िंदगी सिम्पल, पर सपनों की चमक थी।

फिर आई मुंबई,
जहाँ कमरा मिला, एक छोटी सी जगह।
पर उस खिड़की ने दिखाई दुनिया नई, अलग सी राह।

रोशनी चमक रही थी,
कुछ सुनहरी, तो कुछ निली।
हर इमारत में कहानियाँ थी रंगीली,

कहीं हँसी, कहीं तन्हाई की कहानी,
कहीं स्ट्रगल, कहीं ज़िंदगानी।

उस नज़ारे में जब खुद को खोया पाया,
महसूस हुआ वो आज़ादी का साया।
और मैं ख़ामोश, बस देखती रही वो रोशनी,
जो हर खिड़की के साथ बदलती रही अपनी कहानी।

तब दिल ने कहा, हल्की सी थ्योरी.
Every window has a different story.

IMAGE COURTESY: AUTHOR

Ayesha Tisekar, a F.Y.B.Arch. student at Rachana Sansad's Academy of Architecture (IIA - Affiliated College), blends curiosity with a growing interest in innovative thinking. Observational writing serves as her most intuitive medium of expression and informs her emerging architectural approach rooted in sensitivity, clarity, and thoughtful design responses.
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The Magnificent Ranakpur Temple

By Moksha Bhatia

The Jain Temple of Ranakpur, built in the fifteenth century, is a magnificent location nestled amid the Aravalli hills' forests. Situated in the charming town of Ranakpur in the Indian state of Rajasthan, Ranakpur temple is a magnificent illustration of what Jain architecture is all about.

An architectural wonder, this temple is distinguished by its 80 domes, 1444 pillars and elaborate carvings. Made of white marble, the temple is regarded as one of India's greatest artistic accomplishments. Each of the 80 domes let in natural light and are held up by 400 columns. There are many intricately carved columns, and it is stated that no two pillars are identical in their design. Jain Tirthankara statues and sculptures adorn the temple's walls and halls. The temple features a 48,000 square foot basement with a ceiling decorated with scrollwork and geometric designs.

Figure 1: Magnificent entrance of Ranakpur Temple

Figure 2: Three-storied “balanaka” (entrance hall)

Figure 3: Elaborately carved columns of Ranakpur temple

Figure 4: Intricately detailed high-raised ceiling dome

Figure 5: The intricate carvings and entwined areas are highlighted by the light.

Figure 6: The rhythm in design

Figure 7: Exquisite composition of space – floating and elegantly entwining

Figure 8: Beauty of “Sculpture-Architecture”

Figure 9: Details embedded in the design

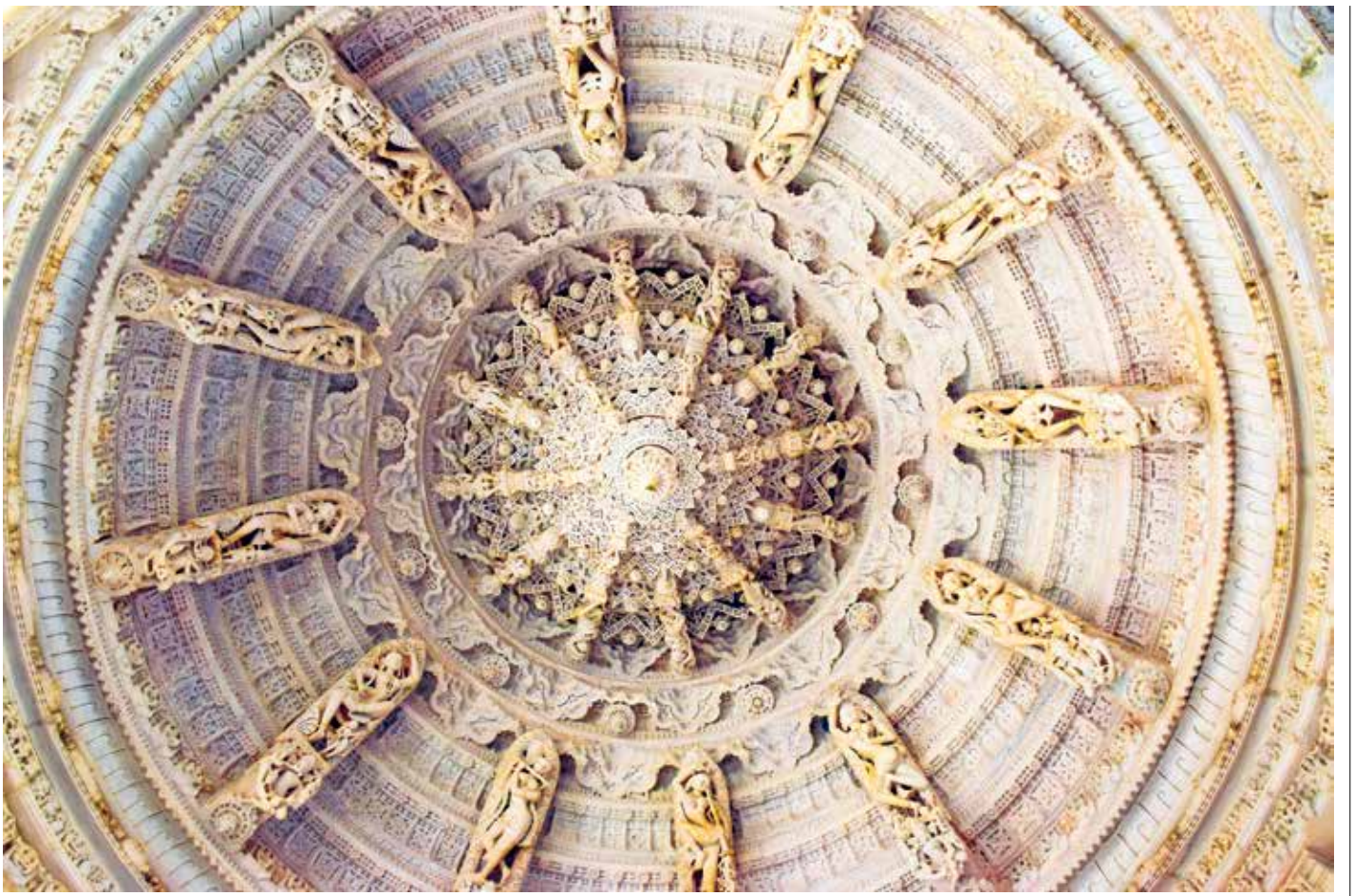

Figure 10: Another intricately detailed high-raised ceiling dome

The temple hosts a number of Jain festivals and rituals, drawing followers who take part in religious rites, prayers and sacrifices. Visiting the Ranakpur Jain Temple makes one experience India's rich cultural and architectural legacy.

All images courtesy: Author

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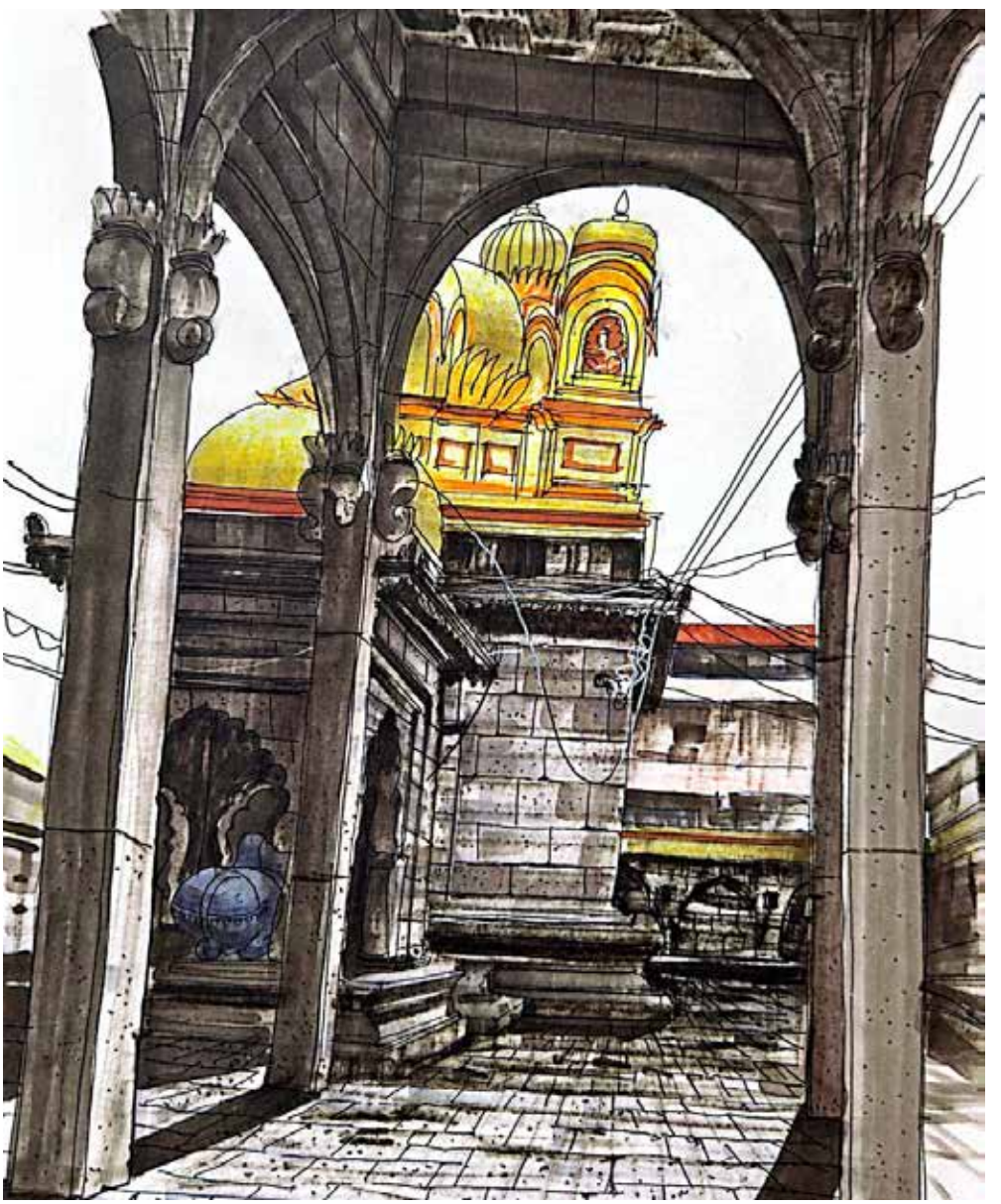
SKETCHES

Sacred Landmarks

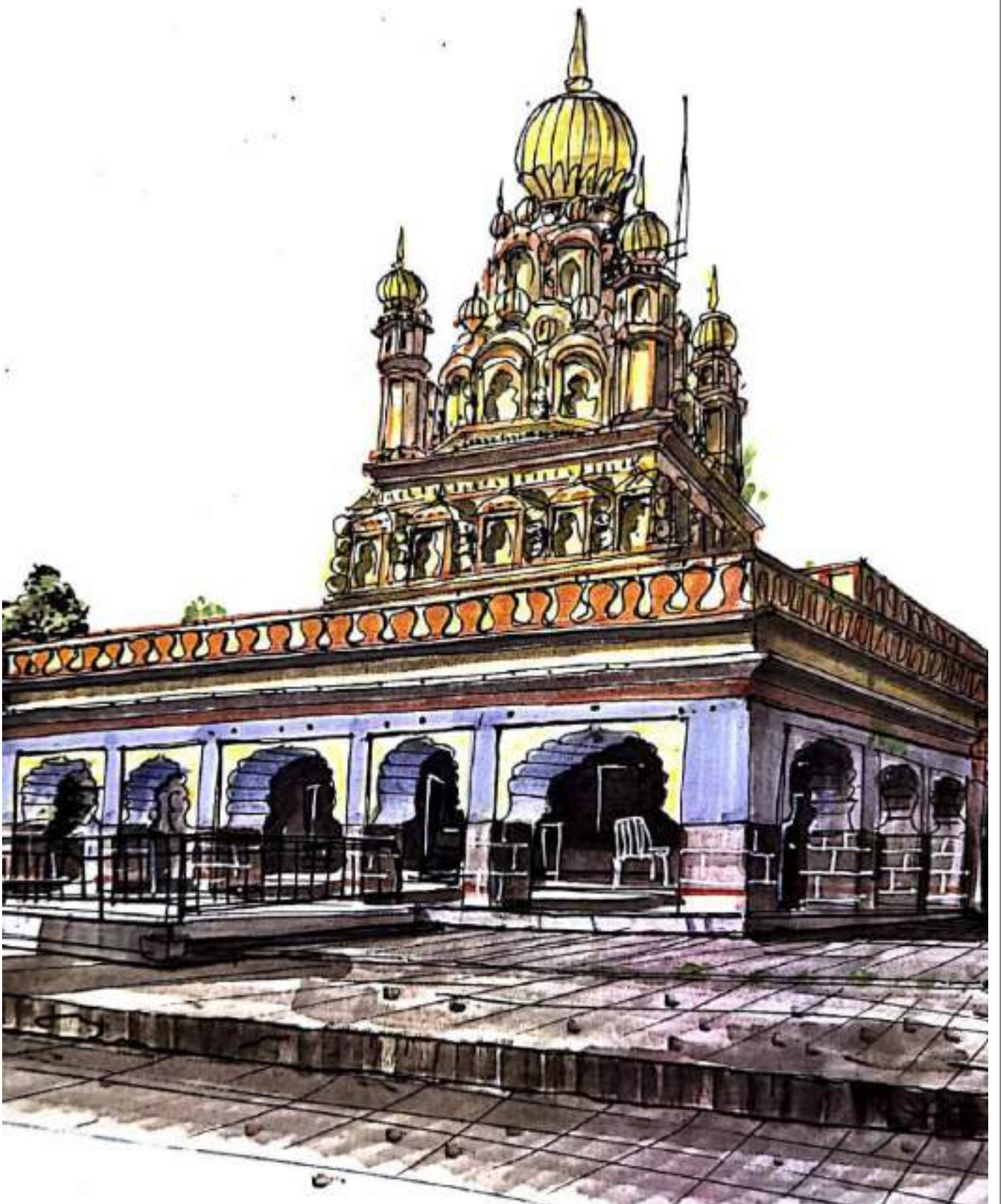
By Ar. Ravi Gadre

Sketching places of religious significance has been a source of inspiration for my architectural thought processes.



Shri Kashi Vishweshwar Mandir, Ganpati Ali Ghat

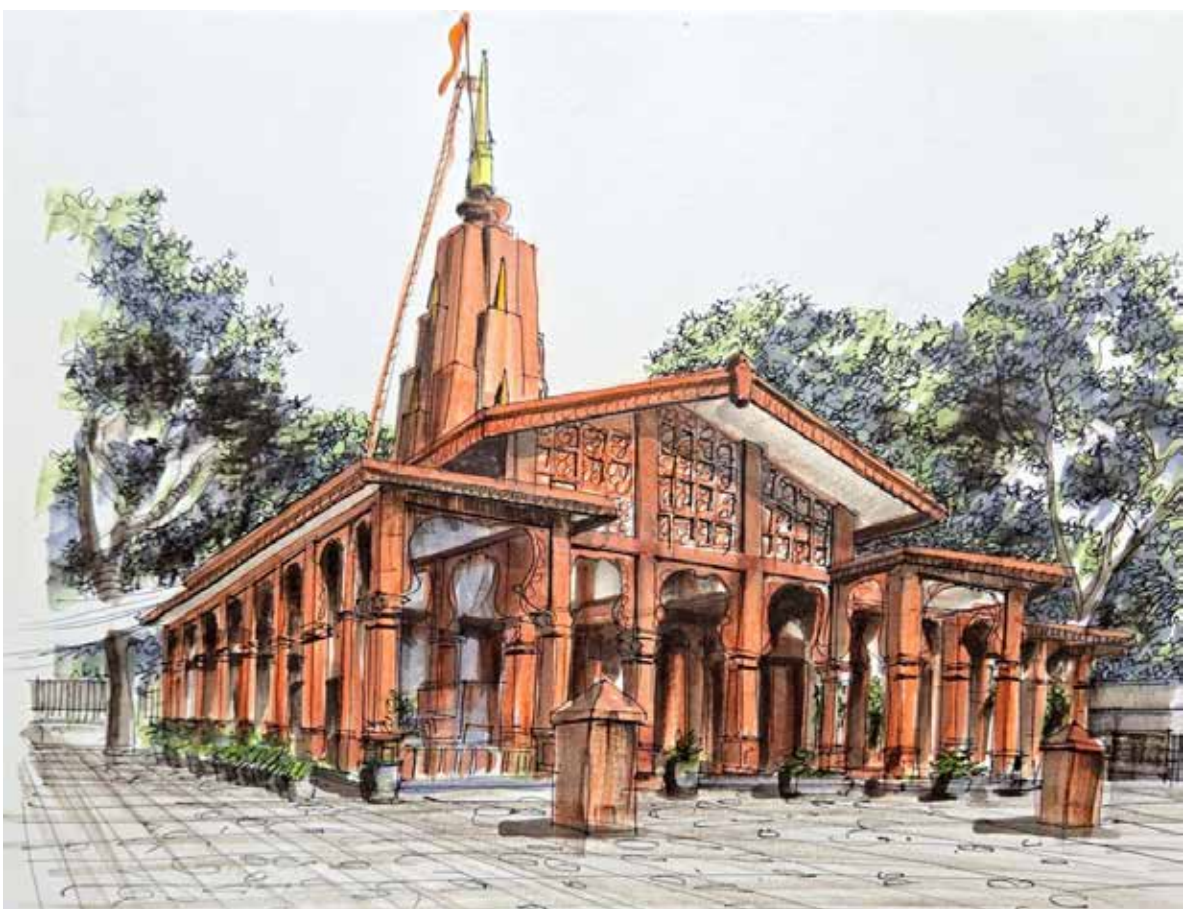
Saras Bag Ganpati Mandir, Pune



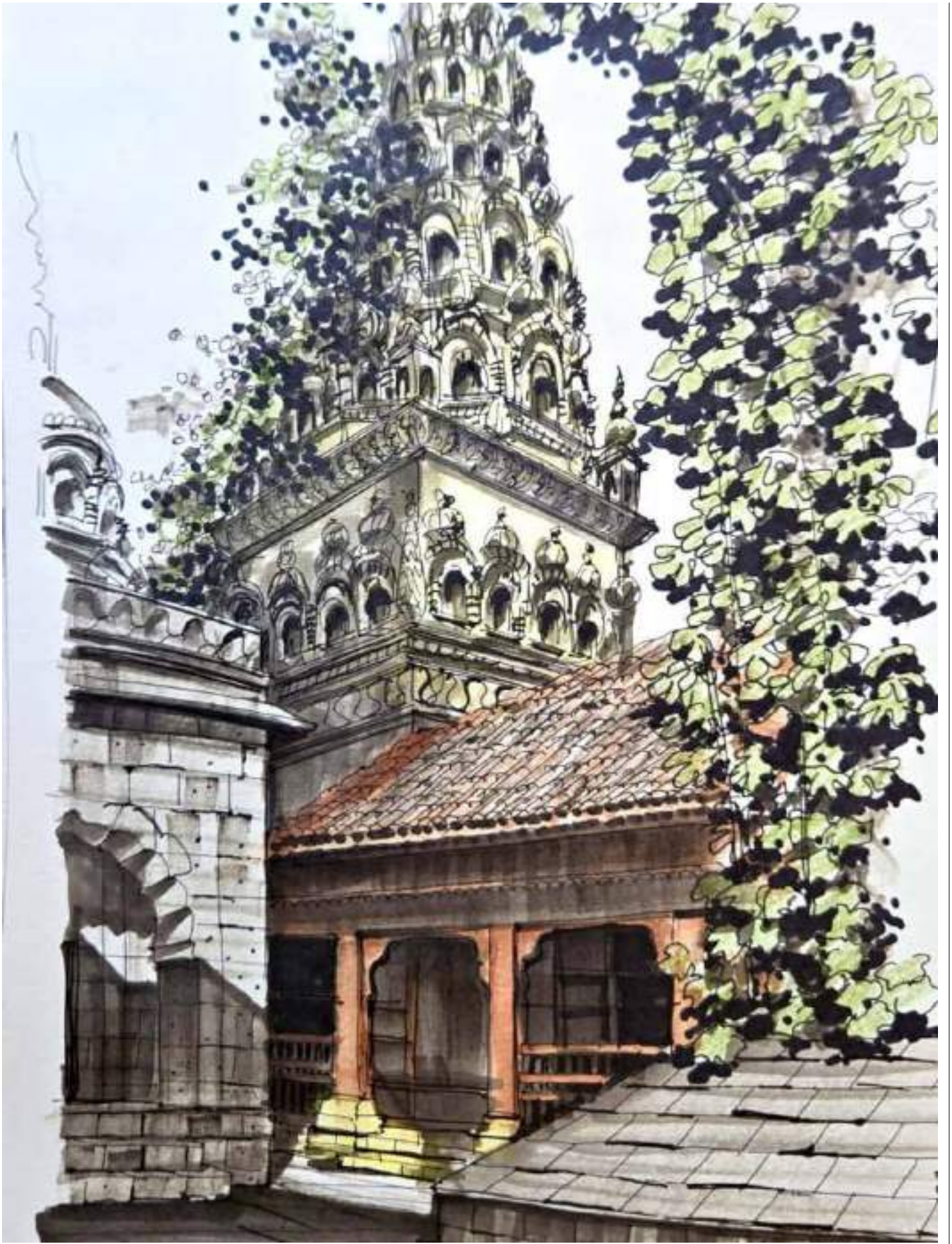
Devdeveshwar Mandir, Parvati, Pune

Hanuman Mandir at Taljai Mandir, Pune

Punyadham Ashram, Kondhawa, Pune



Sarasbag Temple, Pune



Shree Ram Mandir at Tulsibag, Pune

Flower Market at Kotwal Chawadi, Mandai, Pune

Mhatoba Temple, Hinjawadi hill

All Images Courtesy: Author

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NEWSLETTER NOVEMBER

CONDOLENCES

Prof. M.M. Nangia

(16 Sept. 1945 – 1 Dec. 2025)

Prof. M.M. Nangia (A07113) was a distinguished architect, town planner and educator whose work profoundly shaped architectural education and urban planning in post-independence India. He passed away in Mohali, leaving behind a legacy defined by intellectual clarity, contextual sensitivity and an unwavering commitment to teaching. A meritorious alumnus of the School of Planning and Architecture (SPA), New Delhi, Prof. Nangia completed his Bachelor of Architecture in 1967, securing top positions in merit in his senior years. He went on to obtain a Post-Graduate Diploma in Town and Country Planning from SPA in 1969, specialising in Housing and Community Planning. The rigorous academic environment of SPA, combined with India's evolving planning challenges, grounded his professional and pedagogical philosophy. He began his career as Assistant Town Planner at SPA, New Delhi (1967–1968), working under the mentorship of T. J. Manickam and B. K. Ghosh. He later joined the Office of the Chief Town Planner, Rajasthan (1968–1970), contributing to public building designs and urban development in rapidly growing towns. His participation in the preparation of the Master Plan and Sector Plans of Korba Township, Madhya Pradesh, stands out among his early professional achievements. Prof. Nangia entered full-time academia in 1970 as Lecturer at the University of Roorkee, serving for nearly three years. His most enduring academic tenure was at the College of Architecture, Chandigarh, where he served about fifteen years (UPSC selection). During this period, he became part of ongoing planning conversations in Chandigarh—engaging with its modernist legacy while addressing the city's emerging needs. A two-year deputation (circa 1978–1980) to the University of Jos, Nigeria, broadened his global exposure and deepened his understanding of tropical design and cross-cultural architectural processes. Upon returning to India, he served as Professor at the Government College of Architecture, Lucknow, for nearly fourteen years, including several years as Head of the Department. His stewardship strengthened academic rigour, planning education and design-research integration at the institution. After retiring from GCA, Lucknow, Prof. Nangia continued to shape architectural pedagogy as Professor and Head at Integral University, Lucknow. He subsequently served at BBDNITM, Lucknow; ITM, Lucknow and finally at MIT, Moradabad, where he taught until 2018. Even after relocating to Mohali, he remained active through writing, mentoring and scholarly engagement. A prolific writer and reflective thinker, Prof. Nangia authored essays on housing, open spaces, conservation, architectural legislation and urban governance. His work on the Kalayat Temple complex remains a widely referenced contribution to conservation discourse. His articles appeared in Jantar, Aayam and INTACH newsletters, while his lecture series and seminar papers on South Indian temple architecture, hill architecture, planning theory and Vastu systems enriched academic discussions across institutions. Prof. Nangia championed climate-responsive design, contextual modernism and ethically grounded professional practice. Known for his disciplined teaching and intellectual generosity, he profoundly shaped generations of architects. The architectural fraternity mourns the passing of a mentor, scholar and visionary whose influence will continue to resonate within India's architectural landscape.

Ar. Mohammad Ziauddin, Associate Professor and Former Head Department of Architecture Faculty of Architecture and Ekistics Jamia Millia Islamia, New Delhi.

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